


HEALTH DISPARITY IN SASKATOON



Analysis to Intervention

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SPECIAL THANKS

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Professional guidance

Professor Johan Mackenbach and Dr. Anton Kunst from Erasmus University in the Netherlands.

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Art work

Permission to use the image titled “The Broadway Bridge” displayed on the cover was obtained from The Glen Scrimshaw Gallery. For more information about the artist and his prints contact Glen Scrimshaw at gallery@glenscrimshaw.com.

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ABOUT THE AUTHORS

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Cory Neudorf is the Chief Medical Health Officer for the Saskatoon Health Region. Cory has a degree in Medicine, a fellowship in Community Medicine and a Masters degree in Health Science. Cory is also an Associate Clinical Professor with the Department of Community Health and Epidemiology at the University of Saskatchewan.

For copies of this report

Additional copies of this report can be obtained from the Saskatoon Health Region Public Health Observatory website:

http://www.saskatoonhealthregion.ca/your_health/ps_public_health_pho_about.htm

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BACKGROUND AND CONTEXT

A study conducted by the Saskatoon Health Region in 2006 compared the health status of residents within Saskatoon's six lowest income neighbourhoods to the rest of the city and found substantial disparities in suicide attempts, mental disorders, injuries and poisonings, diabetes, chronic obstructive pulmonary disorder, coronary heart disease, chlamydia, gonorrhoea, hepatitis C, teen births, low birth weights, infant mortality and all cause mortality (Section 2.3: Health Disparity by Neighbourhood Income). Although disparity in health outcomes by socioeconomic status is well known, the magnitude of the disparity in health outcomes found in Saskatoon is shocking for a city in the western world. For example, the infant mortality rate in Saskatoon's low income neighbourhoods was 448% higher than the rest of the city; which is worse than developing nations.

Upon completion of the research, over 200 community consultations were initiated with various government representatives, academics, community groups and community associations. The purpose of the consultations was to transfer knowledge of the vast disparity in health to the Saskatoon community and to gather opinion on what needs to be done to help alleviate this complex problem. As a result of these consultations, a number of regional initiatives were implemented (Section 3.2).

The initial Health Disparity by Neighbourhood Income study led to more comprehensive research to examine the relationship between socioeconomic status and health status in Saskatoon residents. These additional studies have demonstrated that income status often has the strongest independent association with disparity in the prevalence of diseases or disorders in Saskatoon residents (Sections 2.4, 2.5 and 2.8). Utilization of physician or mental health services had limited (if any) association

in preventing disease prevalence. As well, behaviours also had limited independent associations with health outcomes; mainly because the prevalence of risk behaviours is often associated with income status (Sections 2.6, 2.7 and 2.9). The results from Saskatoon are consistent with the results from other jurisdictions in that the determinants of health (and behaviours) fall mainly outside the health care treatment sector. A new finding also materialized through the more comprehensive research. Aboriginal cultural status was found to have a much more limited association (if any) with poor health outcomes or risk behaviours after statistical adjustment for other variables like income status. This suggests that the health status of Aboriginal residents in Saskatoon can be improved substantially with appropriate social intervention. For example, the 2007 Saskatoon School Health Survey (Section 2.8) found that Aboriginal children between the ages of 10-15 were initially 181% more likely to suffer from depressed mood than Caucasian children. However, after statistical adjustment for other variables like socioeconomic status, Aboriginal children were only 13% more likely to have an independent association with depressed mood. Here is another example. In the Saskatoon Health Region, the prevalence of lifetime suicide ideation (thoughts) is 11.9%. Reviewing by Income, 6.1% of high income Caucasians and 3.8% of high income Aboriginal people had lifetime suicide ideation (Section 2.5).

The rationale for the more comprehensive research was to establish a finite number of determinants which were independently associated with health disparity in Saskatoon. Given the reality of limited human and financial resources, it is important to ascertain the main determinants of health upon which a positive return on investment is likely. If the main

determinants of health responsible for health disparities are variables like income status and educational status, a comprehensive and coordinated set of policy options will be required to reduce extensive health disparity in Saskatoon.

In order to develop a comprehensive and coordinated approach to reduce extensive health disparity in Saskatoon, two additional actions were taken. First, 5000 residents from Saskatoon were contacted at random by telephone to determine which health and social disparity interventions they were willing to support (Section 2.11). Second, over 10,000 abstracts and articles were reviewed from across the world for evidence based policy options to reduce health and social disparity (Section 3.1 A-G). These evidence based policy options were then matched to levels of public support from the Saskatoon population. Policy experts from affected government agencies and community groups/associations were able to review this report prior to release, verify that the statistics were correct and ensure the evidence-based policy options were realistic in a Saskatchewan context. Through this process, an additional 100 consultations occurred.

The final results show that a number of relatively simple policies could be implemented that would have a substantial impact on reducing health disparity. For example, 26.3% of all children aged 0-2 years (and 20.1% of all children) in Saskatchewan live in poverty. The impending result of poverty in children is substantial health disparity in youth of all ages; ranging from unacceptable high mortality rates in infants to alarming differences in health and social outcomes in adolescents. If we were to implement a child poverty protection plan, modelled after the Canada Pension Plan that reduced poverty in seniors from 58% to 6%, we could substantially reduce child poverty in Saskatchewan. In our survey of 5000 Saskatoon residents, 83.8% supported strengthening early intervention programs

for children, such as poverty reduction. It is important to note, however, that the evidence based policy options in this report should be viewed in combination rather than in isolation. Some policy options are to address immediate needs, while others are long term strategies that address macro level social structures. For example, short term income and housing stability measures are intended to provide the necessary support and stability to low income residents to allow longer term educational and employment initiatives to have a realistic chance of success.

Saskatchewan residents understand firsthand the problem of poverty and the need to work together as a community to solve complex problems. Saskatchewan was the hardest hit province in the Great Depression from 1929 to 1939. At that time, two thirds of Saskatchewan's rural population was on social assistance and 290 out of 302 municipalities required government assistance. As a result of impoverished conditions, very few people could afford necessary health services. It is from this collective despair and hardship that innovative solutions were found. After ten years of difficult negotiation, Matt Anderson initiated a regional health insurance plan for the municipality of McKillop, the town of Strasbourg and the villages of Bulyea and Sifton on January 1, 1939. Mr. Anderson bridged consensus within his regional municipality, negotiated contracts with private practice physicians (including a 50% cost reduction for services) and hospitals and received legislative authority from the provincial government to levy a local tax of \$5.00 per person per annum. Within two years, five other municipalities initiated their own regional plans. By 1946, the Government of Saskatchewan had adopted universal hospital services and in 1962 Medicare with physician services became compulsory. The regional plan initiated by Matt Anderson in 1939 became the pride of Saskatchewan when it was adopted throughout Canada in 1972.

In his book, *The End of Poverty*, the world renowned economist Jeffrey Sachs suggests that we should not state what amount of aid someone in need will receive. Instead, we should determine what someone needs in assistance and then raise the required amount. Sachs notes that the problem is not public opposition to greater aid but rather a lack of leadership to ask the public for greater efforts. If Saskatchewan can pioneer something as complex and ground breaking as Medicare, perhaps Saskatchewan can pioneer other social initiatives like having the lowest levels of child poverty in the world.

Moral reasons aside, it is in our collective interest to reduce social disparity. Section 2.10 uses a linked dataset to demonstrate that low income residents consume an extra \$179 million in healthcare costs than if they were middle income. This does not include the additional costs for social services and corrections. Research from British Columbia found that proactive housing for homeless individuals would save \$17,985 per person in health, social and correctional costs on an annual basis.

Regardless of overall economic benefit, significant health disparities are inconsistent with Saskatchewan values. In addition to the excess burden of illness on those who are already disadvantaged, health disparities threaten the cohesiveness of our community, challenge the sustainability of our health system and have an impact on the economy. These consequences are avoidable and can be successfully addressed. Our research shows that many of the evidence based policy options presented for discussion already have strong public support; including a wide range of general support from agencies and community groups.

How this report is organized:

The letters of support for this health and social disparity reduction plan are placed at the beginning of the report in order to convey the extensive consultations that have occurred with the Saskatoon community. The consultations included regional government, academic leaders, community groups and community associations. The letters of support are followed by the Introduction which discusses the association between socioeconomic status and health in other jurisdictions.

Section 2 discusses the association between socioeconomic status and health in Saskatoon residents, the causes of health disparity and levels of public support for social intervention. As well, Section 2 also discusses the reduced role of Aboriginal cultural status with poor health outcomes and risk behaviours after controlling for other variables, namely socioeconomic status.

Section 3 summarizes over 10,000 abstracts and articles from other jurisdictions on evidence based policy options that had successful impact in other similar countries or communities in reducing health or social disparity.

The overall objective of our report is a) to describe the extent of health disparity in the Saskatoon community, b) to determine the causes of health disparity, c) to explain that health disparity is mostly preventable and d) to use evidence from other jurisdictions to present policy options for consideration.

MAIN RESEARCH FINDINGS

(SECTION 2)

1. Residents that live in the six low income neighbourhoods of Saskatoon are:
 - a) 1458% more likely to attempt suicide,
 - b) 1389% more likely to have Chlamydia,
 - c) 3360% more likely to have hepatitis C,
 - d) 676% more likely to have gonorrhea,
 - e) 1549% more likely to have a teenager give birth to a child,
 - f) 448% more likely to have an infant die in the first yearin comparison to higher income residents.

Note: A majority of Saskatoon residents indicated that there should be 0% difference in health status between income groups in Saskatoon.
2. Children aged 10-15 years old that live in the six low income neighbourhoods are:
 - a) 180% more likely to report low self report health
 - b) 200% more likely to be depressed
 - c) 250% more likely to be anxious
 - d) 190% more likely to have suicidal thoughts
 - e) 41% more likely to have low self esteem
 - f) 1140% more likely to be smoking already
 - g) 200% more likely to be using alcohol already
 - h) 1900% more likely to be using marijuana already
 - i) 80% more likely to be physically inactive
 - j) 60% more likely to be bulliedin comparison to higher income children

3. After statistically controlling for other variables (demographics, other socioeconomic status, cultural status, disease intermediaries, other health disorders, behaviours, life stress and healthcare utilization) low income residents in Saskatoon are:
- a) 50% more likely to report low self report health,
 - b) 196% more likely to have diabetes,
 - c) 118% more likely to have heart disease,
 - d) 367% more likely to have suicidal thoughts,
 - e) 130% more likely to be a daily smoker,
 - f) 72% more likely to have a child that is not fully immunized
 - g) 107% more likely to have a child that is depressed
 - h) 163% more likely to have a child use alcohol
 - i) 163% more likely to have a child use marijuana.

Note: The independent (adjusted) association between a risk indicator such as income, and an outcome, is much lower than the unadjusted association. This is because all other explanatory variables have been controlled for.

4. After statistically controlling for other variables, Aboriginal cultural status no longer has a statistically significant association with low self report health, diabetes prevalence, heart disease prevalence, lower child immunization rates and depressed mood. After controlling for other variables, Aboriginal cultural status retains a small but statistically significant association with suicide ideation and daily smoking.

After controlling for other factors, namely socioeconomic status, Aboriginal people are:

- a) 21% less likely to report low self report health
- b) 24% less likely to have diabetes
- c) 4% less likely to have heart disease
- d) 184% less likely to have suicidal thoughts
- e) 186% less likely to be a daily smoker
- f) 64% less likely to have a child that is not fully immunized
- g) 168% less likely to have a child that is depressed
- h) 272% less likely to have a child use alcohol
- i) 712% less likely to have a child use marijuana.

MAIN EVIDENCE BASED POLICY OPTIONS

(SECTION 3)

Over 100 community consultations occurred with various regional government groups, academics, community groups and community associations in order to discuss the evidence based policy options in Section 3 prior to releasing this report.

The evidence based policy options presented within this final report were included if they had sufficient support from the groups mentioned

above. As well, evidence based policy options were included if they had high levels of public support from our random telephone survey of 5000 Saskatoon residents. All of that said, there appears to be seven evidence based policy options that consistently demonstrate substantial support from the community of Saskatoon.

Evidence Based Policy Option #1 - Develop a Multi-Year, Targeted Plan to Reduce Poverty

Evidence Based Policy Option #3 - Ensure no Child Lives in Poverty

83.8% support from the Saskatoon community for early intervention programs like poverty prevention.

Evidence Based Policy Option #6 - Remove Work Earning Clawbacks

84.1% support from the Saskatoon community

Evidence Based Policy Option #15 - Increase Support for Community Schools

82.0% support from the Saskatoon community

Evidence Based Policy Option #16 - Universal Child Care for Low Income Parents

66.0% support from the Saskatoon community

Evidence Based Policy Option #19 - Redirect Funds from Ineffective to Effective Programs (i.e., more skills training)

82.3% support from the Saskatoon community

Evidence Based Policy Options #24 and #26 - Expand Affordable Housing Projects

74.9% support from the Saskatoon community for adults with children
66.8% support from the Saskatoon community for adults without children

Note: 83.2% of Saskatoon residents believe something can be done to reduce health disparity by income status.

LETTERS OF SUPPORT

Regional Government

Since writing the draft of this report, an additional 100 community consultations occurred with various government groups, academics, community groups and community associations. The purpose of the consultations was to ensure that the research was valid, the statistics were accurate and that the evidence based policy options presented in Section 3 were realistic in a Saskatchewan context.

This first section includes letters of support from regional government groups. The foreword is from the President and CEO of the Saskatoon Health Region. The other letters of support are from the Tribal Chief of the Saskatoon Tribal Council, the President of the Central Urban Métis Federation, the Chairman of the Board of the Saskatoon Board of Education, the Chair of the Greater Saskatoon Catholic Schools, the Mayor of Saskatoon, the City Councillors for Wards two, three and four (representing the six low income neighbourhoods in Saskatoon), other City Councillors, the Chief of Police and the Regional Inter-Sectoral Committee; which links all human services in Saskatoon in order to implement Saskatchewan's Action Plan for Children.



Office of the President and Chief Executive Officer
3rd Floor, Saskatoon Square, 410 – 22nd Street East, Saskatoon, SK Canada S7K 5T6
Phone: (306) 655-3322 Fax: (306) 655-3394

October 7, 2008

On behalf of the Saskatoon Health Region, I would like to congratulate the research team for their work on the *Health Disparity: Analysis to Intervention* report.

Prior to the publication of our first health disparity report, Saskatoon Health Region staff engaged in over 200 community consultations to convey the results and to build consensus on the need for a collaborative, community-based response to address health disparities. Since the publication of our initial health disparity report, the Saskatoon Health Region has made a strong commitment to respond to the needs of our community, including enhanced allocation of health services to our low income neighbourhoods.

Our strategic plan includes the strategic directions "Partnering for Improved Health for Aboriginal people" and "Fostering Research, Learning and Innovation," with specific goals and action plans designed to reduce health disparities. We know that we need to do our part, through responsive, effective, client-centred care and services for the populations we serve. We also appreciate that we need to work with others to address the underlying determinants of health disparity.

We are excited about the potential impact of a comprehensive, evidence-informed health disparity reduction plan for Saskatoon and surrounding area. The Saskatoon Health Region looks forward to continued collaboration with the Saskatoon Tribal Council, the Greater Saskatoon Catholic School Board, the Saskatoon Public School Board, the City of Saskatoon, the United Way and other valuable community partners, working together to reduce health disparity in our city. The report by Dr. Neudorf and Dr. Lemstra will inform the Health Region and our partners about policy options to consider in developing a plan to reduce health disparities in our community.

Sincerely,

A handwritten signature in black ink that reads "Maura Davies".

Maura Davies, FCCHSE
President and Chief Executive Officer
Saskatoon Health Region



SASKATOON TRIBAL COUNCIL

ASIMAKANISEKAN ASKIY RESERVE #102A

Suite #200 - 335 Packham Avenue
Saskatoon, Saskatchewan S7N 4S1

Phone (306) 956-6100 Fax (306) 244-7273



April 23, 2008

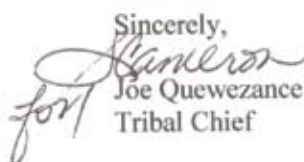
Office of The Tribal Chief

The STC Chiefs have long been aware of the disparity in health status between their people and the general Canadian population. This has been affirmed through various studies and research. The Population Health Research Department is also aware of these issues and moved forward with specific research in the area of health disparities in the city of Saskatoon. The work of the department did not end with the publishing of the report. They continued working by engaging appropriate governing bodies and community organizations. These positive and respectful outreach activities resulted in significant collaborations with First Nations people. Together, areas of public health concern were prioritized and an initial action plan was not only identified but was actually implemented. These accomplishments were a direct result of strategies to ensure knowledge translation occurred.

This knowledge translation effort brought together the resources from the Saskatoon Health Region and the social, jurisdictional and access capital from the First Nations government. Further, the *Saskatchewan First Nations' Urban Protocol* ensures that services in the city of Saskatoon, overseen by the Saskatoon Tribal Council, are delivered to all First Nations people. This is a responsibility and obligation taken very seriously by the STC Leadership.

The research undertaken has confirmed that Aboriginal cultural status is not associated with poor health outcome or risk behaviour after controlling for socioeconomic status. There is a need to transfer the results of the latest research to the community for two main reasons: a) It prevents the negative stereotype and shame felt by Aboriginal people who are told that the cause of their health disparity is a result of their cultural status and b) It allows policy makers and the public at large to acknowledge that health disparity prevention is possible through adequate employment and education programs.

The STC Chiefs direction has been made clear. We can no longer wait for external responses to the depressing status of health in the inner city neighbourhoods of Saskatoon. To this end we are pleased to be working in collaboration with the Population Health Research Department to further translate knowledge about health disparity and the social determinants of health into action. We have worked together with this department in formulating the "Health Disparity in Saskatoon: Analysis to Intervention" report and look forward to working together to turn the recommendations from the report into action.

Sincerely,

Joe Quwezance
Tribal Chief

Kinistin

Mistawasis

Muskeg Lake

Muskoday

One Arrow

Whitecap Dakota

Yellow Quill



Central Urban Métis Federation Inc.
315 Avenue M South
Saskatoon, SK S7M 2K5
Tel: (306) 975-9999 Fax: (306) 975-9156

September 25, 2008

Dr. Mark Lemstra
Research Lead, Public Health Observatory
Office of the Chief Medical Health Services
Saskatoon Health Region

Dear Dr. Lemstra;

Re: **Health Disparity in Saskatoon Report.**

Central Urban Métis Federation (1993) Inc. has always believed that poverty is the root of the challenges that Aboriginal People face. From that root the branches of homelessness, health, justice, education and unemployment grow. Many of our people including Elders make daily decisions of food or medication and children do not attend school because there is nothing for their lunch.

Diabetics test randomly because of the cost of testing strips. Immunizing children is not a top priority when you are homeless without basic needs being met, supports in place or transportation. Society cannot expect people to contribute when getting by day to day is their priority.

CUMFI agrees with and supports the Health Disparity Report that the Health Status of Aboriginal residents in Saskatoon can be improved substantially with social intervention. We also believe that these strategies need to be Aboriginal led.

Sincerely,

Shirley Isbister
President
Central Urban Métis Federation (1993) Inc.



Saskatoon
Public
Schools

Caring to Learn...Learning to Care

June 17, 2008

310 - 21st Street East, Saskatoon, Saskatchewan S7K 1M7

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Dr. Jim Jutras, Director of Education

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
#101 – 310 Idylwyld Drive North
SASKATOON SK S7L 0Z2

Dear Dr. Lemstra

Thank you for your presentation of the report "Health Disparity In Saskatoon: Analysis To Intervention" at our June 10th Board meeting.

The Saskatoon Board of Education supports the general themes of this report including the focus on the elimination of child poverty in Saskatoon. We would also like to offer more specific support for your recommendation to allocate health services to community schools and other public schools where warranted. This is consistent with the Board's strong support for integrated community centres. In addition, your recommendation that, as a community, we invest in early childhood education and care is consistent with the Board's early learning and literacy priority and, therefore, receives our strong support.

The Saskatoon Board of Education has two clear priorities that we believe will address learning discrepancies. Our *Literacy For Life* and *Collegiate Renewal* initiatives have improved student success and engagement, and over time will be a positive factor in eliminating poverty in our community.

Thank you for your leadership in addressing health disparities. As most of the young people in the six poorest neighborhoods attend public schools, we look forward to strengthening our partnership with the Saskatoon Health Region and other organizations in the interests of a stronger community.

Yours sincerely

Mr. Ray Morrison, Chairman, Saskatoon Board of Education



GREATER SASKATOON CATHOLIC SCHOOLS

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May 13, 2008

To Whom It May Concern:

This letter is intended as one of general support for the report entitled *Health Disparity in Saskatoon: Analysis To Intervention* by Dr. Mark Lemstra and Dr. Cory Neudorf of the Saskatoon Health Region.

The Greater Saskatoon Catholic Board of Education believes that a good education for all students will help solve health disparity of school aged children in Saskatoon. The Board of Education believes that all children and youth need to attend school to become educated, graduate and become contributing members of society. Good education is directly related to a healthier population.

Eradicating child poverty in Saskatchewan is a goal our Board of Education strongly supports.

Sincerely

A handwritten signature in black ink, appearing to read "JC", is written over a horizontal line.

Jim Carriere, Chair
Greater Saskatoon Catholic Schools



—City of—
Saskatoon

OFFICE OF THE MAYOR
DONALD J. ATCHISON
MAYOR

June 12, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
101 – 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

On behalf of City Council, I wish to thank you and Dr. Cory Neudorf for your report entitled *Health Disparity in Saskatoon: Analysis to Intervention*.

This document provides a wealth of evidence-based information to guide action by various orders of government and community stakeholders to improve the quality of life for some of our most vulnerable citizens. This in turn will contribute to the best uses of our limited community resources.

Members of City Council also wish to thank you and Dr. Neudorf for your recognition and endorsement of the Saskatoon Affordable Housing Business Plan objectives and initiatives. The City of Saskatoon is proud of its leadership role related to this social issue in our community and our sustainable commitment to fulfil the initiatives contained within this plan.

Although the City of Saskatoon will continue to explore partnership responsibilities with the health sector in areas of mutual interest, current pressures on our resources will not allow us to expand our mandate beyond its current scope and level.

We wish you and Dr. Neudorf success with your presentations. Again, on behalf of City Council, thank you for your report and we wish you the very best.

Sincerely,

Donald J. Atchison
Mayor

copy: General Manager, Community Services
City Clerk



City of
Saskatoon

July 28, 2008

TO WHOM IT MAY CONCERN:

This is a letter of support for the strategies and recommendations detailed in the Health Disparities Report produced by Dr. Mark Lemstra of the Saskatoon Health Region and his colleagues.

Together, they have produced a compelling and meticulous document that should be required reading for everyone concerned with meaningful research that can produce substantive changes into the very real and often tragic implications of health disparities in our population.

At the City Council level, I represent an area of Saskatoon (Ward Two) that encompasses five neighbourhoods of low income people. These neighbourhoods include Riversdale, Pleasant Hill, King George, Holiday Park and Meadowgreen. Many of my constituents suffer the negative health consequences of poverty associated with low levels of educational attainment, and poor economic and employment prospects. Although many of my constituents are proud and caring parents, nevertheless, they and their children face difficult futures. Ethnically diverse, they are bound by the common element of poverty. It is these people that Dr. Lemstra writes about so powerfully.

The work of the health disparities report is ground-breaking and seminal. If the research, and its conclusions and recommendations, are attended to by policy makers at all levels, there exists a very real possibility that we will finally be able to make a significant difference in the problems associated with poverty and poor health.

I strongly commend this report and all its recommendations.

Pat Lorje,
City Councillor,
Ward Two,
City of Saskatoon.

To: Mark Lemstra
Saskatoon and Region Health District

In regards to the health disparity study by neighbourhoods by the Saskatoon Health Region in the city of Saskatoon, I am in full support of the findings of the study. We now have written documentation of health disparities by neighbourhood in the city of Saskatoon that maybe we understood but could not get a handle on.

Although I was not a great supporter of the study in its early stages, I now see that written documentation of these issues in Saskatoon are an important part of the process for moving forward to seek solutions. I would urge all involved with the findings of this study to work together and support partnerships for the development of solutions and creating a healthier lifestyle for all.



Maurice (Moe) Neault
City Councillor Ward 3
City of Saskatoon



City of
Saskatoon

CITY COUNCIL

August 21, 2008

Dr. Mark Lemstra
Office of the Chief Medical Health Officer
Saskatoon Health Region
204 – 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

As City Councillor for Ward 4 in Saskatoon, I would like to express my support for the Health Region's Disparity Reduction Plan.

Yours truly,



for : **Myles Heidt**
City Councillor (Ward 4)

:smm



CITY COUNCIL

—City of—
Saskatoon

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101-310 Idylwyld Drive North
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August 26, 2008

Dear Mr. Neudorf and Mr. Lemstra,

Thank you for taking the time to present your most recent instalment of the Saskatoon Health Region's work on health disparities in Saskatoon "From Analysis to Intervention," and to provide the opportunity to review and comment on it.

I was very pleased to see the researchers take this step beyond the initial pioneering Health Disparities research which identified the problem, to providing a thorough analysis of evidenced-based solutions required to respond to the disparities effectively. The researchers have laid the evidence out very clearly that we can tackle health disparity effectively by ensuring that there is a strong social safety net in society and effective supports in place to help people living on low-income. The evidence-based recommendations around minimum wage, social assistance, housing, and especially the Child Poverty Protection Plan are unquestionably bold, but we must be reminded that they are based on an analysis of what actually works.

At this time of economic boom in Saskatoon and Saskatchewan, we are in danger of increasing the health and income disparities without a systematic and evidenced-based approach to ensuring a policy framework that promotes the health of everyone. This Health Disparities report provides a strong basis for this approach and I support the work and the direction that it gives.

Sincerely,

Charlie Clark
City Councillor Ward 6
Saskatoon, SK



—City of—
Saskatoon

September 2, 2008

Dr. Mark Lemstra
Saskatoon Health Region
101-310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

Re: Health Disparity in Saskatoon: Analysis to Intervention

Thank you for presenting your report to City Council. I am pleased that your unit has taken the time to document the causes of ill health in Saskatoon, the magnitude of health disparity and evidence based policy options to address these complex issues. Specifically, I was interested in the section that discusses the economic costs of ignoring poverty and the potential cost effectiveness in health, social and correctional costs when proactively addressing this issue.

Given the vast health disparity existent in Saskatoon, it is clear that the status quo is not working. I look forward to working with the long list of regional governments, academic centers, community groups and community associations that have provided support to this worthwhile initiative.

This report has my full support.

Yours truly,

Tiffany Paulsen
City Councillor (Ward 9)

TP:mmm



— City of —
Saskatoon

September 11, 2008

Dr. Mark Lemstra
Saskatoon Health Region
101-310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

RE: SASKATOON HEALTH REGION - HEALTH DISPARITY REDUCTION PLAN

I want to commend Dr Lemstra and all persons in the Saskatoon Health Region for producing this very important report. It is a vital awareness and education tool for all of us in Saskatoon and beyond. Our community should – and I believe is – concerned about the incredible health disparities that face many individuals and families among us. With this situation, the entire community is affected in a negative way.

I want to thank the Health Region for meeting with City Council, as it is important that all decision-makers take whatever steps available for us to be part of the solutions which are indeed necessary to improve and strengthen good health services for all. As the report so aptly points out, the broadest range of issues around housing, education, nutrition, social and recreational supports must be addressed at the same time.

As former Executive Director of the Saskatoon Food Bank, I saw first-hand just what this report so starkly points out.

All of us must work hard together to ensure that we move forward in a coordinated and determined manner to follow the important blueprint that has been laid out for us.

I wish everyone well, and feel confident in that there is recognition that the situation before us must be resolved.

Sincerely,

per. **Bob Pringle**
City Councillor, Ward 7

:smm



CITY COUNCIL

— City of —
Saskatoon

September 17, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
101 – 310 Idylwyld Drive North
Saskatoon, SK. S7L 0Z2

Dear Dr. Lemstra:

Thank you to yourself and Dr. Cory Neudorf for presenting your report entitled “Health Disparity in Saskatoon: Analysis to Intervention to the City Council Executive Committee.

From my perspective it is important to finally have a written report on the health disparities by neighbourhood in the city of Saskatoon. This will be a very useful tool to working towards the future to seek solutions of this issue in Saskatoon. A long time coming I would suggest!

I am happy that the city of Saskatoon’s Affordable Housing Plan was endorsed in your report as well. This is a social issue that we have taken very seriously and our Community Services department as well as City Council have spent countless hours on!

I do support the plan you have put forward with the report and wish you best of luck with your presentations.

Yours truly,

Bev Dubois
City Councillor, Ward 10
City of Saskatoon



CITY COUNCIL

— City of —
Saskatoon

September 11, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
101 - 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr Lemstra:

I wish to express my support for the methods, findings, and recommendations found within the Health Disparity In Saskatoon: Analysis To Intervention report.

This work clearly identifies the need for further action, which I hope will mark the beginning of positive social change for health and well-being for those currently in need.

I look forward to continued discussions and coordinated efforts to reduce disparity in our community.

Sincerely,

Darren Hill
Councilor, Ward 1
City of Saskatoon



CITY COUNCIL

September 26, 2008

Reply To: **Gordon Wyant**
E-mail: gordonwyant@saskatoon.ca

Saskatoon Health Region
101 - 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

ATTENTION: DR. MARK LEMSTRA
SENIOR EPIDEMIOLOGIST

Dear Dr Lemstra:

I wish to express my thanks for all that participated in drafting the report entitled; Health Disparity in Saskatoon: Analysis to Intervention. I support the work done and in particular, the recommendations contained therein.

As a community we need to work together to address the needs in our community identified therein.

I look forward to continued discussions and coordinated efforts to reduce disparity in our community.

Sincerely,

Gordon S. Wyant
City Councillor, Ward 5

GSW/brl



CITY COUNCIL

City of
Saskatoon

October 8, 2008

Dr. Mark Lemstra
101 - 310 Idylwyld Drive North
Saskatoon, SK
S7L 0Z2

Dear Dr. Lemstra:

I am pleased to provide this letter of support for the Health Disparities Report provided by you and your team of researchers.

I want to thank the Health Region for meeting with Council and pointing out the need to deal with a broad range of issues. We need to deal with housing, education, nutrition and social supports at the same time.

I believe this report is an important foundational step as we move forward as a city, and I support the direction that it takes us.

Yours truly,

A handwritten signature in blue ink, reading "Glen Penner".

Glen Penner
City Councillor (Ward 8)

smm



August 8, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
#101 - 310 Idylwyld Dr N
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

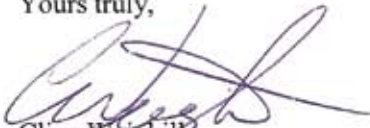
On behalf of the Saskatoon Police Service, I wish to firmly offer our support for the initiatives suggested in the *Health Disparity In Saskatoon: Analysis To Intervention* report.

The Saskatoon Health Region has clearly become a leader in identifying the social drivers inhibiting a healthy community. There is no doubt that the same social drivers such as poverty, unemployment, racism, education, and substance abuse are also a key detriment to building a safe community.

The Police Service will partake in any level of discussion or implementing options to assist with reducing the aforementioned social drivers of health disparity and criminality.

I invite participation from the School Boards, Social Services, First Nation and Métis organizations, the Saskatoon Regional Intersectoral Committee, police, and community based organizations to form a working alliance with the Health Region. A committed partnership with strong and achievable goals will definitely reduce disparity in our community.

Yours truly,


Clive Weighill
Chief of Police



130 4TH AVE N • BOX 1728 • SASKATOON, SK S7K 3R6 • (306) 975-8300

Honour - Spirit - Vision



OFFICE OF THE RIC
c/o Saskatchewan Learning
8th Floor, 122-3rd Ave. N.
Saskatoon, SK S7K 2H6
Ph: 306 933-5032 Fax: 306 933-7469

As Co-Chairs of the Saskatoon Regional Intersectoral Committee on Human Services (SRIC), we would like to express our appreciation for the efforts made by your research team to prepare the *Health Disparity in Saskatoon: Analysis to Intervention Report*.

The RICs are a provincial structure that was launched in 1997 to assist with the implementation of Saskatchewan's Action Plan for Children. Linking to the provincial Human Services Integration Forum, the Saskatoon RIC consists of 30 senior administrators, including representatives from the federal, provincial, municipal, First Nations and Métis governments as well as community-based organizations. The RIC's mission is to work in partnership with community voices and researchers to coordinate linkages that shape and influence policies, programs, funding and resource deployment to meet the diverse needs of vulnerable children, youth and their family. We are particularly interested in addressing gaps and barriers to services for marginalized populations.

Health Disparity in Saskatoon: Analysis to Intervention was presented to the SRIC on March 7th, 2008 and March 15th, 2008. The research proposes a variety of recommendations human service providers can take to address health inequities. The SRIC members agreed to review the document and discuss taking a coordinated approach to the disparities and where appropriate subsequent recommendations provided in the report.

The SRIC Office and Co-Chairs have appreciated the opportunity to work with Dr. Cory Neudorf (as a member of our SRIC) and yourself to coordinate an SRIC response to the health disparities research. SRIC members have agreed that there would be significant benefit if the Saskatoon Health Region was able to provide knowledge transfer support to assist the RIC members with responding to the research. We appreciate the opportunity to provide this letter of support to advance these efforts.

We look forward to continued discussion on these coordinated efforts in the upcoming year.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Broten".

Chris Broten
RIC Co-Chair

A handwritten signature in black ink, appearing to read "Christine Smillie".

Christine Smillie
RIC Co-Chair



Working together to remove barriers, close gaps, and reduce duplication in the delivery of human services

LETTERS OF SUPPORT

Academic

The second section of the letters of support are from various academics to ensure the methodology of the research is high quality and the policy options proposed are sound.

The foreword is from Professor Mackenbach in Europe who is the foremost international expert on health disparity in the world. Professor Mackenbach was the author of the European Union's report on health disparities, has authored 360 peer reviewed publications on health disparity and was the Secretariat for the team that wrote the health disparity reduction plan for the Netherlands.

From a national level, a letter of support was written by the Honourable Monique Bégin. Professor Bégin is the former Minister of National Health and Welfare for Canada and represented Canada on the World Health Organization's Commission on Social Determinants of Health. Letters of support were also written from the Chief Executive Officer of the Canadian Public Health Agency, the Director of the Canadian Population Health Initiative and the Director of the Canadian Institute for Health Information.

Letters of support from academics at the University of Saskatchewan, University of Regina and SIAST include the President of the University of Saskatchewan, the President of SIAST, the Dean of Medicine, the Director of the Masters of Public Health program, the Head of the Department of Paediatrics, the Chair of the Department of Community Health and Epidemiology, the Head of the Department of Psychiatry, the Dean of Education, the Director of Applied Research, an Associate Professor within the Department of Political Studies, the Research Chair for Substance Abuse, the Canada Research Chair for Public Policy and Economic History, the Co-Directors for the Community University Institute for Social Research, the Director of Quality Measurement and Analysis at the Health Quality Council and the President of the Student Medical Society of Saskatchewan.



When I recently completed the *Health Inequalities: Europe in Profile* report on behalf of the European Union, the main findings were a) inequalities in health between people with higher and lower educational level, occupational class and income were found in all European countries and b) the widening of health inequalities during the past few decades has increased the urgency to address this public health problem.

I am pleased to have worked closely with Dr. Lemstra in the production of most of this report. I believe the research papers within this document are of high quality and the conclusions are sound. In particular, two findings stand out. First, income status is strongly associated with health status and risk behaviours in the Saskatoon population. Second, Aboriginal cultural status has a more limited association with health outcomes and risk behaviours after statistical adjustment for other variables like socioeconomic status.

The results suggest a call to action. As such, I am pleased that the authors have reviewed the literature, consulted with the local community, and generated evidence based policy options on how to reduce health disparity.

Health disparity is largely preventable and, as such, is unacceptable. Those who are less well off should not be allowed to live in poor health and die prematurely. The city of Saskatoon is in a unique position to engage in a community based intervention to improve the health of its population. I urge the residents of Saskatoon to move forward.

Sincerely,

Prof. Dr. Johan P. Mackenbach
Department of Public Health
Erasmus MC
Rotterdam
The Netherlands

Ottawa, August 18, 2008

To Whom It May Concern :

We hear that the best approach to social change and reform is to think globally and act locally. This initiative and the enclosed report are a perfect translation, at the Saskatoon Health Region level, of the great international studies that have defined how factors others than medicine and one's genetic endowment – employment, education, housing, income, environment and more – shape the health of populations. It embodies the knowledge of the Black report, the Whitehall Studies and, closer to us, the report and recommendations of the incoming WHO Commission on Social Determinants of Health.

This is a very important illustration of how communities can define and describe the inequalities in health status in their midst and then reach the decision to tackle inequity. *Health Disparity in Saskatoon : From Analysis to Intervention* seems to me a template on how to work collaboratively between sectors, between disciplines, acknowledging that a consultative process is an essential ingredient to move forward. But a good process is not enough without solid evidence. Those in authority need to know what works and what does not work when it comes to developing public policies, establishing programs and voting budget and other necessary resources.

The extensive literature review remains focused, keeping in mind the socio-economic as well as the Aboriginal dimensions of the more vulnerable neighbourhoods identified. Income status comes out clearly as a key negative determinant of poor health, both physical and mental. The recommendations, inspired by what worked in some other comparable countries as well as in other parts of Canada, form a solid and definitely feasible program of action.

As a member of the WHO Commission on Social Determinants of Health, and if I may, as a former Minister of National Health and Welfare, I can only wish it is adopted and becomes a reality!

Sincerely,



The Hon. Monique Bégin, PC, FRSC, OC
Visiting Professor (Health Administration)
and
Professor Emeritus (Health Sciences)



August 25, 2008

Dr. Stephen Whitehead
Deputy Medical Health Officer
Saskatoon Health Region
204 – 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Whitehead,

The Canadian Public Health Association (CPHA), the country's leading national non-governmental voice dedicated exclusively to public health, has advocated for many years for a comprehensive, broad-based, public health approach to address health disparities in Canada. On behalf of CPHA, I would like to congratulate the Saskatoon Health Region for producing "Health Disparity in Saskatoon: From Analysis to Intervention". This landmark study provides a wealth of much needed information about the situation in your region that will surely act as an important guide to action for all stakeholders, government, community and private sector, to improve the health and well-being of all people in the Saskatoon Health Region, and especially the most vulnerable and at-risk populations.

As you are aware, the report of the World Health Organization's Commission on the Social Determinants of Health will be released on August 28, 2008. The report's recommendations can be expected to challenge countries around the world, including Canada, to take immediate action to reduce significantly, if not eliminate, health inequities. CPHA will release shortly thereafter a response to the Commission's findings and recommendations. We will advocate for a "made-in-Canada" approach to address the report's recommendations for action. The experiences and plans contained in the Saskatoon Health Region's report will be, in my opinion, highly relevant to the Canadian response.

We wish you and your colleague's success in launching the report and in facilitating and putting into place follow-up action.

Sincerely,

Debra Lynkowski
Chief Executive Officer

cc: Ron de Burger, CPHA Chair

www.cpha.ca

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August 29, 2008

Dr. Cordell Neudorf
Chief Medical Health Officer
Saskatoon Health Region
204 – 310 Idylwyld Drive North
Saskatoon SK S7L 0Z2

Dear Dr. Neudorf:

I am pleased to write a letter of general support for the report *Health Disparity in Saskatoon: Analysis to Intervention*. The mission of the Canadian Population Health Initiative of the Canadian Institute for Health Information (CPHI-CIHI) is two-fold: to foster a better understanding of factors that affect the health of individuals and communities, and to contribute to the development of policies that reduce inequities and improve the health and well-being of Canadians.

Canada's life expectancy is among the best in the world, but not all Canadians have the same chances for a long life. The health and well-being of Canadians is linked to a wide range of social, cultural, physical and economic factors, including housing, income and education level. This report is broad in its approach and brings together these factors clearly.

Health Disparity in Saskatoon shows that stark differences in health exist within the city and that these differences are often linked to socioeconomic status. The report is consistent with other research that demonstrates that variations in health between neighbourhoods can be just as big as—or sometimes bigger than—differences between Canada's cities or even between countries.

Health Disparity in Saskatoon goes beyond simply describing the nature of health inequalities in Saskatoon. By including a broad range of options for action to reduce health inequalities the report makes an important contribution to a Pan-Canadian discussion on how this can be achieved. This comprehensive and well-written document will prove to be a rich source of information and inspiration to a wide array of actors.

Sincerely,

Jean Harvey
Director
Canadian Population Health Initiative

JH/kb

CC: Dr. Stephen Whitehead, Deputy Medical Health Officer
Ms. Cristina Ugolini, Manager, Public Health Observatory

Ottawa

495 Richmond Road, Suite 600, Ottawa, Ontario K2A 4H6
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Fax: 613-241-8120
Télec. : 613-241-8120

August 25, 2008

Dr. Mark Lemstra
Senior Research Epidemiologist
Saskatoon Health Region
204 - 310 Idylwyld Drive North
Saskatoon SK S7L 0Z2

Dear Dr. Lemstra:


Thank you very much for meeting with me for the purpose of discussing your report "Health Disparity in Saskatoon: Analysis to Intervention."

I congratulate you and Dr. Neudorf for an impressive study emphasizing the social determinants of health. I particularly appreciate your affirmation of the connection between education and health.

Your report includes correspondence from a number of my colleagues at the University of Saskatchewan. I join them in expressing appreciation for a study that undoubtedly will advance public discussion of health care policy. I add my own assurance of the interest and support of our University in addressing matters related to the social determinants of health.

With best wishes,

Yours sincerely,


Peter MacKinnon
President

**SIAST**SASKATCHEWAN INSTITUTE OF
APPLIED SCIENCE AND TECHNOLOGY**Administrative Offices**
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Saskatoon SK S7K 5X2
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Office of the President

August 27, 2008

I am pleased to provide a letter of support for the report authored by Dr. Mark Lemstra and Dr. Cory Neudorf, entitled "Health Disparity in Saskatoon: Analysis to Intervention".

My compliments to the authors on their methodology and their successes, to date, in disseminating their findings. The array of consultations, surveys, presentations and publications are most noteworthy. I am equally impressed by the evidence-based policy options that have been presented. The grouping of their options under categories is also helpful in assessing what at first appears to be a long list of options.

I read the material related to education disparity, and particularly the options related to post-secondary education, with great interest. I welcome the commentary on the role of education in individual and societal health. All of us in the education field must re-double our efforts to allow all learners to maximize educational opportunities. For example, SIAST has been targeting support for 'students in financial need' and I welcome the challenge to SIAST regarding education placements for low-income students (Option #18). I also acknowledge that we must re-assess childcare services at all four of our SIAST campuses (Option # 16).

As the authors point out, the evidence regarding a strong association between socio-economic status and health disparity is unequivocal. It is encouraging to see a bold report that assesses the current environment and provides many creative options.

Respectfully submitted,

Dr. Robert G. McCulloch
President and CEO

RGM/ens



July 4, 2008

Health Sciences Building, 107 Wiggins Road
Saskatoon SK S7N 5E5 Canada
Faculty Affairs, Finance and Administration,
Research and Graduate Studies - Rm. B103
Phone: (306) 966-2673 Fax: (306) 966-6164
Admissions, Undergraduate, Postgraduate,
Medical Education - Rm. A204
Phone: (306) 966-6135 Fax: (306) 966-2601

Dr Mark Lemstra and Dr Cory Neudorf:

Re: *Health Disparity in Saskatoon: Analysis to Intervention*

On behalf of the College of Medicine, I am pleased to add a letter of support to those from the Saskatoon Health Region, the Saskatoon Tribal Council, the Catholic School Board and many others for your report titled *Health Disparity in Saskatoon: Analysis to Intervention*. We have been rather frustrated in meeting our 'social accountability' requirements when so much of health, particularly child health, is determined by non-medical causes, as you clearly outline in your report.

The College of Medicine has been attempting to respond to the health disparities in Saskatoon in a number of ways, such as partnering with the Westside Community Clinic in supporting the implementation of an inter-professional student wellness clinic (SWITCH) and paediatric clinics within our low income neighbourhoods and to provide access to care for at risk children and teen mothers.

I was not personally surprised by the magnitude of health disparities in Saskatoon in the first paper published by your group. The role of poverty in contributing to health disparities is well known in international literature and the approaches you propose are similar to those proposed by Jeffrey Sachs in *The End of Poverty* to address global poverty. In these times of economic prosperity in Saskatchewan, we have a unique opportunity to address these issues as you propose. As stated above, we have known for some time, many of the determinants of health fall outside the health care treatment sector. Since your original report, you have written additional papers exploring many of these non-medical determinants of health and I would like to especially support your evidence based policy options put forth in this report.

It is my hope that all departments within the College of Medicine will consider re-prioritizing some resources toward those most in need in Saskatoon and elsewhere in Saskatchewan, including rural and remote regions. Enhanced and coordinated clinic services, along with social interventions, in these underserved areas will improve the health status of those less fortunate and allow everyone to benefit from the expected economic possibilities facing this province in these times. To make the correct decisions now that will benefit everyone, but most especially the disenfranchised members of our society, is critically important to the future of this province.

.../2

Dr M. Lemstra and Dr C. Neudorf
July 4, 2008
Page 2

If there is anything the College of Medicine can do to help you achieve the vision outlined in your report, please just let us know. I personally wish you all the best with the initiatives proposed in this report.

Sincerely:

A handwritten signature in dark ink, appearing to read "William L. Albritton". The signature is fluid and cursive, with a long horizontal stroke at the end.

William L. Albritton, MD, PhD, FRCP(C)
Dean, College of Medicine

WLA:kk



UNIVERSITY OF
SASKATCHEWAN

School of Public Health

Dr. Allen Backman
Director, Master of Public Health Program
107 Wiggins Road
Saskatoon, Saskatchewan
S7N 5E5 Canada
Phone: (306) 966-2773
E-Mail: a.backman@usask.ca

8/14/2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
Saskatoon Saskatchewan S7L 0Z2

Dear Dr. Lemstra:

Thank you for sending me a copy of the document, Health Disparity in Saskatoon: Analysis to Intervention. I have reviewed this document and am pleased to provide some feedback.

I have had the privilege of studying the health care system for the past 30 years from the perspective of health management and policy. Your report is entirely consistent with the best research I have read on the social determinants of health and how to improve the population's health status.

Your literature review was comprehensive and accurately reflected the "state of the art" in the reduction of health disparities in the population. Your methodology and findings regarding disparities of health being due to socio-economic factors such as income rather than ethnic factors like aboriginal cultural status were sound, appropriate and accurately reflect current scientific thought.

The evidence based policy options should be taken as strong recommendations by policy makers. I am convinced that, if implemented, their effects on reducing the health disparities of Saskatoon's people would be profound.

Sincerely,

Dr. Allen Backman

Department Head

(306) 966-8117
Dr. W.T. Bingham

Cardiology

(306) 966-8114
Dr. M.J. Tyrrell
Dr. A. Kakadekar

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Dr. A. McKenna

Clinical Teratology

Dr. P. Blakley

Critical Care

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Dr. G. Kasian

Cystic Fibrosis

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Dr. B. Lothian

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Pediatrics**

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Dr. P. Blakley

Emergency

Dr. K. Streilein
Dr. V. Cattell
Dr. R. Siemens
Dr. J. Theron

Gastroenterology

Dr. G. Bruce

General Pediatrics

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Dr. G. Bruce
Dr. S. Martin
Dr. A. McKenna
Dr. K. Baerg

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Dr. E. Lemire

**Hematology/
Oncology**

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Dr. K. Ali
Dr. C. Mpofu

Infectious Diseases

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Dr. B. Tan

**Neonatology/
Critical Care**

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Dr. W.T. Bingham
Dr. L. Givellichian
Dr. G. Kasian
Dr. K. Sankaran
Dr. N. Wonko

Nephrology

Dr. E. Jugnauth

Neurology

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Dr. R. Huntsman
Dr. N. Lowry
Dr. S. Seshia

Respirology

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Dr. B. Lothian

**Rheumatology/
Immunology**

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Dr. A. Rosenberg

103 Hospital Drive, Saskatoon SK

S7N 0W8 Canada

Telephone: (306) 966-8108

Faxes: Administrative - 975-3767

Clinical - 966-8640

April 29, 2008

To Whom It May Concern:

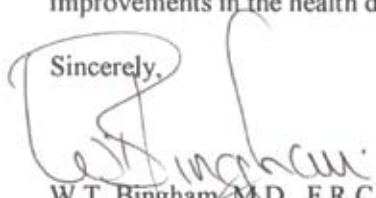
RE – “Health Disparity in Saskatoon: Analysis to Intervention”

Dear Sir/Madam:

As a practicing Pediatrician within the Saskatoon Health Region, I wish to extend my gratitude to the authors of the report for having clearly defined health disparities within Saskatoon. They have offered thoughtful and practical interventions to address the disparities amongst our most disadvantaged and vulnerable community members. I'm particularly struck by the disparities that children and youth must endure in the core neighborhoods of our city. The action plan contained within this report provides a road map to a healthier community. The vehicle has been identified and we simply need to put gasoline in the tank and start the engine. Delay in implementation will be health denied.

It is my sincere hope that within a decade, the authors can report dramatic improvements in the health disparities that they have so clearly identified.

Sincerely,



W.T. Bingham, M.D., F.R.C.P.(C.)
Head, Department of Pediatrics

WTB/cms



SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT

August 11, 2008

Drs. Mark Lemstra and Cordell Neudorf
Saskatoon Health Region
101, 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Partners in Health:

Saskatchewan Health
Research Foundation (SHRF)

University of Regina

University of Saskatchewan

Re: Support for the report "Health Disparity in Saskatoon: Analysis to Intervention"

Dear Drs. Lemstra and Neudorf:

On behalf of the Healthy Children research team at the Saskatchewan Population Health and Evaluation Research Unit, I would like to express my support for your work on reducing health disparities in Saskatoon and its strong emphasis on using research to inform policy and practice. The findings in your recently released report echo those that we have found in our ongoing research on the social determinants of healthy childhood development.

In our research, we have found that characteristics of both the families that children are raised in, and the neighbourhoods in which they live, are important when measuring how prepared children are to take advantage of learning opportunities when they reach kindergarten. Taking children's individual differences into account, we have found five neighbourhood factors that help us predict whether children will be "ready to learn": proportion of employed adults, average household income, level of post-secondary education, proportion of single parent families, and proportion of low-income families.

We were pleased to see that your report includes numerous evidence-based policies, and that you recognise that an effective plan to reduce poverty and health inequality requires a multi-year plan, concrete targets and broad support, and that it will need to be evaluated. We look forward to continuing to work with you to improve our children's outcomes.

Sincerely,

Nazeem Muhajarine, PhD
Professor and Chair, Community Health and Epidemiology
University of Saskatchewan
Research Faculty, SPHERU

SPHERU Offices:

☐ University of Saskatchewan
107 Wiggins Road
Saskatoon, SK
S7N 5E5

☐ University of Regina
3737 Wascana Parkway
Regina, SK
S4S 0A2

☐ University of Regina (Prince Albert)
P.O. Box 2830
Prince Albert, SK
S6V 7M3

August 19, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
#101 – 310 Idylwyld Drive North
Saskatoon, Saskatchewan
S7L 0Z2

Dear Dr. Lemstra

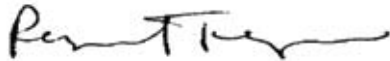
I would like to congratulate you and Dr Neudorf, as well as, your collaborators on your extensive and very informative report 'Health Disparity in Saskatoon: Analysis to Intervention'. And, mental health issues are at the forefront of health disparities. Yes, there is a definite link between mental disorders and poverty and your report is very opportune to remind us about this simple but very important relationship.

In light of your report, it is imperative that we re-think and plan how to redistribute our mental health and psychiatric services in Saskatoon, in an innovative way. Keep in mind that Saskatchewan was the first province where a comprehensive plan of deinstitutionalization occurred in the 1950's and 60's under the direction of several prominent psychiatrists and politicians, including Dr Griff McKerracher and the legendary Tommy Douglas.

Be assured that you have my full collaboration in ways to improve the mental health of our population, especially those with a low socioeconomic status. I would like to bring to your attention, that our research unit, SHORE (Saskatchewan Health Organization Research and Evaluation), is currently involved in mental health care programs evaluation and could help your team in addressing this endeavour.

On behalf of the Department of Psychiatry, I would like to congratulate you, Dr Neudorf and your team for this report. Thank you to remind us that housing has a direct effect on individual mental health and has to be a top priority for good mental health.

In closing, the new Mental Health Commission of Canada has a mandate to improve the care of all Canadians with mental disorders. It is my hope that this Commission will also be a catalyst for pushing for new initiatives in mental health care, and why not Saskatoon? Our city could also be the place where we will fast improve the care of the less wealthy members of our community.

A handwritten signature in black ink, appearing to read 'Ray Tempier', with a stylized, flowing script.

Raymond Tempier MD,MSc,FRCPC
Professor, Head Department of Psychiatry,
College of Medicine, University of Saskatchewan



September 17, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
#101 – 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

The College of Education commends you and your research team for your work on this community health disparity reduction plan. We support the general themes of your report "Health Disparity in Saskatoon: Analysis to Intervention."

We applaud the focus on the elimination of child poverty in Saskatoon. We believe children need to be served in integrated ways and we also value the increased investment in early childhood education.

We wish you well as you work to bring this plan to fruition.

Sincerely,

A handwritten signature in blue ink that reads "V. Hajnal".

V. Hajnal, Ph.D.
Acting Dean

VH:iik



September 9, 2008

Re: Health Disparity in Saskatoon: Analysis to Intervention

I have been working in the area of mental health as a researcher for the past 35 years. A persistent and robust finding in a vast number of studies over the years has been the role of social and economic factors in the cause, course and outcome of emotional and psychiatric disorders. Despite that consistent observation, social determinants of mental health problems are often overshadowed by the biological determinants. While we should not ignore biological determinants of mental health as important, a narrowly biological perspective prevents meaningful discussion about the role of social and psychological causation and the potential benefits of social and psychological interventions in prevention and treatment.

This report is a good example of research that clearly shows the association between socioeconomic factors and mental health problems and also explores the potential role of social interventions in prevention and treatment. Further, the authors find that the association between Aboriginal cultural status and poor mental health outcomes is substantially reduced after controlling for socioeconomic factors. This type of research is unfortunately uncommon in the health literature and the underlying pathways deserve more detailed investigation. From a theoretical perspective, there have been few studies that document why there should be a biological association between Aboriginal people and poor mental health. On the other hand, there is strong theoretical and empirical support for the association between lower socioeconomic status and poor mental health outcomes.

To re-iterate socioeconomic status has long been linked to mental health and illness. As with physical health, those at the bottom of the social and economic ladder have been found to have higher rates of disorder. This is a robust epidemiological finding evident in a wide range of studies from different geographical settings using diverse methodologies.

The research contained in this document is sound and the recommendations made are evidence based. This report has my full support.

Yours truly,

Carl D'Arcy PhD
Professor, Department of Psychiatry and the School of Public Health
Director, Applied Research/Psychiatry



September 15, 2008

Dear Dr. Lemstra and Dr. Neudorf:

Thank you for sharing a copy of the report titled *Health Disparity in Saskatoon: Analysis to Intervention*, which helps to profile an important causal link between health and income status, the need for reforms to social programs within our jurisdiction, and the reform initiatives that have already been undertaken in other jurisdictions.

The report is laudable for its purpose, scope, and evidence based recommendations for reform.

Its purpose is laudable for the clear commitment to influence the policy agenda in narrowing the magnitude of health disparity based on socio-economic status in Saskatoon and other municipalities in the province.

Its scope is laudable, indeed remarkable, not only for the analysis of a large amount of data on health and poverty conditions in Saskatoon, but also for the breadth of the comparative research regarding strategies for poverty elimination and improved health in other countries.

Its evidence based recommendations are also laudable in that they provide policy makers with a series of policy options to consider and implement for the purpose of reducing poverty and health disparities in various communities.

The report is quite impressive in at least two other ways. First, for the large number of people who were consulted to solicit their views on, among other things, current problems and the means by which to address them. Equally impressive is the special effort that the co-editors of the report are devoting to disseminate it widely in an effort to mobilize policy makers and proximate policy-makers within the policy system not only to place this issue on the policy agenda, but also to foster a proactive and progressive policy response to deal with the current problems.

For the benefit of current and future generations this report and the recommendations contained therein merit special attention and consideration.

Yours truly,

A handwritten signature in dark ink, appearing to read "J. Garcea", is written over the typed name.

Joseph Garcea, Ph.D.

Department of Political Studies, University of Saskatchewan

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Dear Dr. Lemstra,

I am writing this letter in support of the recent report released by the Saskatoon Health Region, *Health Disparity in Saskatoon – Analysis to Intervention*.

As the Research Chair in Substance Abuse at the University of Saskatchewan, I am particularly encouraged to see a research report produced by the Saskatoon Health Region that highlights the serious impacts of the social determinants of health on Saskatoon's population, and in particular those who are most marginalized. You have well-established through your methodological approach the association between income status and health behaviours. You have also established what many on the front-lines are well aware of; underlying social economic factors vastly impact the health status and behaviours of Aboriginal peoples in Saskatoon. Your report underscores the need to address health issues in Canada, which include substance abuse and mental health, from a population health informed approach that forefronts integrated structural and community-based responses.

I would also like to take this opportunity to applaud yourself, Dr. Cory Neudorf and your team for the attention you are placing on turning your empirically supported findings into action. I strongly encourage your team and our broader community to continue its work toward a health-disparity reduction plan, and am more than willing to assist in any way that I can. The disparities certain segments of children and youth in Saskatoon face is a serious and loud call for action. In these times of prosperity in Saskatchewan, I hope that as a community we can invest wisely in the youth of our future.

Sincerely,

Colleen Anne Dell, PhD
Research Chair in Substance Abuse, University of Saskatchewan
Senior Research Associate, Canadian Centre on Substance Abuse



UNIVERSITY OF
REGINA

JOHNSON-SHOYAMA
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OF PUBLIC POLICY

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September 19, 2008

Dear Dr. Lemstra and Dr. Neudorf,

I want to thank both of you for providing me with a draft of your report "Health Disparity in Saskatoon: Analysis to Intervention" which I read with great interest. Let me say how impressed I was with the quality and rigour of your work, especially your efforts to isolate the variable of Aboriginal culture from other variables associated with socio-economic status. This work is critical in terms of its implications for health policy in the future not only in Saskatchewan but in Canada and beyond.

As a health systems researcher, I want to say how much I appreciate the work you have done to date. I would like to lend my support for your continuing this important work. You have established a solid foundation for this important research and I urge you and your partners to continue.

Sincerely,

Gregory P. Marchildon
Canada Research Chair in Public Policy and Economic History



Building healthy sustainable communities
Community University Institute for Social Research
RJD Williams Building
432 – 221 Cumberland Avenue
Saskatoon, SK S7N 1M3
Phone: (306) 966-2121
Fax: (306) 966-2122
Email: cuisr.oncampus@usask.ca
Website: www.usask.ca/cuisr

Dr. Mark Lemstra
Research Lead, Public Health Observatory
Office of the Chief Medical Health Officer
Saskatoon Health Region

Dear Dr Lemstra:

The Community University Institute for Social Research (CUISR) has been conducting collaborative research and outreach with the community of Saskatoon since 2000. Our research, particularly the Quality of Life research series, has gathered a broad range of information on how our citizens feel about their quality of life and, through interactive and ongoing discussions with more than 100 community organisations, come to the broadly held belief that a concerted, multi-agency, cross jurisdictional effort to reduce poverty is absolutely essential to enhancing the quality of life in our community.

Our research and community consultation results are confirmed by the findings of the health disparities work. These results identify poverty as a primary force in our assessment of quality of life and feelings of community belonging. This work confirms that our citizens believe that poverty reduction requires improved living situations for children and families, access to and support for achieving education and training, and access to safe affordable housing.

CUISR is happy to provide this letter of support for leadership and initiatives on poverty reduction provided by the Saskatoon Health Region. It is our ongoing commitment to keep working to achieve this goal through research, monitoring, and consulting community as we move forward.

Bill Holden
CUISR Community Co-Director

Michael Gertler
CUISR University Co-Director (Acting)

For the staff, board and partners of CUISR





October 10, 2008

Dr. Mark Lemstra
Research Lead, Public Health Observatory;
Office of the Chief Medical Health Officer
Saskatoon Health Region

Dear Dr. Lemstra;

I am pleased to write a letter of support for the important body of work you have assembled in your report "Health Disparity in Saskatoon: Analysis to Intervention". I have had an opportunity to read the various research studies contained within the report and conclude that you and your research team have done important, innovative and rigorous scientific work in assessing the relationships among socioeconomic status, cultural status, disease (mental and physical) and health care utilization.

I commend your research team's decision to not just stop with identification of the issues/problems but to also put considerable work into identifying evidence-based potential solutions and gauged decision-maker and broad public support for the various solution options. This level of engagement with decision- and policy-makers in government and public institutions, and the public they are ultimately accountable to, demonstrates the commitment of the Saskatoon Health Region's Public Health Observatory in moving evidence into practice.

The Health Quality Council also concerns itself with inequities/disparities in the health and health care of Saskatchewan residents, because equity is a foundational dimension of quality. Through our *Quality Insight* measurement and reporting program we now routinely stratify our reporting on health care quality indicators by demographic (age, sex, urban/not, Health Region) and socioeconomic status (income level) descriptors of Saskatchewan residents. We make this information publicly available on our web site (www.hqc.sk.ca) and update the information at least annually.

I read with particular interest your manuscript "*High healthcare utilization and costs associated with lower socioeconomic status: results from a linked dataset*" where the findings demonstrated that much of the higher utilization of health care services by lower income people is related to the higher prevalence of illness among them compared to higher income groups. This study illustrates the high cost to the health care system of the additional burden of disease associated with poverty in the population. Taken together with the analyses reported by the Health Quality Council on our website, in which we find a fairly consistent pattern of poorer quality of care experienced by Saskatchewan residents living in areas with lower average income, it appears that poverty carries with it the double jeopardy of greater risks of illness *and* of sub-optimal health care. The end result of both of these kinds of disparities is greater burden of illness for lower income people and ultimately greater costs for our tax-funded health care system.

I congratulate you on a solid piece of epidemiological and policy research and join you in hoping that this work will translate into action for the benefit of all Saskatchewan residents.

Kind regards,

A handwritten signature in black ink, appearing to be 'G. Teare', written in a cursive style.

Gary F. Teare PhD MSc DVM
Director, Quality Measurement and Analysis



Student Medical Society of Saskatchewan • College of Medicine • A204 Health Sciences Building
107 Wiggins Avenue • Saskatoon SK S7N 5E5 • Phone: (306) 966-6153

September 14, 2008

To Whom It May Concern,

Re: Health Disparity in Saskatoon: Analysis to Intervention Report

As medical students we would like to show support for the aforementioned report written by Dr. Cory Neudorf, chief Medical Health Officer for the Saskatoon Health Region (SHR) and Dr. Mark Lemstra, senior epidemiologist for the SHR. In the past two weeks Caroline Kosmas, a 4th year medical student, had the opportunity to read, analyze and report back on this report.

We agree with the methods and findings of this report, namely:

- Aboriginal cultural status is not associated with poor health outcomes if income and education are controlled for.
- Results of 200 community consultations that occurred in Saskatchewan to formulate this report.
- Results of a literature review of 10, 076 articles to derive 46 evidence-based best practice recommendations with achievable subtargets to reduce poverty in Saskatchewan.

We consider Dr. Lemstra's and Dr. Neudorf's collective expertise in public health, statistics, epidemiology, community medicine, community consultation and small business as integral to the development of healthy public policy. They co-authored the 'neighborhoods study' for Saskatoon that showed the health outcomes of residents in the 5 lowest income neighborhoods compared to rest of the city. Policy options implemented were derived by comparing programs and policies from around the world that reduce disparity to derive best practices.

It is becoming a well known fact that the broader determinants of health (eg. income, education, childhood poverty, housing, age) are more influential factors leading to poor health outcomes, for example, than risk behaviors or treatments in hospital. Thus, we support these policy options and hope they will be implemented to reduce the health disparity.

On behalf of the Student Medical Society of Saskatchewan,

Brent Thoma
President, SMSS

LETTERS OF SUPPORT

Community

The third section includes letters of support from community agencies, community organizations, community leaders, unions and business groups.

The foreword is from the Executive Director of the United Way. Other letters of support were also written from the CEO of the YMCA, the Executive Director of the YWCA, the Paediatrician that works at St. Mary's school and W.P. Bates school in Saskatoon's low income neighbourhoods, the Executive Director of Communities for Children, the Executive Director of the Canadian Cancer Society in Saskatchewan, the Chief Executive Office of the Heart and Stroke Foundation, the President and CEO of the Lung Association, the Administrator for the Saskatoon Community Clinic, the Coordinator of the Student Initiative Toward Community Health (SWITCH), the Executive Director of the National Anti-Poverty Organization, the Co-Chairs of the Saskatoon Anti-Poverty Coalition (which represents 18 community groups), the Executive Director of the Saskatoon Friendship Inn, the CEO of the Saskatoon Food Bank, the Community Association Presidents from low income neighbourhoods in Saskatoon, the Executive Director of Saskatoon Housing Coalition, the Executive Director of Saskatoon Ideas Inc., the President of the Saskatchewan Public Health Association, the President of the Saskatchewan Union of Nurses, the President of the Service Employees International Union (West), the President of the Saskatchewan Federation of Labour and the Executive Director from The Riversdale Business Improvement District.

As well, an Elders Advisory Council of 10 Elders within the Aboriginal community was initiated to help the Saskatoon Health Region overcome health disparities (agreement attached).



April 25, 2008

To Whom It May Concern:

The United Way of Saskatoon and Area has been a partner with the Saskatoon Health Region in trying to address significant disparities in health status between people living in Saskatoon's poorest neighbourhoods compared to people living anywhere else in the city.

In 2007, Saskatoon Health Region provided \$30,000 in funding to support after school programs for children attending 10 community schools in Saskatoon's poorest neighbourhoods and the United Way provided \$50,000. The ten community school coordinators have used the money to support family nutrition programs, immunization clinics, literacy programs, recreational programs and social events that bring families into the schools. SHR, the United Way, the two school boards and Care and Share Saskatoon have formed a partnership to oversee this project and to bring other funders to the table.

The health disparities research which has been conducted by the Saskatoon Health Region, including the latest report entitled Health Disparity in Saskatoon: Analysis to Intervention, provides decision-makers and community based organizations with important information on why action is needed and what actions would be the most effective in reducing poverty and improving the health of our most vulnerable citizens.

Sincerely,

A handwritten signature in black ink, appearing to read "Christine Smillie". The signature is fluid and cursive, written in a professional style.

Christine Smillie
Executive Director



Letter of Understanding
between
Saskatoon Health Region
and
The Elders Council
(those Elders whom are signatories to this Letter)

The parties to this Agreement acknowledge that significant health disparity exists in Saskatoon which is disproportionately represented within our Aboriginal community. The parties agree that Saskatoon Health Region can best assist in overcoming these disparities by seeking direct input from First Nations and Métis persons. Therefore, the parties agree to work together to share concerns and identify strategies to address the health disparity within our Aboriginal community.

1. The Saskatoon Health Region acknowledges that Elders have a position of respect and trust within the Aboriginal Community.
2. The Elders Council agrees to function in a consultative capacity to the Saskatoon Health Region.
3. The Saskatoon Health Region agrees to listen and hear the concerns raised by the Elders Council and consider how to address the concerns.
4. The Elders agree to share their wisdom, and their knowledge of their culture and community to assist the Saskatoon Health Region to plan service that better meets the health needs of the Aboriginal community.
5. The parties agree to meet four times per year.

In recognition of their commitment to the above, the parties set their signature to this agreement on the 5th day of June, 2006.

A handwritten signature in dark ink, appearing to read "Maura Davies".

Maura Davies
President and CEO
Saskatoon Health Region

A handwritten signature in dark ink, appearing to read "Simon Kytwayhat".

Simon Kytwayhat
Elder

A handwritten signature in dark ink, appearing to read "Alma Kytwayhat".

Alma Kytwayhat
Elder

A handwritten signature in dark ink, appearing to read "Walter Linklater".

Walter Linklater
Elder

A handwritten signature in dark ink, appearing to read "Maria Linklater".

Maria Linklater
Elder

A handwritten signature in dark ink, appearing to read "Laura Wasacase".

Laura Wasacase
Elder

A handwritten signature in dark ink, appearing to read "Louise McKinney".

Louise McKinney
Elder

A handwritten signature in dark ink, appearing to read "Edward Baldhead".

Edward Baldhead
Elder

A handwritten signature in dark ink, appearing to read "Katie Poundmaker".

Katie Poundmaker
Elder

A handwritten signature in dark ink, appearing to read "Mary Lee".

Mary Lee
Elder

A handwritten signature in dark ink, appearing to read "Helen Isbister".

Helen Isbister
Elder





YMCA

We build strong kids,
strong families, strong communities.

June 24, 2008

To whom it may Concern:

RE: Health Disparity in Saskatoon: Analysis to intervention
By Dr. Mark Lemstra and Dr. Cory Neudorf

The YMCA recognizes the importance of the findings of the report: Health disparity in Saskatoon: Analysis to Intervention by Dr. Mark Lemstra and Dr. Cory Neudorf. This research shows the potential to make a significant difference to health outcomes in Saskatoon communities. It also provides decision-makers and community based organizations with important information on why action is needed and possible ideas for solutions.

The YMCA has long been involved in providing assistance, support and opportunities to the people of Saskatoon and area. We look forward to continuing to provide our programs to people and our hope is that these will also help to reduce the disparities in our population.

Sincerely,

Ken Muggeridge
CEO

YMCA of Saskatoon

25-22nd Street East, Saskatoon, Saskatchewan S7K 0C7 tel. 306 652-7515 fax. 306 652-2828
Charitable Registration #889538443RR0001





YWCA
SASKATOON

A TURNING POINT
FOR WOMEN

CHILD CARE
EMPLOYMENT
HEALTH AND WELLNESS
SHELTER / HOUSING

July 7, 2008

Mark Lemstra
BSc, MSc, MSc, MPH, DrSc, DrPH, PhD, PhD
Research Lead, Public Health Observatory;
Office of the Chief Medical Health Officer
Saskatoon Health Region
#101-310 Idylwyld Drive N
Saskatoon, SK
S7L 0Z2

Dear Dr. Lemstra:

YWCA Saskatoon has been following closely the research and resulting consultations and recommendations on health disparities conducted by the Saskatoon Health Region.

YWCA Saskatoon has a long history of working with Saskatoon women and their families in the areas of poverty reduction and homelessness. As the largest women's crisis shelter in the province, we see daily the challenges and issues faced by those living in poverty. Through case planning, programming and counseling, YWCA staff work with shelter residents to help them move towards security and prosperity. Through the YWCA Employment & Learning Centre, we help individuals to gain the skills, knowledge and support to achieve sustainable employment.

Our experience supports the observation that socioeconomic status is a critical factor in health status in Saskatoonians. We commend the Saskatoon Health Region on continuing to work and collaborate to find solutions to the huge disparities that came to light in the original study. This most recent report, Health Disparity in Saskatoon: Analysis to Intervention, provides the ground work for decision makers to move forward to initiate concrete, workable solutions to very complex issues.

YWCA Saskatoon is committed to working in collaboration with all levels of government, the Saskatoon Health Region and other community-based organizations to reduce poverty and alleviate the health disparities experienced by those in Saskatoon's core neighborhoods.

Sincerely,

Barb Macpherson
Executive Director

Our Mission: The YWCA Saskatoon provides advocacy, programs, and services to positively impact the lives of women, their families, and the community.



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Dr. R. Huntsman
Dr. N. Lowry
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August 15, 2008

To Whom It May Concern:

I am a Community Paediatrician in the Department of Paediatrics, College Of Medicine, U of S. I practice Paediatrics at St. Mary's Community School and W.P.Bate. I represent Paediatrics as part of a collaborative, multidisciplinary School-Based Paediatric Health Care Center established in response to the "Health Disparity by Neighbourhood Income Study".

As a paediatrician, practicing in the core-neighbourhoods, I am in a unique position to comment directly on what I know to be key factors that influence the health and well-being of children. For this reason, I am writing this letter of support.

I absolutely embrace the perspective that enlarges the Paediatric health-care focus from one child to ALL children within a Community; recognizing the profound impact not only of biology, but of family, education, culture, the environment, economics and politics on the health and well-being of children. It is difficult to impact on a child's health when his/her daily life takes place in a social and physical environment that compromises his/her health.

The relationship between income and child-health is well documented. Wealthier people are healthier people. Conversely, low-income children are more likely to have virtually every measurable chronic or acute condition. This relationship between health and income is apparent from birth. The incidence of low birth weight babies are higher for those who live in poverty. I see a disproportionate number of these babies in my practice and I know that this will negatively impact their future and longevity. I know that these babies will grow up and will have a disproportionately higher incidence of diabetes, cardiovascular disease and ironically obesity and its associated risks. I know this because it has been documented, and because I see these patients in the elementary schools that I work in, in this community to which I provide access to paediatric care. And I understand that my impact alone is not enough.

Asthma is the leading chronic condition in children; and once again disproportionately higher in our core-neighbourhoods. It is one of the leading causes of emergency room visits, school-absenteeism and lost parental income. Yes, genetic predisposition plays a part in the development of asthma. The role of the environment such as poor housing (mold), poor neighbourhoods (pollution), lower level of literacy (reading medication labels), etc is of equal and perhaps greater importance. Place matters. Income matters. I treat children with their asthma and send them back to what is making them sick.... their homes and the impoverished lives that they lead.

One cannot possibly talk about comprehensive Paediatric health for all children without talking about mental health and what we are calling the new morbidities. At least 30 % of children that I see within my practice have a mental health and/or a behavioural diagnoses. ADHD, Learning Disabilities, Disruptive Behaviour disorders, depression and drug-abuse are but a few. Children

who live in poverty (that is the children in my practice) have a disproportionately higher burden of these conditions. And yet, their families have disproportionately fewer resources; and they themselves have less protective factors. I see these children in my practice and I know that the conventional model of health-care is not enough, since the needs addressing key determinants of their health within their environment are not being met.

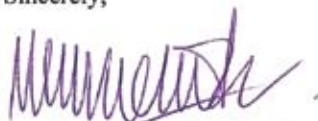
We need to accept that health is not just endowed at birth; but develops over time. The structure for physical, emotional, social and cognitive health for each individual patient is built in the early years; but carries through to the adult years. And so, sicker children means sicker adults. Disadvantage during childhood diminishes future prospects by reducing a child's health potential, which harms educational outcomes and future social competence; which in turn accelerates the acquisition and severity of health problems in later years. The burden on society increases.

Material poverty leads to social poverty, which leads to psychological poverty and also cultural poverty. The capacity to believe in oneself diminishes. The effects of intergenerational poverty cannot be underestimated. Those who are not resilient become the parents of the following generation. It should be of major concern to us that the current generation of children will be less healthy than their parents.

It is our moral and social responsibility to ensure that all children eat well, live in good housing, receive a good education and have access to comprehensive paediatric health care. Poverty should be recognized as a key determinant of health, and not as a moral failure.

A high-performing child-health system requires foresight, political will and partnerships across medical, public health, educational, social and justice systems. Without reservation, I support and applaud the comprehensive and relevant recommendations put forth by the Health Disparity Reduction Plan. The Child Poverty Protection Plan demonstrates how we can transform and positively impact the health and well-being of all our children.

Sincerely,



Dr. M. Mehtar, MB BCh; F.R.C.P. (C)
Assistant Professor
General and Community Paediatrics
Department of Paediatrics
University of Saskatchewan



September 02/2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon, Health Region
Saskatoon, Saskatchewan

Dear Dr. Lemstra

On behalf of Saskatoon Communities for Children (C4C) I would like to offer support for your document **"Health Disparity in Saskatoon Analysis to Intervention"** and your proposed policy options for consideration. We are pleased to support this document and are looking forward to being both a major supporter of this document as well as assisting you in any way that you need to make these policies come to fruition, as well, we would like to offer some suggestions for strengthening policies.

For your information, Saskatoon Communities for Children (C4C) is a partnership between community organizations, the Saskatoon Tribal Council, Métis Nations and Government organizations that deliver services to children in the Saskatoon Region. C4C assists in the development of strategies to address deeply entrenched social problems that cut across mandates of many government and community organizations. Currently C4C is working in a variety of areas to assist in improving the lives of children. These areas are: early childhood care and education, child poverty, keeping kids in school, stopping the sexual exploitation of children, a drug and alcohol awareness strategy for Saskatoon, involvement with the crime strategy of Saskatoon, and working with children/youth with disabilities.

Your document correlates specifically with projects that are currently taking place within Communities for Children and supports our mandate and vision to build a community where children and youth can grow up in a safe, happy, healthy supportive and inclusive environment. This document that focuses on and promotes the importance of strong evidence based policy options is definitely something that C4C can endorse and support. The specific message of an "effective plan to reduce poverty and health inequality that needs a multi-year plan, concrete targets, broad support and a evaluation", can be supported with organizations such as ours, with a network structure reaching virtually thousands in Saskatoon and throughout the province. We are looking forward to the possibilities of furthering this document and the policy recommendations and can assure your organization that we will be one of the agencies involved to highlight the importance of children and youth within our society.

Once again, we have read through this document and policy recommendations and strongly support this endeavour. This document is timely and a great support for children, youth and families in Saskatoon. and throughout Saskatchewan. Thank you for your ongoing work in our community. Should you require any clarification, assistance, etc, please do not hesitate to contact me at 956-1796 or email me directly at suedelanoy@communitiesforchildren.net.

Sincerely

Sue Delaney Executive Director/ Communities for Children

#200 - 335 Packham Avenue
Saskatoon, SK S7N 4S1

Tel: 306.956.6147
Fax: 306.244.1097
admin@communitiesforchildren.net
www.communitiesforchildren.net

"Saskatoon's Planning Council for a Child and Youth Friendly Community"



Canadian Cancer Society
Société canadienne du cancer

SASKATCHEWAN DIVISION

Affiliated with
the National Cancer
Institute of Canada

SASKATCHEWAN HEADQUARTERS

1910 McIntyre Street
Regina, SK S4P 2R3

Telephone: (306) 790-5833

Fax: (306) 569-2133

Email: ccsk@sk.cancer.ca

August 14, 2008

Dr. Mark Lemstra
Research Lead, Public Health Observatory
Saskatoon Health Region
101, 310 Idylwyld Drive N
Saskatoon, SK S7L 0Z2

PATRON

His Honour

The Honourable

Dr. Gordon L. Barnhart

Lieutenant Governor

of Saskatchewan

Dear Mark:

On behalf of the Canadian Cancer Society, I am pleased to offer our support for your excellent research to address health disparities and health outcomes in our province. We know that economic status is a determinant of health in general and that lower economic status contributes to risk factors for cancer incidence and mortality. These risk factors include poor nutrition, smoking, access to screening and access to care.

This comprehensive document is an excellent tool that can help guide good policy development by providing decision makers at all levels with evidence-based solutions.

Thank you for your dedication and perseverance in producing this document. We look forward to working in support of and in collaboration with all levels of government and community-based organizations to implement the recommendations.

Sincerely,

Keith Karasin, Executive Director
Canadian Cancer Society in Saskatchewan

Cancer Information Service

1-888-939-3333

www.cancer.ca



HEART &
STROKE
FOUNDATION OF
SASKATCHEWAN

Finding answers. For life.

279 3rd Avenue North August 20, 2008
Saskatoon, Saskatchewan
S7K 2H8

Tel (306) 244-2124
Toll-free 1-888-473-4636
Fax (306) 664-4016
heart.stroke@hsf.sk.ca
www.heartandstroke.ca

Drs. Mark Lemstra and Cory Neudorf
Saskatoon Health Region
300, 410 – 22nd Street East
Saskatoon
SK S7K 5T6

Dear Drs Lemstra and Neudorf

Thank you for forwarding your extensive report, *Health Disparity in Saskatoon: Analysis to Intervention*.

We have reviewed the report and are extremely pleased to add our letter of support to the many that you have already received. We found this document to be a compelling and significant look at an urgent issue that faces all of us, and is especially relevant to groups and organizations working to improve health status in our city and province.

The Heart and Stroke Foundation, as a leading funder of health research across all four pillars of study, from biomedical through to population health, is very much aware of the challenges that poverty and low educational status have on individuals. Your report confirms our own understanding of the linkages between risk factors for cardiovascular and cerebrovascular disease and socioeconomic status: the core risk factors that multiply the risk of a heart attack or stroke are unquestionably higher for those people who are least able to effect personal or societal change.

Your recommendations will inform both policy and program initiatives on a number of levels, and certainly will become a source of guidance for those individuals and groups to move ahead to address the crucial impact of poverty on health. Our Foundation looks forward to the opportunity to work in collaboration with others to bring about meaningful change in the areas where we have opportunity and ability.

Yours truly

Lucy Buller
Chief Executive Officer

October 1, 2008

Dr. Mark Lemstra
Research Lead, Public Health Observatory
Saskatoon Health Region
101, 310 Idylwyld Drive N
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

On behalf of the Lung Association of Saskatchewan I am very pleased to support the adoption of this report and the recommendations for reducing the disparity in health status.

We have followed with interest your previous studies that were conducted in Saskatoon to describe the state of the problem. We are pleased to be able to work with you and other agencies to develop and implement programs to address the problems you have identified. We hope that the newly initiated project to provide asthma educator services in inner-city schools will contribute to the reduction of health disparity in these neighbourhoods.

Thank-you very much for the excellent work that you have done in this area, for identifying options to address the problems and for making recommendations based on solid evidence. Thank-you also for the clear recognition of childhood poverty as a public health hazard.

The Lung Association will be a willing partner in the implementation of policies and programs to reduce disparities in health in general and respiratory health in particular.

Sincerely,



Dr. Brian L. Graham, Ph.D.
President and CEO

direct line: (306) 343-9640 ext 222
email: brian.graham@sk.lung.ca



*Saskatoon
Community
Clinic*

Community Health Services (Saskatoon) Association Ltd.

455 Second Avenue North, Saskatoon, Saskatchewan S7K 2C2 Phone (306) 652-0300 Fax (306) 664-4120

August 15, 2008

Dr. Mark Lemstra and Dr. Neudorf
Saskatoon Health Region
Suite 30, 410 22nd St E
Saskatoon, SK S7K 5T6

Dear Dr. Lemstra and Dr. Neudorf:

You deserve great applause for the excellent ongoing research you have been doing comparing the health status of residents within Saskatoon's six low income neighbourhoods to the rest of Saskatoon. You have done an excellent job bringing these health disparities to the attention of our community, province and nation and calling us to do our duty to act to lessen them.

Your research has clearly demonstrated that poverty is the primary causal force behind the health disparities being experienced by people living in these neighbourhoods. We very much agree with you that if we act collaboratively in our community to meaningfully address poverty in these neighbourhoods we will dramatically improve the health status of the people living there.

We very much appreciate that you have in your subsequent report "**Health Disparity in Saskatoon: Analysis to Intervention**", taken a critical and brave next step...you have offered us evidence-based policy options you believe can effectively address the issues of poverty in the inner city and improve the health status of the people who live there. The local, provincial and national public policy options you have offered are substantive, reasonable, and achievable. They are options that, for the most part, can be applied to low income neighbourhoods across our nation to address health disparities.

Our community needs to take up the challenge you have presented us of seriously, in multi-sectoral public forums, discussing these policy options and implementing those we collectively agree can address poverty and health disparities in our community.

Our Association strongly supports your presentation of these policy options and is prepared to work with you and our community to consider and act on them.

Thank you for the very pro-active work you have been doing to address health disparities in Saskatoon's inner city.

Sincerely

Patrick Lapointe
Administrator



631 20th Street West
Saskatoon, SK S7M 0X8
(306) 956-2518
Fax: 934-2506
student_clinic@yahoo.ca
www.switch.usask.ca
September 18, 2008

Re: Health Disparity in Saskatoon: Analysis to Intervention Report

To Whom It May Concern,

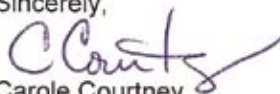
On behalf of the students and professionals who work with SWITCH, I am pleased to provide a letter in support of the above referenced research report. This report and the recommendations made by Dr. Neudorf and Dr. Lemstra contained therein have the ability to be the road map for a substantial poverty reduction plan for this province.

We consider Dr. Lemstra's and Dr. Neudorf's collective expertise in public health, statistics, epidemiology, community medicine, community consultation and small business to be integral to the development of healthy public policy. Their previously released study "Health Disparity by Neighbourhood Income" shows the health outcomes of residents in Saskatoon's five lowest income neighbourhoods compared to rest of the city. One of the most significant findings from that research is that a person's health is heavily dependent on their income and age. While age cannot be controlled for, income can and should be addressed by those agencies whose mandate it is to reduce the disparities between those who live in advantaged and disadvantaged socioeconomic conditions.

Those working with SWITCH know that the barriers to access to health care and programs for the individuals and families living in the core neighborhoods are substantial. Access to recreation, education, appropriate activity, transportation, adequate housing, food security, child care and culturally appropriate services are all too hard to come by for our clients and in most cases are either completely absent or substandard.

Community based organizations and individuals in our city have long talked with government about how poverty reduction should be a priority. It is time that these issues were addressed to ensure the health, safety and well-being of those most affected. Thus, we support these policy recommendations and hope they will be implemented by government to reduce the disparities felt by the citizens of our core neighbourhoods.

Sincerely,


Carole Courtney
SWITCH Coordinator



Imagine...
Canada Without Poverty
National Anti-Poverty Organization
1 Nicholas, Suite 1210 Ottawa ON K1N 7B7

Tel: 613-789-0096
Toll-free: 1-800-810-1076
Fax: 613-244-5777
info@napo-onap.ca
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Sonia Prevost-Derbecker
Winnipeg, MB

Reanna Sutton
Old Crow, YK

Executive Director

Rob Rainer

Associate Director

Kelly Law

September 18, 2008

Dr. Mark Lemstra
Research Lead, Public Health Observatory;
Office of the Chief Medical Health Officer
Corporate Office
300, 410-22nd Street East
Saskatoon SK S7K 5T6

Dear Dr. Lemstra:

Founded in 1971, the National Anti-Poverty Organization (NAPO) is an incorporated, not-for-profit organization dedicated to the eradication of poverty in Canada. Based in Ottawa and governed by people with experience of living in poverty, NAPO works to address the structural causes of and to promote lasting solutions to poverty. NAPO is especially focused on federal, provincial and territorial government policies and legislation (existing and proposed) that may help or harm low-income Canadians.

We are deeply impressed by recent population health research you have led at the Saskatoon Health Region. This research has helped to confirm the strong link between determinants of health and health disparities. We are notably impressed by the strong links between income status and health disparities, and education status and health disparities. These research findings point to the urgency for governments to find ways to improve income security for all people under their jurisdiction, and to ensure equitable access to high-quality education at all levels.

We therefore support the evidence-based policy options identified in the recent report you co-authored, titled *Health Disparity in Saskatoon: Analysis to Prevention*. Were these options to be embraced by the federal, provincial or local governments in Saskatchewan (depending on the option), they would contribute to markedly better outcomes vis-à-vis poverty in Saskatoon and elsewhere in the province, and thus markedly better health and broader socio-economic outcomes. Moreover, embrace of these options would position Saskatchewan to be a jurisdictional leader in the national effort to reduce and ideally eliminate poverty – a goal the NAPO believes to be achievable by 2020 with sufficient political will, corporate social responsibility and community engagement.

We encourage the relevant parties responsible for potentially acting on the policy options presented in this important report, to indeed move forward with the actions recommended.

Yours truly,

Rob Rainer
Executive Director



Saskatoon Anti-Poverty Coalition

The Saskatoon Anti-Poverty is a coalition of concerned citizens and organizations who are dedicated to addressing the causes and effects of poverty.

Contact: 955-5095 antipoverty@sasktel.net

September 24th, 2008

To Whom It May Concern:

As co-chairs of the Saskatoon Anti-Poverty Coalition (SAPC) we are pleased to see the Health Disparities research that was conducted in our communities inspiring potential policy change as reflected in *Health Disparity In Saskatoon: Analysis To Intervention*.

Many of our members are people who live the reality of being poor in our city. We continue to urge all groups who are working to make changes to improve the lives of people living in poverty to include low income residents in all aspects of policy development. We invite a representative of the team involved in these recommendations to chat with SAPC members so we can gain a greater understanding of the policy recommendations proposed and their impact on all Saskatoon residents.

We also strongly believe in the need for a long-term, integrated poverty reduction strategy to truly have lasting impact on those living in poverty and our community as a whole. We are encouraged by many of the recommendations made here, and we hope implementation of some of these recommendations will be the beginning of a long term, integrated poverty reduction strategy.

Sincerely

for/

Sydney Bell and Betty-Anne Person
Co-chairs, Saskatoon Anti-Poverty Coalition

/sb

Organizational representatives come from: Riverbend Inner City Ministry, Saskatoon Communities for Children, Saskatoon Health Region (Public Health and Corporate Social Work), Canadian Red Cross, Elizabeth Fry, Child Hunger and Education Program, Quint Development Corporation, Equal Justice for All, Saskatoon Housing Coalition, Indian and Metis Friendship Centre, National Anti-Poverty Organization, Saskatoon Food Bank, Saskatoon United Way, Saskatoon Community Clinic, Rainbow Community Centre, Saskatchewan Anti-Poverty Network, Saskatoon Multi-faith Social Justice Circle, Saskatoon Friendship Inn and Saskatoon Faith Churches/communities



Saskatoon Friendship Inn

619 20th Street West
Saskatoon, SK S7M 0X8

Phone: (306) 242-5122

Fax: (306) 242-1291

E-mail: friendship.inn@shaw.ca



COMPASSION = COURAGE

August 12th, 2008

A letter of Support

Re: Health Disparity in Saskatoon- Analysis to Intervention

The Saskatoon Friendship Inn is a non-profit organization that serves two meals 365 days a year to those in need. The Inn is opened everyday ay at 8: 15 a.m. allowing those in need a safe and compassionate place to be.

This report and executive summary is something we support. We will assist in any way we can to help implement the goals set out. Homelessness/Housing definitely exists in our community. If we can address this as well as work on education and on the job training we will see some positive changes. The one thing we see due to our economy is some of our clients getting jobs and the difference it has made in their lives.

The Saskatoon Friendship Inn will assist in any way we can, as we truly believe in compassionate solutions to those living less fortunate in our own community.

Please contact us if you have any questions.

Sincerely,

Geselle Doell
Executive Director



SASKATOON FOOD BANK
& LEARNING CENTRE
202 Avenue C South
Saskatoon, SK S7M 1N2
PHONE: (306) 664 - 6565
FAX: (306) 664 - 6563

EMAIL: office.admin@saskatoonfoodbank.org

September 11, 2008

Dr. Mark Lemstra
101 – 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

Dear Dr. Lemstra:

Thank you for meeting with me for the purpose of discussing the ***"Health Disparity in Saskatoon: Analysis to Intervention"*** report.

The work cited above conducted by you and Dr. Cory Neudorf provides an in-depth and impressive study for the Saskatoon Health Region. I have particular interest in the context of socioeconomic, health and income status as pertaining to our Aboriginal residents of Saskatoon.

In addition, the reference, yet disturbing, to the disparities that children and youth in our communities are facing in very real situation.

It is with this letter that you have my full endorsement and collaboration in ways of policy and action plans to improve the health and reduce poverty of the less fortunate people in our communities.

With sincere regards,

Paul Merriman
CEO

PM/dlm

Dr. Mark Lemstra, Research Lead
Public Health Observatory
Saskatoon Health Region

August 15, 2008

On behalf of the Pleasant Hill Community Association, we are pleased to provide you with a letter of support for the recommendations outlined within the Health Disparity Intervention Report.

The original health disparity report provided us with a snap shot of how serious the health disparities are in our community. Downstream and "band aid" solutions will not suffice and we support a more integrated and comprehensive approach to these issues.

Thank you for your attention and work in this area.

A handwritten signature in dark ink, appearing to read 'Helen Arnesen', with a stylized, flowing script.

Helen Arnesen, President
Pleasant Hill Community Association

Dr. Mark Lemstra, Research Lead
Public Health Observatory
Saskatoon Health Region

On behalf of the King George Community Association, we are pleased to provide you with a letter of support for the recommendations outlined within the Health Disparity Intervention Report.

The original health disparity report provided us with a snap shot of how serious the health disparities are in our community. Downstream and "band aid" solutions will not suffice and we support a more integrated and comprehensive approach to these issues.

Thank you for your attention and work in this area.

R. Mawda, President

King George, Community Association

Sept 10th 2008

PO Box 30012 RPO32
Saskatoon, SK
S7L 7M6

August 16, 2008

Dr. Mark Lemstra, Research Lead
Public Health Observatory
Saskatoon Health Region

Dear Dr. Lemstra:

I'm writing on behalf of Westmount Community Association to thank you for the research into health disparities in Saskatoon and to extend Westmount Community Association's support for the recommendations in the Health Disparity Intervention Report. As a Community Association board, we unanimously agree that the recommendations put forth in the report, if implemented, would benefit the residents of Westmount tremendously, and for many, would be life changing in terms of their health and quality of life.

The report details staggering inequities including a 448% higher infant mortality rate in Saskatoon's low income neighbourhoods. This is shocking, unacceptable and most importantly, a call to action. We are invested in the implementation of the recommendations of the report and stand firm in our support of eradicating the unacceptable inequities that this research so clearly demonstrates.

We thank you for advocating on behalf of the people who live in Westmount.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Lisa Erickson', with a stylized, flowing script.

Lisa Erickson, President
Westmount Community Association

cc: Westmount Community Association Board

Dr. Mark Lemstra, Research Lead
Public Health Observatory
Saskatoon Health Region

Sept 12, 2008

On behalf of the Riversdale Community Association, we are pleased to provide you with a letter of support for the recommendations outlined within the Health Disparity Intervention Report.

The original health disparity report provided us with a snap shot of how serious the health disparities are in our community. Downstream and "band aid" solutions will not suffice and we support a more integrated and comprehensive approach to these issues. Our community association is very concerned that the trends in health disparity are reversed, and that all our people have access to the health and wellness which they seek. Health disparity is the symptom; poverty, racism, and structural injustice are the root causes.

Thank you for your attention and work in this area.

A handwritten signature in dark ink, appearing to read "Shawn Sanford Beck". The signature is fluid and cursive, with the first name "Shawn" being more prominent and followed by "Sanford Beck".

Shawn Sanford Beck, President

Riversdale Community Association



SASKATOON HOUSING COALITION, INC.

301 – 1702 – 20th Street West ~ Saskatoon, Sask. S7M 0Z9 ~ Canada
Phone 655-4979 ~ Fax 655-4981

September 22nd, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
101 – 310 Idylwyld Drive North
Saskatoon

Dear Dr. Lemstra,

At this time, I would like to take this opportunity to express my support for the Saskatoon Health Region Health Disparity Report that has provided valid findings related to the health disparity of citizens in the inner city neighbourhoods of Saskatoon. For years, citizens and community workers in the inner city core have spoken to the need to address the quality of life and health issues in these neighbourhoods but now research has been conducted to legitimize the expressed concerns.

There were a number of identified policy options recommended in the report that could improve the quality of life for these citizens. However, realistically it would be difficult to act on all of them. So I am supporting the advancement of five policy recommendations to be prioritized at this time. They would be to ensure no child lives in poverty; increase support for community schools; universal child care for low income parents; remove work earning clawbacks; and expand affordable housing projects. The first three policy options are very specific to improving services for children through direct provision of health and intervention services to ensure that children are both physically and emotionally healthy in the primary years. The latter two will be of benefit to families and single adults who need an adequate income to be able to access services to ensure a good quality of life is in place. Affordable housing units are essential to address security and shelter needs. One's home is a base to access a variety of services and social networks which is important in developing a sense of wellbeing and belonging to a community. As an agency representative providing supportive housing services to a very vulnerable population, I have seen how access to affordable housing units has improved the stability and quality of lives for our clients.

Now that research has been provided to speak to the concerns of Saskatoon's inner city residents, I support any initiative to urge the Province of Saskatchewan to step up to the challenge of putting policy and resources in place to address these evidence based policy options. In a collaborative partnership with the community, community based organizations, regional health departments and government ministries, we need to be forward thinking in developing best practices as models that can be implemented locally and in other regions within the province. I hope some new initiatives will be seen in the near future as a result of your research efforts.

Regards,

J. Coleman Pidskalny
Jo-Ann Coleman Pidskalny
Executive Director

The Saskatoon Housing Coalition exists to enhance the capacity of individuals with mental illnesses to optimize their independence by facilitating direct provision of selected accessible and affordable housing options, enhanced community integration opportunities, enhanced daily living skills and increased illness awareness.

Saskatoon Ideas Inc.
200 – 120 Sonnenschein Place
Saskatoon, SK S7M 1M8
Ph. 306.653.2007 Fax: 306.242.301
Email: info@saskideas.com



Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region

August 14, 2008

Re: Health Disparity in Saskatoon: Analysis to Intervention

Dear Dr. Lemstra:

Please consider this a letter of support for the recommendations presented in the above noted report. Having lived and worked in Saskatoon's core community in a number of capacities over the past 20 years, there is no doubt the disparities noted in the study have a significant impact on the daily lives of families in our community.

Implementing the recommendations brought forward in this report as part of an integrated approach to addressing health disparities is vital to ensuring the recovery of these communities, our families and our children. I would like to congratulate you and your team on your comprehensive approach to addressing these very serious issues and endorse moving forward with this strategy.

Sincerely,

Phyllis Lodoen, Executive Director
Saskatoon Ideas Inc.



The Saskatchewan Public Health Association
Box 845
Regina, SK S4P 3B1

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
101 310 Idylwyld Drive North
Saskatoon, SK S7L 0Z2

RE: Health Disparity in Saskatoon: Analysis to Intervention
by Dr. Mark Lemstra and Dr. Cory Neudorf

The Saskatchewan Public Health Association (SPHA) is committed to increasing the health of all of the citizens of the province. The SPHA recognizes the importance of the findings of the report: Health Disparity in Saskatoon: Analysis to Intervention by Dr. Mark Lemstra and Dr. Cory Neudorf. This research shows the potential to make a significant difference to health outcomes in Saskatoon communities.

This letter is meant to provide general support for the study. SPHA recognizes the importance of the findings and strongly encourages a program to reduce health disparities among the youth of the province.

Sincerely,

Terry Gibson, President,
Saskatchewan Public Health Association



Regina Office
2330 2nd Avenue
Regina, Saskatchewan S4R 1A6
Phone: (306) 525-1666
Toll Free: (800) 667-7060
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Email: saskatoon@sun-nurses.sk.ca

www.sun-nurses.sk.ca

Healthy Union, Healthy Members, Healthy Communities

August 15, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatchewan Health Region
#101 – 310 Idylwyld Drive North
Saskatoon, Saskatchewan
S7L 0Z2

Dear Doctor Lemstra:

Thank you for the invitation to review the report "Health Disparity in Saskatoon: Analysis to Intervention".

The Saskatchewan Union of Nurses supports the general themes of recommendations contained in the report. Investment must be made in the social determinants of health if we are going to make a difference in the health status of citizens where disparities exist.

Mr. Fyke, in his 2001 report titled "Caring for Medicare – Sustaining a Quality System", talks about investment in chance. One of the core investments he suggests is in Chapter Three of the report – Making Things Fair. He suggests that continued investment in health promotion, disease prevention and action on health determinants would be required in order to reduce costs in the delivery of health services.

We would be pleased to discuss this further if circumstances arise or warrant.

Yours truly,

A handwritten signature in black ink that reads "Rosalee Longmoore".

Rosalee Longmoore, RN
SUN President

RL/js

c.c. Donna Trainor, Executive Director
Linda Kezima, Director of Operations
Barb Abele, Base Hospitals/Saskatoon Rep

The Saskatchewan Union of Nurses (SUN) is affiliated with the Canadian Federation of Nurses' Unions, the Canadian Labour Congress and the Saskatchewan Federation of Labour.





BARBARA CAPE
President

SHELLY BANKS
Vice-President

JANICE PLATZKE
Secretary-Treasurer

SERVICE EMPLOYEES
INTERNATIONAL UNION
CLC

314 Duchess Street
Saskatoon, SK
306.652-1011
Fax: 306.652-1392
www.seiu.ca

September 19, 2008

Dr. Mark Lemstra
Senior Epidemiologist
Saskatoon Health Region
#101 – 310 Idywyld Dr. N.
Saskatoon, Saskatchewan
S7L 0Z2

Dear Dr. Lemstra,

Thank you for the opportunity to review and comment on the report, "Health Disparity in Saskatoon: Analysis to Intervention."

Service Employees International Union – SEIUWEST would like to express our support for the recommendations contained in this report. Our responsibility is to work proactively on our concerns for social and economic justice for all. This report effectively outlines how all sectors of our community can participate and champion the improvements to the overall health of the citizens of Saskatoon, and Saskatchewan.

Specifically, the report illustrates how even the smallest of proactive measures can effect extraordinary change in our community. This report also highlights the successes in countries which have determined that population health is a priority. Such investments improve our overall health to the point where the whole of our society benefit; the method by which ordinary people can accomplish extraordinary things.

By being proactive and setting targets in reducing the disparities in population health, we as a community can address both our ethical and economic responsibilities to one another.

Letter to Dr. Mark Lemstra
September 19, 2008
Page 2

We offer our support for this report based on the assurance that no individuals who are not members of the SEIU bargaining unit will perform work of the bargaining unit, and there will not be, either now or in the future, the loss of, curtailment of, and/or the denial of work that is properly within the ambit of the SEIU bargaining unit.

Sincerely,



Barbara Cape
President
SEIUWEST

BC/mko COPE-397

c.c.: Shawna Colpitts, SEIUWEST
Bob Laurie, SEIUWEST
Carolyn Rebeyka, SEIUWEST
Don Kitchen, Union Representative, SEIUWEST
Bob Tosso, Chair, Public Health Unit, Saskatoon Health Region

X:\Barb Cape\General Correspondence\letter of support of lemstra health report Sept. 23.doc



October 8, 2008

Dr. Mark Lemstra
Senior Research Epidemiologist
Saskatoon Health Region
Idylwyld Centre
204 – 310 Idylwyld Drive North
Saskatoon, Sask. S7L 0Z2

Dear Dr. Lemstra

I write to thank you for the presentation on *Health Disparity in Saskatoon: Analysis to Intervention* that you gave to our Executive Council. It was most informative.

Your study adds proof to what many of us in the trade union movement have long believed: people who receive a decent wage are better off socially and healthier than those who live in poverty. Your research shows how poverty affects people and the many other hidden costs associated with being poor. People should be aware of these issues.

We commend you for going even further by making a number of recommendations to deal with some of these issues. This is good work.

Following your presentation our Executive Council passed a motion endorsing your report and the recommendations contained there in.

We support your study and your on-going work. We have reproduced your executive summary and will present it to the over 700 delegates and guests who will attend our annual convention in Regina on October 22-25, 2008.

In Solidarity,

A handwritten signature in black ink, appearing to read 'Larry Hübich'.

Larry Hübich
President

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A west side story.

October 10, 2008

Dr. Mark Lemstra
Saskatoon Health Region

Re: Health Disparity in Saskatoon: Analysis to Intervention

Dear Mark,

Thank you for presenting your report to our Board on September 2, 2008. This letter will serve as a general letter of support for the report. Although we do not agree with all of the recommendations, we agree that the status quo is no longer an option for our community and something must be done.

Specifically, we would like to add our support to the goal of reducing child poverty and thank you for agreeing to alter your report so that the proposed tax to pay for it, is only one of many options on how to pay for this worthwhile initiative.

We are strongly in favour of three initiatives as follows:

- 1) That efforts to reduce child poverty be realized with efficiencies found within existing revenues or programs;
- 2) Work earning clawbacks be removed immediately with the new threshold moved to the poverty line and adjusted annually;
- 3) That the delivery of more health and social services be moved to community schools, and this occur by reallocating existing positions.

The Riversdale Business Improvement District believes strongly in the Gross Domestic Product and Gross Domestic Happiness of our community, and looks forward to working with those who support improving the quality of life in our neighbourhood.

Sincerely,

Lionel Stewart
Vice Chair
Riversdale Business Improvement District
Board of Management

Randy Pshebylo
Executive Director
Riversdale Business Improvement District

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It is not that genetics and medical care are unimportant for health, but this limited focus misses out on the major determinants of health and health influencing behaviour.¹

The association between socioeconomic status (SES) and health disparity is now well documented by researchers. In England, it appears that social status based on occupational hierarchy is the major SES determinant of health. In mainland Europe, educational status appears to be the major SES determinant of health. In North America, income status appears to have a stronger association with health disparity than either educational status or occupational status; mainly due to reduced income disparity observed in Europe. Some suggest that income status, educational status and occupational status are strongly interrelated and there is little benefit to delineate the independent effect of one SES variable on health outcomes while controlling for the other SES variables. Others suggest that it is very important to ascertain which SES determinants have the strongest association with health outcomes in order to prioritize limited resources on a few key determinants of health that will have the largest impact on reducing health disparity.

Although the association between SES and health disparity has received enough attention by researchers that specific details are being debated, the general association is less well known among policy makers and the public at large. This is evident by the fact that health disparities between populations over time appear to be increasing instead of decreasing. Perhaps this is due to the fact that most of the analysis on this topic is at the national level. This is a problem for countries like Canada where a majority of social policies that influence the determinants of health are funded at the provincial level (i.e., education, social services, housing, health care) and provided at the regional level. In other words, local data will be required to influence change in policy at the local level.

The primary purpose of this report was to determine if SES is associated with poor health status in Saskatoon residents. At the onset, however, there is already a major complication to address. In Canada, it is not difficult to find a government agency reporting that Aboriginal cultural status is associated with poor health outcomes.^{2,3} The complication is that Aboriginal cultural status is strongly correlated with socioeconomic status in Canada. As such, the second purpose was to determine if Aboriginal cultural status was independently associated with poor health status after controlling for other variables, namely SES. The third purpose was to determine if Saskatoon residents are willing to support policies and interventions to reduce health and social disparity. The fourth purpose was to review the literature for evidence based policy options to reduce health and social disparity and match these policy options to public support.

1.1.

Socioeconomic Status and Health Status

The Whitehall study prospectively followed more than ten thousand British civil servants for twenty years with longitudinal (individual) data. This study design offered important advantages over previous studies of occupational status and health that included only cross-sectional data at a single point in time for an entire population (without individual data).⁴

There were three main findings in the Whitehall study. First, the age-standardized mortality among males aged forty to sixty-four was much higher for those in the manual occupational grades in comparison to higher occupational grades like professionals and senior administrators.⁵ For example, manual workers were three and a half times more likely to die from lung cancer in comparison to professionals or executives (Table 1.1). Second, there was an obvious and clear gradient in mortality from the top to the bottom of the hierarchy in almost all of the causes of death.⁶ For example, clerks were less likely to die from lung cancer during the study period than manual workers while professionals were less likely to die than clerks and senior administrators were less likely to die than professionals. Third, differences in mortality from heart disease persisted even after statistical adjustments for smoking, blood pressure and cholesterol.⁶ These observations suggest some underlying general causal process, correlated with social occupational status, which expresses itself through different diseases.⁷ As such, the specific diseases that eventually result in death may simply be alternative pathways rather than causes of death; the essential causal factor is socioeconomic status.⁷

Table 1.1 Age Adjusted Relative Mortality by Occupational Status and Cause of Death

Cause of Death	Senior Administrators	Professional & Executive	Clerk	Manual
Lung cancer	0.5	1.0	2.2	3.6
Other cancer	0.8	1.0	1.4	1.4
Coronary heart disease	0.5	1.0	1.4	1.7
Cerebrovascular disease	0.3	1.0	1.4	1.2
Chronic bronchitis	0.0	1.0	6.0	7.3
Other respiratory	1.1	1.0	2.6	3.1
Gastrointestinal diseases	0.0	1.0	1.6	2.8
Genitourinary diseases	1.3	1.0	0.7	3.1
Accidents and homicide	0.0	1.0	1.4	1.5
Suicide	0.7	1.0	1.0	1.9
Non smoking related cancer	0.8	1.0	1.3	1.4

Source: Evans⁷ Reprinted with permission. This table reveals that manual workers were 3.6 times more likely to die from lung cancer than professionals and executives, 40% more likely to die from other cancer, 70% more likely to die from coronary heart disease, 20% more likely to die from cerebrovascular disease, 7.3 times more likely to die from chronic bronchitis and so on.

Table 1.2 Mortality by Occupational Status in England and Wales 1911-1981

Year	Social Class				
	Professional	Managerial	Skilled Manual and Non-Manual	Semi-Skilled	Unskilled
1911	88	94	96	93	142
1921	82	94	95	101	125
1931	90	94	97	102	111
1951	86	92	101	104	118
1961	76	81	100	103	143
1971	77	81	104	114	137
1981	66	76	103	116	166

Source: Evans⁷ Reprinted with permission. Numbers are standardized mortality rates that express age adjusted mortality as a percentage of the national average at each given date (Data from 1941 was not collected due to world war). This table shows that men aged 15-64 in 1981 were almost three times more likely to die that year if they were unskilled (166) in comparison to if they were a professional (66).

The Black report provides mortality data for men aged 15-64 in England and Wales by occupational classification from 1911 to 1981.^{7,8} At the beginning of the century, infectious diseases were the main causes of death and age-standardized mortality rates were higher in the lower occupational classes. At the end of the century, however, heart disease and cancer were the main causes of death but they too had higher incidence in the lower occupational classes.⁷ The fact that the diseases responsible for death changed over time while mortality rates remained higher in the lower occupational classes suggests that disease specific prevention programs may be of limited benefit to prevent health disparity.⁷ Even if one disease is cured, another will simply take its place (Table 1.2).^{7,9}

Now let's move to mainland Europe where the primary socioeconomic determinant of health disparity tends to be educational status. Four reviews will be highlighted.

The first review looked at four indicators of self-report morbidity and mortality by level of education, occupational class and level of income from western European countries for the years 1985 to 1992.¹⁰ Socioeconomic status was associated with health disparity in every country, but educational status was the socioeconomic indicator that had the strongest relationship with health disparity. Odds ratios for morbidity (sickness) ranged between 1.5 and 2.5 (50% to 150% higher) and the rate ratios for mortality (death) were between 1.3 and 1.7 (30% to 70% higher).¹⁰

The second review analyzed disparities in mortality by education in eight western European countries. In this study, increased mortality was found in all specific causes of death by educational status; except prostate cancer in men and lung cancer in women.¹¹

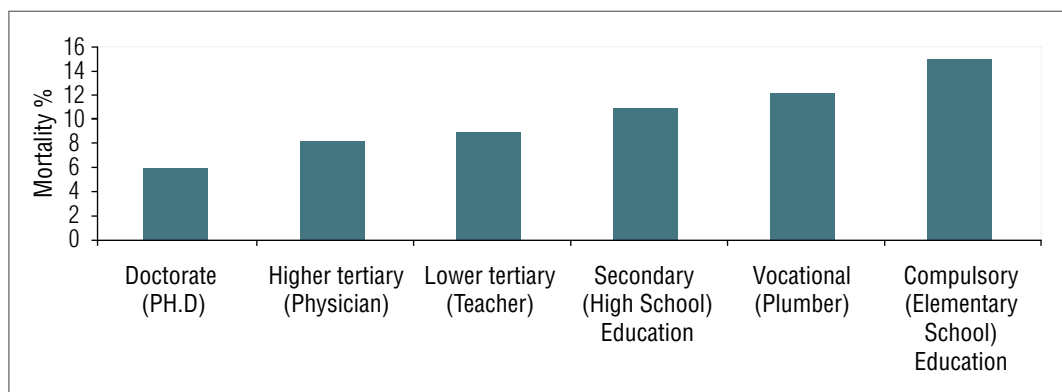
The third review looked at national health surveys conducted in eight western European countries in the 1990s. The prevalence of 17 chronic disease groups were analysed in relation to education.¹² Most diseases showed a higher prevalence among the lower education group. Stroke, diseases of the nervous system, diabetes and arthritis had relatively large inequalities (OR > 1.50 or 50% higher); but no socioeconomic differences were evident for cancer, kidney

diseases and skin diseases.¹²

The fourth review looked at socioeconomic inequalities in health in the European Union and its immediate neighbours.¹³ Not only were rates of mortality consistently higher among those in a lower socioeconomic position, but the inequalities in mortality increased in many European countries in the past few decades.¹³ This study, however, found no clear trend as to which socioeconomic indicator (education, occupation or income) was more strongly associated with health disparity.¹³ The study found that people with lower socioeconomic positions not only live shorter lives but also spend a large number of years in ill-health with increased incidence and prevalence of most chronic conditions, mental health problems, functional limitations and disability.¹³

In Sweden, the entire population aged twenty-five to sixty-five were linked to the national census in 1990 with subsequent mortality.^{1,14} Higher education resulted in substantially lower mortality in comparison to lower education at each step of the gradient (Figure 1.1).^{1,14}

Figure 1.1 Mortality by Level of Education Sweden 1990-1996

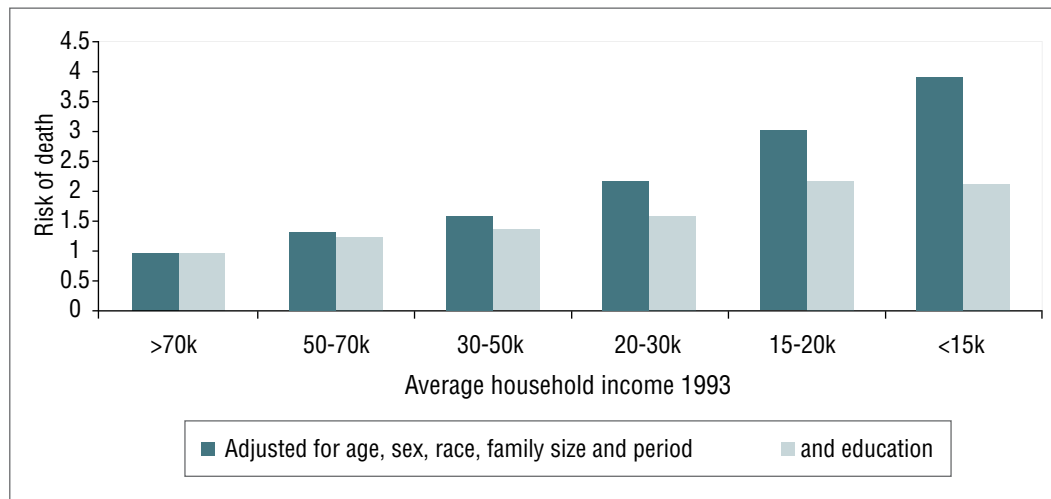


Source: Marmot¹ Reprinted with permission.

A meta-analysis from Belgium reviewed socioeconomic inequalities in major depression in adults in all studies published from 1979 to 2001. Results indicated that low-SES individuals had 81% higher odds of being depressed.¹⁵ A dose-response relationship was observed for both education and income.¹⁵ The authors concluded that they found compelling evidence for socioeconomic inequality as a risk indicator for depression.¹⁵

In North America, income status appears to have a stronger association with health disparity than either educational status or occupational status. In the United States, a sample of 8,500 men and women were followed for twenty years from 1972-1991.^{1,16} Men and women that made less than \$15,000 per year were 3.89 times more likely to die during the study period than those making more than \$70,000 per year after adjusting for age, sex, race, family size and time period (Figure 1.2).^{1,16} The second group of bars, in the figure, shows what happens to the relationship between income and mortality when education is taken into account. The association between income and mortality remains but is reduced after adjusting for education status.^{1,16}

Figure 1.2 Relative Risk of Death in United States Study of Income Dynamics



Source: Marmot¹ Reprinted with permission.

A recent cross-sectional analysis of the Canadian Community Health Survey, a comprehensive survey with more than 130,000 Canadians, demonstrated that those with the highest household incomes are two and a half times more likely to report excellent or very good health than those with the lowest incomes.¹⁷

The collection of information provided above suggests that variables like occupational status, educational status and income status are strongly associated with health status. Given that these variables are all modifiable, there is little reason to believe that health disparities could not be substantially reduced in a society. This leads to another complication. Despite the improvement in life expectancy of the lower social classes over the past few years, the health status of the higher social classes has improved more.^{1,18} In other words, the gap in health disparity in the past twenty years by socioeconomic status has been increasing instead of decreasing.^{1,18} The gap in life expectancy between the top and bottom social classes increased from 5.5 years in 1976 to 9.5 years in 1996 (Figure 1.3).^{1,18} This presents a challenge as it suggests that policy makers have been either unaware or ineffective in reducing health disparity over time.

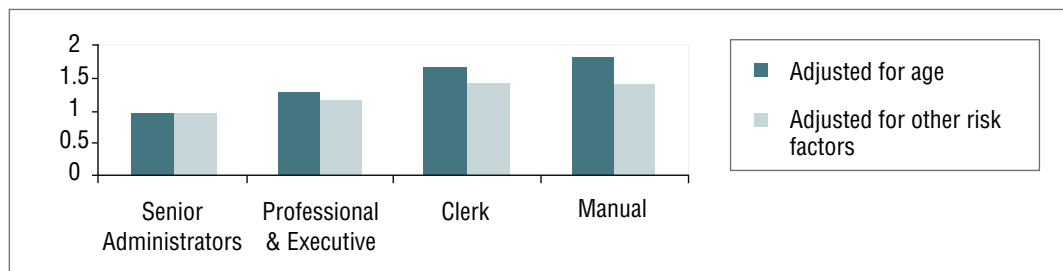
Figure 1.3 Life Expectancy for Men by Social Class in England and Wales



Source: Marmot¹ Reprinted with permission

There is still one other complication to discuss. Some people argue that differences in health status between socioeconomic groups are the result of individual choices to engage in risk behaviours like smoking, physical inactivity and poor diet.¹ As such, some argue there is little we can do when individuals from lower socioeconomic status choose to engage in risk behaviours.¹ The problem with this argument is that the evidence does not support it. Differences in behaviour provide only a modest explanation of the socioeconomic gradient in health.¹ If lower socioeconomic status men died earlier from heart disease because they had higher levels of risk behaviours, then statistically adjusting for these behaviours (i.e., smoking) and the consequences of these risk factors (i.e., blood pressure, plasma cholesterol and blood sugar), would make the risk of heart disease between socioeconomic groups the same.¹ Figure 1.4 demonstrates that the risk of mortality from coronary heart disease is approximately 50% higher in the manual grades in comparison to senior administrators after statistical adjustment for known risk factors.¹ Statistically adjusting for known risk factors explains less than a third of the social gradient in mortality from heart disease.¹

Figure 1.4 Mortality from Coronary Heart Disease over Twenty-Five Years



Source: Marmot¹ Reprinted with permission

Some important questions still need to be reconciled. Why would behaviours such as smoking, reduced exercise and poor diet appear to be a) more common and b) more harmful in lower-status groups than in higher status groups?¹ It cannot be a coincidence that people in lower socioeconomic groups are more likely to choose to smoke and it surely cannot be coincidence that lower socioeconomic groups are more likely to suffer from poor health as a result.¹ If smoking, lack of exercise and poor diet are causes of ill health, then we have to look at the “causes of the causes” of poor health, or the determinants of risk behaviour that lead to poor health.¹ In other words, socioeconomic status is associated with poor health status but socioeconomic status is also associated with risk behaviours that lead to poor health status.

1.2.

Socioeconomic Status, Cultural Status and Health

As stated previously, it is not difficult to find a government agency in Canada reporting that Aboriginal cultural status is associated with poor health.^{2,3} For example, the Health Canada website reports that First Nations peoples are more likely to experience poor health outcomes in essentially every indicator possible.¹⁹ The following are some of the highlights from Health Canada's *A Statistical Profile on the Health of First Nations in Canada for the year 2000* report:

- The life expectancy at birth for the Registered Indian population was 68.9 years for males and 76.6 years for females. This reflects a reduction of 7.4 years and 5.2 years in life expectancy for Registered Indians in comparison to the Canadian population.¹⁹
- In First Nations populations, potential years of life lost from injury was almost 3.5 times that of the national average.¹⁹
- Compared with the overall Canadian population, First Nations had elevated rates of pertussis (2.2 times higher), rubella (7 times higher), tuberculosis (6 times higher), shigellosis (2.1 times higher) and chlamydia (7 times higher).¹⁹
- First Nations hospitalization rates were higher than Canadian rates for all causes except cancers. Where the principal hospital discharge diagnosis was respiratory disease, digestive disease, or injuries and poisonings, the rates were approximately two to three times higher than the national averages.¹⁹

One of the concerns associated with the discussion above is that it gives policy makers and the public at large the impression that health disparity is not preventable because a major determinant of health and behaviour (cultural status) is not modifiable. In the United States and Canada, cultural status is strongly correlated with socioeconomic status.²⁰ In 1990, the *Canadian Aboriginal Peoples Survey* concluded that:

- 28.0% of all Aboriginal adults relied on social assistance for at least part of the year in comparison to 8.1% of the national average.²¹
- The overall Aboriginal unemployment rate was 19.4%, which was more than double the general population in Canada. The rate of on-reserve Aboriginal unemployment was even higher at 31.0%.²¹

The Department of Indian and Northern Development has projected that social assistance dependency rates among Canada's First Nations will increase from 150,000 beneficiaries in 1997 to 250,000 in 2010.²² According to the 2001 Census of Canada, on-reserve Registered Indians rate lower than the general Canadian population on all educational attainment indicators including secondary school completion rates, postsecondary education admissions and completion of university degrees.¹⁹ In 2000/01, Indian and Northern Affairs Canada indicated that 15.7% of homes on First Nations reserves were in need of major repairs and 5.3% were no longer habitable or had been declared unsafe or unfit for human habitation.¹⁹

There is growing awareness, however, that the association between cultural status, SES and health status is neither simple nor straightforward. For example, in Canada, one paper reviewed data from the *National Population Health Survey* in 1997 with a sample size of 81,804.²³ The baseline analysis revealed that Aboriginal Canadians experienced significantly more depressive symptoms than other Canadians.²³ However, the authors found that increases in family income

reduced the level of depression and the risk of a major depressive episode.²³ After multivariate adjustment, the authors concluded that socioeconomic variables were responsible for mental health disadvantages between cultural groups.²³

A literature review looked at the influence of cultural status and poverty on the mental health of children.²⁴ This review found that a) children whose parents are living in poverty or who have experienced severe economic losses are more likely to report higher rates of depression, anxiety and antisocial behaviours and b) after controlling for socioeconomic status, African American, Native American and Hispanic children are actually less likely to report mental health problems.²⁴

Another Canadian study found that lower self report health and diabetes prevalence were not associated with Aboriginal cultural status after controlling for socioeconomic confounders.²⁵ At baseline, self-reported health status was uniformly worse for Aboriginal residents; but the differences disappeared after adjustments for socioeconomic confounders.²⁵

There is an important point to discuss at this stage. To date, many researchers have viewed cultural status as either a proxy for SES or regarded SES as a confounder to the relationship between cultural status and health. Others argue, however, that SES is part of the casual pathway by which cultural status affects health.^{23,26-29} In other words, cultural status is an antecedent or determinant of SES.^{23,26-29} As such, understanding the role of social causation is required in order to understand how cultural status can be associated with lower health status.^{23,26-29}

Definitions: Race, Ethnicity and Culture

Precise definitions of the terms “race,” “ethnicity,” and “culture” are elusive. As social concepts, they have many different meanings.³⁰

Race

Most people think of race as a biological category in order to divide and label different groups according to a set of common biological traits.³⁰ Despite this popular view, there are no biological criteria for dividing races into distinct categories.³⁰ There is overwhelmingly greater genetic variation within a racial group than across racial groups.³⁰ The concept of race is especially relevant when certain social groups are separated, treated as inferior or superior and given differential access to power and other valued resources.³⁰

Ethnicity

Ethnicity refers to a common heritage shared by a particular group. Heritage includes similar history, language, rituals and preferences for music and foods.³⁰

Cultural Status

Cultural status is broadly defined as a common heritage or set of beliefs, norms and values.³⁰ It refers to the shared attributes of a group of people.³⁰

For the purpose of this report, the term cultural status will be used instead of the terms race or ethnicity.

Definitions: Registered Indian, First Nations and Aboriginal People

Registered Indian (or Status Indian)

Registered Indian refers to an Indian person who is registered (or entitled to be registered) under the Indian Act. The Act sets out the requirements for determining who is a Status Indian.³¹

First Nations

First Nations is a term that came into common usage in the 1970s to replace the word “Indian,” which some people found offensive. Although the term First Nation is widely used, no legal definition of it exists. Among its uses, the term “First Nations peoples” refers to the Indian peoples in Canada, both Status and Non-Status. Some Indian peoples have also adopted the term “First Nation” to replace the word “band” in the name of their community.³²

Aboriginal People

Aboriginal people is a collective name for the original peoples of North America and their descendants. The Canadian Constitution (*the Constitution Act, 1982*) recognizes three groups of Aboriginal peoples — Indians, Métis and Inuit. These are three separate peoples with unique heritages, languages, cultural practices and spiritual beliefs.³²

Except when citing other work, this report will use the term Aboriginal people.

1.3.

Explanations of Socioeconomic Inequality in Health

Two general types of social theories have been put forth to explain health disparity: 1) selection and 2) social causation. Selection refers to the idea that those with existing health disorders are less likely to obtain high levels of income, education or occupational status.^{33,34} Social causation suggests that health disparity can result when a society offers differential access to resources like education and employment to certain groups; which results in lower health status.^{33,34}

Macro Social Theory

There are two main competing theories for explaining social causation.³⁵ The first explanation arises from the sociological theory of functionalism.³⁴ Functionalists argue that some occupations require an extensive amount of skill and intelligence whereas other occupations can be performed by almost anyone.³⁴ In order for society to function properly, rewards and resources must be distributed unequally in order to attract those believed to have the most intelligence and skill into formal education programs and occupations that have the most importance to society.³⁴

The second main explanation for the existence of social causation comes out of the conflict paradigm.³⁴ According to this theory, individuals and groups already higher up in the social hierarchy intentionally restrict access to rewards and resources to others in order to maintain their advantage within society.³⁴

If an individual inherits their social position from their parents, regardless of their personal attributes, then the social class system is closed and support is given to the conflict theory.³⁴ If an individual can increase their social position regardless of their background, then the social class system is open and support is given to the functional theory.³⁴ There is evidence that both theories have been observed in the past century.³⁴

Micro Social Theory

Increased stress is the most widely accepted causal explanation for higher rates of mental disorder among those with lower socioeconomic status.³⁴ Stress evolves from the discrepancy between the demands of the environment and the potential responses of the individual.³⁴

Within the topic of stress theory, one important issue to discuss is how people exposed to the same stressors are not necessarily affected in the same manner. There are two main modifiable variables, stressors and moderators, within the stress process that can influence mental health outcome.³⁴

Within the stressors, status strains suggest that some individuals have unequal access to resources and opportunities.³⁴ Contextual strains suggest that the local environment (i.e., neighbourhood) can influence outcome.³⁴ The three main moderators are coping, social support and mastery.³⁴ Coping is what individuals do on their own to minimize stress.³⁴ Social support is access to social support networks.³⁴ Mastery refers to a sense of control over the external environment.³⁴ Mastery is also related to attributional theory whereby successful individuals attribute outcomes to individual efforts and unsuccessful individuals attribute outcomes to social structure.³⁴

Although stress theory is the predominant theory explaining mental health disparity, other theories do exist. Some suggest income inequality translates into inequity in access to material conditions like adequate nutrition, housing and protection. This theory is called materialist/structuralist.³⁷ Others suggest lower income groups tend to exhibit higher prevalence of risk behaviours harmful to health. This theory is called cultural/behavioural.³⁸ Lastly, a review on health disparity in Canada argues that colonialism, oppression, racism and discrimination are linked to unequal access to resources, education and employment for Aboriginal people in Canada and that these factors result in poor health.²²

1.4.

Structure of Section 2 and Section 3

Section 2

Overall, the primary purpose of Section 2 was to determine if socioeconomic status is associated with poor health status and risk behaviours in Saskatoon residents. The second purpose of Section 2 was to determine if Aboriginal cultural status was independently associated with poor health outcomes and risk behaviours after multivariate adjustment for other factors like socioeconomic status. The third purpose of Section 2 was to contact Saskatoon residents to determine which policy options they were willing to support to reduce health and social disparity in Saskatoon.

There are eleven research papers that form the body of Section 2.

- A. The first paper was a systematic literature review to identify published or unpublished papers that reviewed the prevalence of depressed mood or anxiety by socioeconomic status in youth aged 10-15 years.
- B. The second paper was a systematic literature review to identify published or unpublished papers that reviewed marijuana and alcohol risk behaviour by socioeconomic status in youth aged 10-15 years.
- C. The third paper was a cross sectional study that reviewed all hospital discharges, physician visits, medication utilisation, public health information and vital statistics for Saskatoon by neighbourhood income status. The purpose of the study was to quantify the magnitude of health disparity between low, average and high income neighbourhoods in Saskatoon.
- D. The fourth paper merged data from three cycles of the *Canadian Community Health Survey* (2001, 2003, and 2005) with identical data collected by the Saskatoon Health Region in 2007. The three health outcomes included self report health, heart disease prevalence and diabetes prevalence. The risk indicators included disease intermediaries, behaviours, life stress, healthcare utilization demographics, socioeconomic status and cultural status. The purpose of the study was to determine if Aboriginal cultural status was independently associated with three completely divergent health outcomes in adults after controlling for other covariates; namely income status. The second purpose of the study was to review the independent association between socioeconomic status and self report health, heart disease prevalence and diabetes prevalence.
- E. The fifth study reviews lifetime suicide ideation (thoughts) in Saskatoon. This study used the same data source used in the fourth paper to determine if Aboriginal cultural status was independently associated with lifetime suicide ideation after controlling for other covariates; namely income status. The second purpose of the study was to review the independent association between socioeconomic status and lifetime suicide ideation.
- F. The sixth study reviews daily smoking status in Saskatoon. This study used the same data source as the fourth paper to determine if a risk behaviour, smoking, was independently associated with Aboriginal cultural status after controlling for other covariates; namely income

status. The second purpose of the study was to review the independent association between socioeconomic status and smoking.

- G. The seventh study reviews child immunization coverage rates at age two to determine if they were lower in the low income neighbourhoods of Saskatoon. Parents were contacted that were behind and not behind in child immunization coverage to determine differences in knowledge, beliefs and opinions on barriers and solutions. The main purpose of the study was to determine if Aboriginal cultural status was independently associated with being behind in childhood immunizations after controlling for low income status. The second purpose of this study was to review the independent association between socioeconomic status and child immunization coverage.
- H. The eighth paper asked every student in grades 5 to 8 in the City of Saskatoon to complete a health questionnaire. The main purpose of the study was to determine if Aboriginal cultural status was independently associated with moderate or severe depressed mood in youth after controlling for other covariates; namely socioeconomic status. The second purpose of this study was to review the independent association between socioeconomic status and moderate or severe depressed mood.
- I. The ninth paper asked every student in grades 5 to 8 in the City of Saskatoon to complete a health questionnaire. The main purpose of the study was to determine if Aboriginal cultural status was independently associated with alcohol and marijuana use in youth after controlling for other covariates; namely socioeconomic status. The second purpose of this study was to review the independent association between socioeconomic status and alcohol and marijuana use.
- I. The tenth paper looked at linked data from the Canadian Community Health Survey and healthcare utilization (hospital, physician and medication) data from Saskatoon. Data was used to determine extra healthcare utilization and cost associated with lower socioeconomic status in Saskatoon.
- J. The eleventh paper was a cross sectional random survey of 5,000 Saskatoon residents to determine knowledge about health determinants and health disparity and then determine levels of public support for various interventions to address health disparity.

Section 3

Section 3 is a comprehensive literature review of 10,076 abstracts and articles on evidence based policy options to reduce health or social disparity in a population. Evidence based policy options are discussed on how to reduce disparity in income, education, housing, employment and access to healthcare. The evidence based policy options were then matched to levels of public support determined in the eleventh research paper in Section 2. The section concludes

with some thoughts on how to forward relations with our Aboriginal population and how to reduce disparity between our cultural groups.

Although income was found to be the main determinant of health in Saskatoon (aside from age), the evidence based policy options reflect a broad range of determinants. Why? As discussed throughout this paper, the determinants of health influence and interact with each other. For example, education and employment obviously influence subsequent income. Conversely, income can influence access to higher education, access to suitable housing, access to physical activity and nutritious food and even access to health care. Although income was the main determinant of health in Saskatoon, it was rarely the only socioeconomic determinant of health. Other variables like education status had important associations with poor health; albeit more modest associations than income status.

Table 1.3 summarizes the determinants of health in Canada according to the Canadian Institute for Health Information (CIHI). Although income is the main determinant of health, it is certainly not the only determinant of health.

Table 1.3	The Determinants of Health in Canada
The Canadian Institute for Health Information lists twelve factors that contribute to health status: ³⁹	
1.	Income status
2.	Education
3.	Social support networks
4.	Employment and working conditions
5.	Early childhood development
6.	Physical environment
7.	Personal health practices and coping skills
8.	Biological and genetic factors
9.	Health services
10.	Gender
11.	Culture
12.	Mass media technology (i.e., television viewing and physical inactivity)

Figure 1.5 Planned Promotion of Population Health

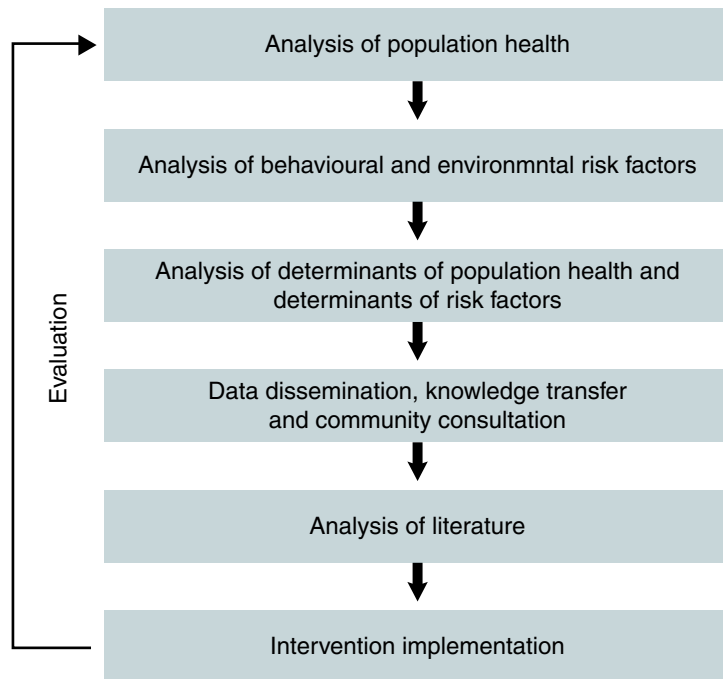


Figure 1.5 schematically displays a logical progression of population based analysis to intervention in order to improve the health status of the Saskatoon population. This model was the basis of progression for our report to move from: “Analysis to Intervention”.

1.5.

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CHAPTER 2

Socioeconomic Status and Health Status in Saskatoon

Section 2 discusses the results of eleven research projects in Saskatoon. The first two research papers are systematic literature reviews detailing the association between socioeconomic status and health outcomes and behaviours. The next seven research papers describe the determinants of disparity in health outcomes and behaviours in Saskatoon. The tenth research paper reviews extra healthcare utilization and costs associated with lower socioeconomic status in Saskatoon. The eleventh research paper measures levels of public support for various community based evidence based policy options to reduce health and social disparity in Saskatoon.

2.1.

Lemstra M, Neudorf C, D'Arcy C, Kunst A, Warren L, Bennett N.

A systematic review of depressed mood and anxiety by socioeconomic status in adolescents aged 10-15 years. Canadian Journal of Public Health 2008;99(2):125-129.

Abstract

Introduction

A majority of population based studies suggest prevalence of depressed mood and anxiety is most common during late adolescence to early adulthood. Mental health status has been linked previously to socioeconomic status in adults. The purpose of this systematic literature review is to clarify if socioeconomic status (SES) is a risk indicator of depressed mood or anxiety in youth between the ages of 10 to 15 years old.

Methods

We performed a systematic literature review to identify published or unpublished papers between January 1, 1980 and October 31, 2006 that reviewed the prevalence of depressed mood or anxiety by SES in youth aged 10-15 years.

Results

9,194 titles were screened for relevance. In the end, we found nine studies with a sample size of 34,752 that fulfilled our inclusion criteria and passed the methodological quality review. The prevalence of depressed mood or anxiety was 2.49 times higher (95% confidence interval 2.33-2.67) in youth with low SES in comparison to youth with higher SES.

Discussion

The evidence suggests that low SES has an association with the prevalence of depressed mood and anxiety in youth between the ages of 10 to 15 years old. Higher rates of depressed mood and anxiety among lower socioeconomic status youth may impact emotional development and limit future educational and occupational achievement.

Conclusion

Lower socioeconomic status is associated with higher rates of depressed mood and anxiety in youth.

Introduction

The mental health of children and youth is an area warranting continued scientific and public health attention.¹ The World Health Organization predicts that by the year 2020, childhood and adolescent mental health problems will become one of the leading causes of morbidity, mortality and disability among children worldwide.²

A majority of population based studies suggest prevalence of depressed mood is most common during late adolescence to early adulthood. A national survey from Canada determined that prevalence of depression was highest in the 15-19 age group (9.2%; 95% CI 7.1-11.3) with a prevalence rate of 2.7% in the 12-14 age group.³ A review of three American population-based studies suggests that most depressive symptoms start at approximately age 12 and peak between the ages of 15 and 17.⁴ Regrettably, first-onset depression is being manifested at a younger age than observed previously.⁵ The prevalence of depressed mood in youth is higher than depressive disorder, with prevalence rates of depressed mood among youth ranging from 21% to 50%.^{6,7}

Depression has a wide array of symptoms effecting somatic, cognitive, affective, and social processes. The consequences of depression include academic failure, poor peer relations, behavioural problems, conflict with parents and authority figures, low self esteem, substance abuse and interruption in development.^{5,8-11} Up to 41% of youth with depressive disorder report suicide ideation and 21% of depressed youth attempt suicide.⁶ The Ontario Child Health Study found that only 16.1% of children with mental health disorders receive mental health or social service attention.¹²

The identification of anxiety disorders, and how they influence children and adolescence, has been very much undervalued.¹³ In children and youth, approximately 20% of youth suffer from at least one anxiety disorder.⁶

Given that youth onset of depression and anxiety disorders are major risk factors for adult disorder, and that life events experienced in youth are associated with depression in adulthood, it is important to understand risk indicators of mental health status in youth.¹⁴⁻²⁰ Socio-economic status is believed to be a key risk indicator, although some authors suggest the findings are inconsistent.^{1,6,21}

The objective of this systematic literature review was to determine the association between socio-economic status and depressed mood or anxiety in youth aged 10-15 years old.

Methods

An epidemiologist and a senior librarian performed a systematic literature review utilizing the databases PubMed, PsycINFO, CINAHL, EMBASE, and HealthSTAR from January 1980 to October 2006. Subject descriptors included the MeSH terms: depressive disorder, depression, long term depression, depressive disorder major, depression chemical, adjustment disorders, anxiety, anxiety disorders, mental health, socio-economic factors, social class, health behaviour, population characteristics, poverty, poverty areas, educational status, employment and occupations. Limits terms included: child 6-12 years, youth 13-18 years, humans and English language.

We also sought information pertaining to governmental or non-published papers (grey literature). In total, 261 e-mail requests were sent out to all relevant health, mental health, social science and education department heads of Canadian universities, urban health regions, provincial and

federal ministries, Canadian mental health associations and independent research agencies (i.e., Statistics Canada). Each of the contacts was asked to forward the e-mail request to any colleague that worked within the area of mental health and youth. The original e-mails were sent out in October of 2006. From this process, 23 responses were received.

Two epidemiologists independently screened titles and abstracts of published and unpublished literature for relevance. The following inclusion and exclusion criteria were used:

Inclusion criteria:

- 1 Published or unpublished literature that examined depressed mood or anxiety by SES in youth between the ages of 10 and 15 years old. Studies were accepted if the age range crossed an age period that included, but was not exclusive to, youth between the ages of 10 to 15 years old (e.g., 15 to 17 years old).
- 2 Population-based cross sectional surveys or cohort/longitudinal studies.
- 3 Use of a validated screening scale for depressed mood or anxiety (e.g., CES-D).
- 4 Defined SES as parental income, education, employment status or occupational classification.
- 5 Data from Canada, United States, Western Europe, Australia or New Zealand.
- 6 Articles published in English language.

Exclusion criteria:

- 1 Opinion papers, letters to the Editor, case reports, case studies or natural experiments.
- 2 Randomized trials or clinical settings.
- 3 Any paper where the baseline data was not presented or available upon request.

Articles were reviewed in full when criteria within the Abstract did not provide enough detail to make a decision. Reference lists of articles were examined. Full articles were reviewed independently by a panel of three reviewers consisting of two epidemiologists and a medical health officer. The panel independently appraised the methodological quality of a study with pre-established criteria in two stages: 1) assess the presence of selection, information or confounding bias, and 2) review the study design, study population, variable definition, participation rate, sample size, measurement technique, and analysis strategy (Table 1).²² Except for major violations, a study required an overall score of at least 10 out of 15 to be accepted, as well as agreement between all three reviewers.

The statistical basis for the meta-analysis was taken from Fleiss, with the statistical assumptions that data analysis included the total number of studies found in comparison to a sample and that the sample sizes from each of the reviewed studies were assumed to be large.²³ A computer program was built that utilized the following formulas:²³

The fixed effects model was chosen with:
effect size standard error

$$\bar{Y} = \frac{\sum W_c Y_c}{\sum W_c} \quad SE(\bar{Y}) = (\sum W_c)^{-1/2} \quad Y - z_{\alpha/2} / \sqrt{\sum W_c} \leq \psi \leq \bar{Y} + z_{\alpha/2} / \sqrt{\sum W_c}$$

The meta-analytic approach took a weighted average of each study result (slope or β). The study weight (W) was the inverse of the variance computed from the estimated standard error or $SE(\beta)^2$ as $1/SE(\beta)$ and where Y was the effect size. Weighted slopes were calculated by weighting each β as follows:

$$\beta_w = \sum [\beta^* 1/\text{var}(\beta)] / \sum 1/\text{var}(\beta) \quad \text{where} \quad \text{var}(\beta) = SE(\beta)^2$$

The pooled estimate of the $SE(\beta_w)$ was: $1/\sqrt{\sum W_i}$

The pooled estimate of the 95% confidence interval of β_w was: $\beta_w \pm 1.96^* SE(\beta_w)$

Because the rate ratio is less prone to artificial appearance of inter-study heterogeneity, the adjusted rate ratio is presented with 95% confidence intervals.⁵⁸

The assumption of homogeneity of variance is given by: $\chi^2 = \sum W(\beta - \beta_w)^2$ which, if the studies are estimating the same value for the effect, has a chi square distribution with degrees of freedom one less than the number of studies.²⁴

Sensitivity analysis was reviewed by looking at the individual influence of a study and then repeating the analysis without studies with the largest weights. If this produced little change in inference (less than 15% change in rate ratio), it was determined that inclusion of the study would not warrant caution in the interpretation.²⁴ The point estimates of individual studies were plotted against the inverse of their variance or sample size in order to visualize a funnel shape scattered around the true value of the point estimate.²⁴ This funnel plot was used to assess publication bias.²⁴

Results

The results of the systematic literature review are summarized in Table 2. PubMed, PsycINFO, CINAHL, EMBASE and HealthSTAR identified 9,185 titles which were screened for relevance. The grey literature search resulted in an additional 9 titles. From the total of 9,194 titles screened for relevance, the overall search yielded 560 abstracts. Of the 560 abstracts, 231 articles were selected for full review including reference sections. Out of the 231 articles selected for review, 9 met the inclusion criteria and passed the methodological quality review. These 9 studies were forwarded for statistical pooling.

Of the 9 pooled studies, 5 were American, 3 were Canadian, and 1 was European (Table 2).^{3,25-}

³² Four studies were national samples and 5 were provincial/state or regional. All studies used depressed mood as an outcome measure and 1 study also included anxiety. Parental income was used as the socio-economic indicator in 7 studies and employment status and occupational classification were used in the other 2 studies. Two studies also included parental education as a secondary SES indicator. Sample sizes varied from 741 to 14,500.

In total, the overall sample size used for the meta-analysis was 34,752 youth (Table 3). The statistical pooling of the 9 studies resulted in an overall rate ratio of 2.49 with a 95% confidence

interval of 2.33 to 2.67. All 9 studies and 13 results (additional stratifications by gender) reported an inverse association between socio-economic status and depressed mood or anxiety. The rate ratios ranged from a low of 1.07 to a high of 6.11. Only 4 individual results out of 13 had lower confidence limits that crossed 1.^{3,26,32} The result of the overall test of homogeneity of variance was $p < 0.001$, suggesting highly significant heterogeneity between studies. Stratification by gender on 3 studies revealed no statistically significant difference between male and female youth (Table 2).^{26,30,32} No other stratification was able to fully reveal the source of heterogeneity. Sensitivity analysis individually removed 2 studies with relative weights of 0.26 and 0.21.^{29,30} The changes in the rate ratio and 95% confidence intervals were not statistically significant. There were not enough studies accepted in order to visualize a funnel shape to the data to assess publication bias.

The results are presented schematically in Figure 1.

Discussion

The Minister of National Health and Welfare for Canada reported in *Mental Health for Canadians: Striking a Balance* that social and economic conditions are contributing factors to mental health and that social and economic inequity between groups is one of three central challenges to policy development.²¹ The Canadian Senate Committee on Transforming Mental Health, Mental Illness and Addiction Services in Canada reported that social factors were the most important determinants associated with mental illness.³³ This systematic literature review found that youth with low socio-economic status are approximately two and a half times more likely to suffer from depressed mood or anxiety than other youth with higher socio-economic status.

Of the 9 studies that were forwarded for statistical pooling, 4 studies had rate ratios greater than 3.0, 2 studies had rate ratios between 2.0 and 3.0 and the remaining 3 studies had rate ratios between 1.0 and 2.0. The discrepancies between the higher and lower rate ratios may be due to differences in methodology or the characteristics of the various populations surveyed. As reported, gender is not a likely explanation for heterogeneity. This finding is important because gender differences in rates of depressed mood emerge around the age of 13 years.⁶ Stratifications by study design, year of publication, geographical coverage, scale to measure depressed mood or anxiety, construct used to measure parental socioeconomic status did not significantly explain heterogeneity between studies. However, the two smallest rate ratios are from Europe where SES was measured in terms of occupational class.³² This finding might suggest cross-Atlantic differences in magnitude of inequalities or it might suggest that occupational class is somewhat different from other constructs to measure SES.

There are several limitations to discuss. First, the review of the grey literature is mainly influenced by contact with Canadian researchers. Second, publication bias is suspected but we were unable to formally test this assumption due to a limited number of accepted studies. The rate ratio from the only unpublished study (1.22) was much smaller than the rate ratios from the other North American studies that were published.³ Third, there were 4 studies that included ages above the age range of 10 to 15 years old. The authors were unable to separate age groupings. Fourth, the authors did not examine causation or selection. Fifth, only 1 study was found that addressed anxiety, and as such, caution is recommended in interpretation.

Socio-economic status is one variable that should be further explored as a risk indicator for increased depressed mood or anxiety among youth. The identification of pathways, and how

socio-economic status impacts mental health status in youth, should become an important public health priority in Canada.

Table 1	Methodological Evaluation Criteria ²²
1.	Research question is well stated.
2.	Source population is identified and appropriate.
3.	Inclusion criteria are described and appropriate.
4.	Exclusion criteria are described and appropriate.
5.	Participation rate is reported and appropriate.
6.	Sample size is preplanned and provides adequate statistical power.
7.	Baseline comparability of various groups is reported.
8.	Same data collection method is used for all respondents.
9.	Important baseline variables are measured, valid, and reliable.
10.	Outcome is defined and measurable.
11.	Outcome measure is validated.
12.	Outcome assessment was blind or free from bias.
13.	Statistical analysis is appropriate.
14.	Adjustment is made for important covariates.
15.	The results are verifiable from the baseline data

Table 2	Flow Chart Describing the Systematic Literature Review and Selection of Articles					
PubMed	PsycINFO	CINHAL	Embase	Healthstar	Grey Literature	Total
2284	953	2752	853	2343	9	9194
Titles	Titles	Titles	Titles	Titles		
Screen 1- Review of Abstracts:						
246	161	77	30	37	9	560
Screen 2- Review of Full Articles:						
93	83	27	13	6	9	231
Screen 3- Met Inclusion Criteria and Passed Methodological Review:						
4	3	0	0	0	2	9
Statistical Pooling of nine papers.						

Table 3 Summary of Results of Meta-Analysis

Study	RR (95% CI)	In (RR)	Relative weight	Sample size	Country of origin	Study design	Geographical coverage	Scale	Outcome measure	SES indicator
Bergeron L (2000) ²⁵				741	Canada	Cross Sectional	Provincial	Dom	Dep/Anx	Income
M/F age 12-14	3.72 (1.65, 8.50)	1.31	0.01							
StatCan NPHS (1999) ²⁶				1847	Canada	Cross Sectional	National	CES-D	Dep.	Income
Female age 12-14	5.24 (1.96, 14.02)	1.66	0.00							
Female age 15-19	6.11 (2.59, 14.42)	1.81	0.01							
Male age 12-19	3.71 (0.93, 14.73)	1.31	0.00							
StatCan NLSCY (2006) ³				1401	Canada	Longitudinal	National	CES-D	Dep.	Income
M/F age 12-18	1.22 (0.75, 1.69)	0.2	0.04							
Goodman E (2003) ²⁷				1450	USA	Longitudinal	National	CES-D	Dep.	Income
M/F age 12-19	2.07 (1.73, 2.47)	0.73	0.14							
Roberts R (1997) ²⁸				4456	USA	Cohort	Regional	CES-D	Dep.	Income
M/F age 12-14	5.17 (4.46, 5.88)	1.64	0.26							
Hammack P (2004) ²⁹				1704	USA	Cohort	Regional	CES-D	Dep.	Income
M/F age 13-18	2.14 (1.81, 2.47)	0.76	0.21							
Kubic M (2003) ³⁰				3621	USA	Cross Sectional	Regional	CES-D	Dep.	Employ
Female age 12 & 13	1.90 (1.44, 2.50)	0.64	0.06							Education
Male age 12 & 13	1.77 (1.33, 2.33)	0.57	0.06							
Costello E (1996) ³¹				4500	USA	Cohort	Regional	CAPA	Dep.	Income
M/F age 9, 1 1, & 13	3.20 (2.30, 4.40)	1.16	0.04							

Undlheim A (2005) ³²				1982	Norway	Longitudinal	National	MFQ	Dep.	Occupation
Female age 12-15	1.06 (0.50, 1.63)	0.06	0.02							
Male age 12-15	1.07 (0.80, 1.34)	0.07	0.08							
POOLED ESTIMATE	2.49 (2.33, 2.67)	0.91223	1.00	34752						

*N.B. all studies were published papers except for StatCan NLSCY (2006), where data was requested.³

The overall pooled variance of the log of the Rate Ratios was 0.91223

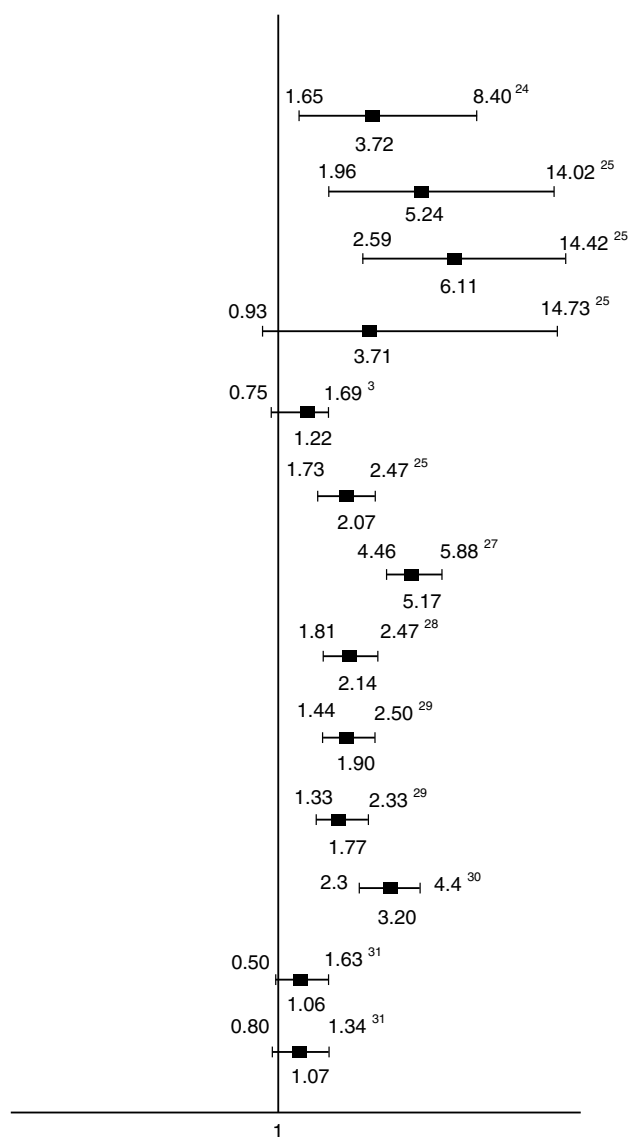


Figure 1. Rate Ratios and Confidence Intervals for nine studies forwarded for statistical pooling

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2.2.

Lemstra M, Bennett N, Neudorf C, Kunst A, Nannapaneni U, Kershaw T, Scott C.

A systematic literature review of drug and alcohol use by socioeconomic status in adolescents aged 10-15 years. *Canadian Journal of Public Health* 2008;99(3):172-177.

Abstract

Introduction

A majority of population based studies suggest the prevalence of drug and alcohol risk behaviour increases during late adolescence to early adulthood. The purpose of this systematic literature review is to clarify if socioeconomic status (SES) is a risk indicator of marijuana and alcohol risk behaviour in adolescents between the ages of 10-15 years.

Methods

We performed a systematic literature review to identify published or unpublished papers between January 01, 1980 and February 09, 2007 that reviewed marijuana and alcohol risk behaviour by SES in adolescents aged 10-15 years.

Results

9,388 titles were screened for relevance. In the end, we found nine studies with a sample size of 219,517 that fulfilled our inclusion criteria and passed the methodological quality review. The prevalence of marijuana and alcohol risk behaviour was 22% higher (RR = 1.22; 95% confidence interval 1.14, 1.31) in adolescents with low SES in comparison to adolescents with higher SES.

Discussion

The evidence suggests that low SES has an association with the prevalence of marijuana and alcohol risk behaviour in adolescents between the ages of 10 to 15 years. Higher rates of marijuana and alcohol risk behaviour among lower SES adolescents may impact emotional development, limit future educational and occupational achievement and increase the likelihood for adult marijuana and alcohol addiction.

Conclusion

Lower SES adolescents have higher rates of marijuana and alcohol risk behaviour than higher SES adolescents.

Introduction

Unhealthy behaviours, such as excessive consumption of alcohol, are one of the main determinants through which socioeconomic status (SES) health differences develop.¹⁻⁷ Explanations for SES differences in unhealthy behaviour have mainly focused on adults, although lifestyle patterns are largely developed during adolescence.⁸ Although the importance of individual lifestyle behaviours in promoting health and preventing disease has long been accepted, little is known about how SES affects the distribution of lifestyle behaviours among children and adolescents.⁹⁻¹⁹

Alcohol is the drug of choice among North American adolescents and it is used by more young people than tobacco or illicit drugs.²⁰⁻²² Alcohol plays a role in adverse health outcomes including being the leading contributor to death from injuries.²³⁻²⁷ For example, morbidity and mortality rates increase 200% from middle childhood to late adolescence/early adulthood.²⁸ This substantial rise is attributable in large part to the increase in risk taking, sensation seeking and erratic behaviour that follows the onset of puberty.²⁹ Underage drinking is associated with academic failure, illicit drug use, tobacco use, risky sexual behaviour and increases the risk of physical and sexual assault.³⁰⁻³⁴ Underage drinking can cause alterations in the structure and function of the developing brain and may have consequences reaching far beyond adolescence.³⁵⁻⁴¹ According to data from the 2005 National Survey on Drug Use and Health (NSDUH), 5.5% of youth between the ages of 12-17 years meet the diagnostic criteria for alcohol abuse or dependence.²⁰

The prevalence of marijuana and alcohol risk behaviour among youth has been steadily increasing since the 1980s with sharp inclines during the early 1990s.⁴²⁻⁵² A World Health Organization cross-national study suggests that for Canadian youth in the 15 year age group, prevalence of alcohol use is 25% for males and 19% for females.⁴⁵ Prevalence of alcohol use for the Canadian 11-13 year age group is 12% for males and 8% for females.⁴⁵ A review of American population based studies suggests that drug and alcohol risk behaviours start at approximately age 10 years and peak between the ages of 14-15 years.^{46,47} The prevalence of alcohol use is higher than drug use amongst adolescents.⁵³⁻⁵⁶

The objective of this meta-analysis was to determine the association between SES and marijuana and alcohol risk behaviour among adolescents aged 10-15 years.

Methods

An epidemiologist and a senior librarian performed a systematic literature review utilizing the databases PubMed, PsycINFO, CINAHL and EMBASE from January 01, 1980 to February 09, 2007. Subject descriptors included the MeSH terms: Ethanol, Alcohol Related Disorders, Alcohol

Drinking, Alcohol Induced Disorders, Fetal Alcohol Syndrome, Alcoholism, Alcoholic Intoxication, Alcoholic Beverages, Socioeconomic, Socioeconomic Factors, Social Class, Health Behaviour, Population Characteristics, Poverty, Educational Status, Occupations, Employment, Drugs, Non Prescription, Street Drugs, Designer Drugs, Psychotropic Drugs, Physiological Effects of Drugs, Marijuana Smoking, Substance Use, Substance Related Disorders, Substance Abuse Detection, Behaviour, Addictive, Social Problems. Limits terms included: Child: 6-12 years, Adolescent: 13-18 years, Publication date 1980-2007, Clinical Trial, Meta-Analysis, Practice Guideline, Randomized Controlled Trial, Review Humans and English language.

We also sought information pertaining to governmental or non-published papers (grey literature). In total, 251 e-mail requests were sent out to all relevant health, mental health, social science and education department heads of Canadian Universities, urban Health Regions, Provincial and Federal Ministries, School Boards, Canadian Mental Health Associations, researchers involved in projects from the National Longitudinal Survey of Children and Youth and independent research agencies (i.e., Statistics Canada). Each of the contacts was asked to forward the e-mail request to any colleague that worked within the area of risk behaviour and adolescents. The original e-mails were sent out during the time period between November 22, 2006 and January 15, 2007. From this process, 13 responses were received.

Two epidemiologists independently screened titles and abstracts of published and unpublished literature for relevance. Inclusion and exclusion criteria were developed and used to assist in the selection of articles for inclusion in the meta-analysis (Table 1). Articles were reviewed in full when criteria within the abstract did not provide enough detail to make a decision. Reference lists of articles were examined. Full articles were reviewed independently by a panel of three reviewers consisting of two epidemiologists and a medical health officer. The panel independently appraised the methodological quality of a study with pre-established criteria in two stages: 1) assess the presence of selection, information or confounding bias and 2) review the study design, study population, variable definition, participation rate, sample size, measurement technique, and analysis strategy (Table 2).⁵⁷ Except for major violations, a study required an overall score of at least 10 out of 15 to be accepted. The statistical basis for the meta-analysis was taken from Fleiss 1993.⁵⁸ Data analysis included the total number of studies found in comparison to a sample.⁵⁸ The sample sizes from each of the reviewed studies had the statistical assumption that they were large.⁵⁸ A computer program was built that utilized the following formulas:⁵⁸

The fixed effects model was chosen with:

$$\begin{array}{lll} \text{effect size} & \text{standard error} & \text{and 95\% confidence interval } (\psi) \\ \bar{Y} = \frac{\sum W_c Y_c}{\sum W_c} & SE(\bar{Y}) = (\sum W_c)^{-1/2} & Y - z_{\alpha/2} / \sqrt{\sum W_c} \leq \psi \leq \bar{Y} + z_{\alpha/2} / \sqrt{\sum W_c} \end{array}$$

The meta-analytic approach took a weighted average of each study result (slope or β). The study weight (W) was the inverse of the variance computed from the estimated standard error or $SE(\beta)^2$ as $1/SE(\beta)$ and where Y was the effect size. Weighted slopes were calculated by weighting each β as follows:

$$\beta_w = \sum [\beta \cdot 1/\text{var}(\beta)] / \sum 1/\text{var}(\beta) \quad \text{where} \quad \text{var}(\beta) = SE(\beta)^2$$

The pooled estimate of the $SE(\beta_w)$ was: $1/\sqrt{\sum W_i}$

The pooled estimate of the 95% confidence interval of β_w was: $\beta_w \pm 1.96 * SE(\beta_w)$

Because the rate ratio (RR) is less prone to artificial appearance of inter-study heterogeneity, the adjusted RR is presented with 95% percent CIs.⁵⁸

The assumption of homogeneity of variance is given by: $\chi^2 = \sum W(\beta - \beta_w)^2$ which, if the studies are estimating the same value for the effect, has a chi square distribution with degrees of freedom one less than the number of studies.⁵⁹

Sensitivity analysis was reviewed by looking at the individual influence of a study and then repeating the analysis without studies with the largest weights. This produced change in inference (greater than 15 percent change in RR), it was therefore determined that inclusion of the study warrants caution in the interpretation.⁵⁹ The point estimates of individual studies were plotted against the inverse of their variance or sample size in order to visualize a funnel shape scattered around the true value of the point estimate.⁵⁹ This funnel plot was used to assess publication bias.⁵⁹

Results

The selection of articles for the systematic literature review is summarized in Table 3. PubMed, PsycINFO, CINAHL and EMBASE identified 8,897 titles which were screened for relevance. The grey literature search resulted in one additional title. An additional 490 titles were identified from reference sections in reviewed papers from the above databases. From the total of 9,388 titles screened for relevance, the overall search yielded 1,327 abstracts. Of the 1,327 abstracts, 629 articles were selected for full review including reference sections. Out of the 629 articles selected for review, nine met the inclusion criteria and passed the methodological quality review. These nine studies were forwarded for statistical pooling.

Of the nine pooled studies, three were American, five were European and one international study included both of these geographic locations (Table 4).^{8,11,60-66} Seven studies were national samples and two were provincial/state or regional. All studies used marijuana and or alcohol risk behaviour as an outcome measure. Parental income was used as the socioeconomic indicator in five studies, occupational classification was used in two studies, parental education was used in two studies and one study also included parental education as a secondary SES indicator. Sample sizes varied from 1,000 to 162,305.

In total, the overall sample size used for the meta-analysis was 219,517 adolescents (Table 4). The statistical pooling of the nine studies resulted in an overall RR of 1.22 with a 95% CI of 1.14 to 1.31. Six studies out of nine and seven results (additional stratifications by gender and age) reported an inverse association between SES and marijuana and alcohol risk behaviour. The rate ratios ranged from a low of 0.09 to a high of 1.85. Nine individual results out of 16 had lower confidence limits that crossed 1. The result of the overall test of homogeneity of variance was $p < 0.00$, suggesting highly significant heterogeneity between studies. Stratifications by study design, year of publication, scale to measure risk behaviour and construct used to measure parental SES did not significantly explain heterogeneity between studies. Stratification by gender on two studies revealed no statistically significant difference between male and female adolescents (Table 4).

Sensitivity analysis individually removed one study comprised of two results with relative weights of 0.25 and 0.31. With all studies included, the pooled RR was 1.22, (95% CI 1.14, 1.31) in comparison to a pooled RR of 1.03, (95% CI 0.93, 1.14) when one well designed study with narrow confidence intervals was removed. The changes in the RR and 95% CI were statistically significant therefore caution is recommended when interpreting the results. There were not enough studies accepted in order to visualize a funnel shape to the data to formally assess publication bias.

Discussion

This meta-analysis found that adolescents with low SES are 22% more likely to engage in marijuana and alcohol risk behaviour than other adolescents with higher SES.

As reported, gender is not a likely explanation for heterogeneity in the estimate. This finding is relevant because gender differences in rates of marijuana and alcohol risk behaviour emerge around the age of 11 years and continue through to age 15 years or older.⁶⁶⁻⁷⁰ Stratification by country of origin revealed that American and New Zealand studies (inverse association) had statistically significant variability in the reported effects as compared to European and UK studies (mostly no association). The differences between the cultural norms and expectations of these two geographical locations regarding marijuana and alcohol risk behaviour may, in part, explain the heterogeneity between studies included in the analysis.⁶⁵ Overall, the papers have contradictory and negative results so publication bias is not suspected.

There are several limitations to discuss. First, the review of the grey literature is mainly influenced by contact with Canadian researchers. Second, there were two studies that included ages above the age range of 10 to 15 years. The authors were unable to separate age groupings. Third, the authors did not examine causation or selection. Fourth, measurement scales for marijuana and alcohol use vary between studies. Fifth, the results of the meta-analysis were highly influenced by one study.

The association between SES and drug and alcohol risk behaviour is well known for adult populations.^{1,8} We found a correlation between SES and marijuana and alcohol risk behaviour for adolescents aged 10-15 years. Prevention or cessation strategies for youth that do not address SES as a component of intervention would likely be met with limited success. SES is one variable that should be further explored as a mediating or explanatory factor for increased marijuana and alcohol risk behaviour among adolescents. The identification of determinants, and how SES impacts risk behaviour in adolescents, should become an important public health priority in Canada.

Table 1 Inclusion and Exclusion Criteria**Inclusion Criteria:**

1. Published or unpublished literature that examined risk behavior (drug use once per month or more and or one full alcohol drink per month or more) by SES in adolescents between the ages of 10 and 15 years. Studies were accepted if the age range crossed an age period that included, but was not exclusive, to adolescents between the ages of 10 to 15 years (e.g. 15 to 17 years).
2. Population based cross sectional surveys or cohort/longitudinal studies.
3. Defined SES as parental income, education, employment status or occupational classification.
4. Data from Canada, United States, Western Europe, Australia or New Zealand.
5. Articles published in English language.

Exclusion Criteria:

1. Opinion papers, letters to the Editor, case reports, case studies or natural experiments.
2. Randomized trials or clinical settings.
3. Any paper where the baseline data was not presented or available upon request.

Table 2 Methodological Evaluation Criteria

1. Research question is well stated.
2. Source population is identified and appropriate.
3. Inclusion criteria are described and appropriate.
4. Exclusion criteria are described and appropriate.
5. Participation rate is reported and appropriate.
6. Sample size is preplanned and provides adequate statistical power.
7. Baseline comparability of various groups is reported.
8. Same data collection method is used for all respondents.
9. Important baseline variables are measured, valid, and reliable.
10. Outcome is defined and measurable.
11. Outcome measure is validated.
12. Outcome assessment was blind or free from bias.
13. Statistical analysis is appropriate.
14. Adjustment is made for important covariates.
15. The results are verifiable from the baseline data.

Table 3 Flow Chart Describing the Systematic Literature Review and Selection of Articles

PubMed	PsycINFO	CINHAL	Embase	Grey Lit	Reference List	Total
2733 Titles	685 Titles	3660 Titles	1819 Titles	1 Titles	490 Titles	9388 Titles
Screen 1- Review of Abstracts:						
327	225	254	256	1	264	1327
Screen 2- Review of Full Articles:						
94	117	76	77	1	264	629
Screen 3- Met Inclusion Criteria and Passed Methodological Review:						
0	2	0	1	0	6	9
Statistical Pooling of 9 papers.						

Table 4 Summary of Results of Meta-Analysis

Study	RR (95% CI)	In (RR)	Relative weight	Sample size	Country of origin	Study design	Geographical coverage	Outcome measure	SES
Elgar F (2005) ⁶⁵				162,305	34 Countries	Cross Sectional	International	Alcohol	Income
M/F age 11									
Low vs High	0.95 (0.43, 2.11)		0.01						
Low vs Med	2.01 (1.21, 3.33)								
M/F age 13									
Low vs High	0.93 (0.54, 1.62)		0.01						
Low vs Med	1.59 (0.96, 2.65)								
M/F age 15									
Low vs High	0.53 (0.31, 0.90)		0.02						
Low vs Med	0.74 (0.41, 1.35)								
Boys A (2003) ⁶⁶				2,624	UK	Cross Sect	National	Drugs	Income
M/F age 13 - 15								Alcohol	
Drugs									
Low vs High	0.2 (0.28, 0.68)		0.00						
Alcohol									
Low vs High	0.09 (0.05, 0.23)		0.00						
Low vs Med	0.54 (0.07, 1.09)								
Droomers M (2003) ³				1,000	New Zealand	Longitudinal	Regional	Alcohol	Father's Occupation
M/F age 11									
Low vs High	1.85 (1.32, 2.60)		0.04						
Blenkinsop S (2001) ⁶⁰				9,000	UK	Cross Sect	National	Alcohol	Income
Male age 11- 15									
Low vs High	0.62 (0.03, 1.20)		0.01						
Low vs Medium	0.83 (0.60, 1.07)								
Female age 11 - 15									
Low vs High	0.28 (0.37, 0.93)		0.00						
Low vs Medium	0.44 (0.25, 1.13)								

Lintonen T (2000) ⁶¹				6,321	Finland	Cross Sectional	National	Alcohol	Parental Education
Male age 9 - 13									
Low vs High	1.1 (0.9, 1.5)		0.05						
Wallace J (1999) ⁶²				25,000	USA	Cohort	National	Alcohol	Education
Male age 13									
Low vs High	0.98 (0.75, 1.27)		0.07						
Male age 15									
Low vs High	1.08 (0.81, 1.44)		0.05						
Miller D (1997) ⁶³				1,725	USA		National	Drugs	Income
M/F age 11-17									
Low vs High	1.72 (0.80, 3.70)		0.01						
Lowry R (1996) ¹¹				6,321	USA	Cross Sectional	National	Alcohol	Education
M/F age 12-17									Income
Low vs High	1.35 (1.17, 1.52)		0.31						
Education									
Low vs High	1.47 (1.25, 1.68)		0.25						
Donato F (1995) ⁶⁴				5,221	Italy	Cross Sectional	Regional	Alcohol	Occupational Category
Males age 14	1.0 (0.8, 1.2)		0.13						
Females age 14	1.4 (1.0, 1.9)		0.05						
POOLED ESTIMATE	1.22 (1.14, 1.31)	0.20115	1.00						
The overall pooled variance of the log of the Rate Ratios was			0.00114						

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2.3.

Lemstra M, Neudorf C, Opondo J.

Health disparity by neighbourhood income. Canadian Journal of Public Health 2006;97:435-9..

Abstract

Introduction

Canadian cities are becoming more segregated by income. As such, investigation is required into the magnitude of health disparity between low, average and high income neighbourhoods in order to quantify the level of health disparity at the scale of an urban city.

Methods

A cross sectional study design was used to review hospital discharges, physician visits, medication utilisation, public health information and vital statistics for an entire city by neighbourhood income status. Postal code information was used to identify six existing contiguous residential neighbourhoods in the city of Saskatoon that were defined as low income cut-off neighbourhoods (N= 18,228). There were two comparison groups: all other Saskatoon residents (N= 184,284) and five affluent neighbourhoods in Saskatoon (N=16,683).

Results

Statistically significant differences by neighbourhood income status were observed for: a) healthcare utilization for suicide attempts, mental disorders, injuries and poisonings, diabetes, chronic obstructive pulmonary disease, coronary heart disease, and b) in the incidence of chlamydia, gonorrhea, hepatitis C, teen birth, low birth weight, infant mortality and all-cause mortality. The rate ratios increased in size when comparing low income neighbourhoods to high income neighbourhoods. No clear trend was observed for stroke or cancer.

Discussion

The findings that health outcome is associated with income is not a new finding. What is new, however, is the magnitude of the disparity in health between low income residents and other residents of Saskatoon.

Conclusion

The findings suggest that low income neighbourhoods are associated with increased healthcare utilization and increased incidence of disease in Saskatoon.

Introduction

Many studies from different countries and diverse settings have found a strong correlation between life expectancy and socioeconomic status (SES).¹⁻⁵ Historically, most of the studies reviewing SES and health status are at the individual rather than the neighbourhood level.^{3,6-13} Recent studies suggest that neighbourhood SES can independently influence individual health above and beyond individual SES.⁹⁻¹³ As such, research on the independent effect of individual and neighbourhood SES on health status is fairly well documented. Although the previous research is very important, there are several considerations: 1) most peer reviewed research in this area is American or British, 2) most papers use national level census data with analysis at the national or provincial level, 3) when national level census data is broken down into regional data, the census tract boundaries can create proxies for neighbourhoods that might not be meaningful, 4) analysis at the regional level normally results in very small sample size and 5) health information is normally self reported.^{6,9-16}

Almost all Canadian cities are becoming more segregated by income.¹⁴ As such, investigation is required into the magnitude of health disparity between low, average and high income neighbourhoods in order to quantify the level of health disparity at the scale of an urban city.¹⁴ The objective of the current research is to use a cross sectional ecological study design to determine the association between neighbourhood income and healthcare utilization in the City of Saskatoon, Canada (N = 202,512).

Methods

The last census in Canada was performed in 2001.¹⁷ Postal code information from the census was used to identify six existing residential neighbourhoods in the city of Saskatoon that were defined as “low income cut-off neighbourhoods” by Statistics Canada.¹⁸ All six neighbourhoods were touching or contiguous pre-existing municipal boundaries (Figure 1). A neighbourhood is designated low income (or high poverty) when more than 30% of the families in the neighbourhood meet the definition of low income cut-off. A family is designated low income when they spend more than 70% of family income on basic necessities like food, shelter and clothing. Cut-off points are adjusted for family size, population of city or area of residence, urban/rural differences and consumer price index. Additional socioeconomic information from the census was collected including neighbourhood education status and employment status (Table 1).

Healthcare utilization information in Saskatchewan includes location of residence by postal code. As such, specific health information was collected on residents that lived in the low income neighbourhoods (N= 18,228). Two comparison groups were established. The first comparison group was all other Saskatoon residents (N= 184,284). The second comparison group was the five most affluent neighbourhoods in Saskatoon identified by Statistics Canada census information on income status. The five neighbourhoods in the affluent group were also contiguous municipal boundaries and had similar population size (N=16,683) as the low income neighbourhoods (Figure 1).

Saskatchewan has universal health coverage for all residents with a centralized administrative database that collects information on all hospital discharges or separations, physician visits, medication usage, public health information and vital statistics. Information was collected on

the eight most common diseases and disorders in Saskatoon (suicide attempt, mental disorder, injuries and poisonings, diabetes, chronic obstructive pulmonary disorder, coronary heart disease, stroke and cancer) resulting in hospital discharge by most responsible diagnosis (ICD9 codes¹⁹) for the year 2001 (to coincide with the latest census year). The positive predictive value of a primary diagnosis from hospital data in Saskatchewan is 90%.²⁰ Information on the same diseases (excluding suicide attempts) was collected for overall physician visits in 2001.

Medication information was collected for all prescriptions filled in 2001 for the entire population for mental disorders (antidepressants and antipsychotic agents) and diabetes (insulin pork/human biosynthetic and oral hypoglycemics). Medication data required an extra data request from Health Canada as the federal government in Canada is responsible for payment of medication expenses for Registered Indians (a historical legal term for treaty purposes).

Missing data is unlikely because documentation for hospital visits, physician visits and medication payments are required for administrative, legal and financial reasons. Misclassification at point of data entry is unlikely due to double data entry and verification procedures.

Public health information was collected on the three most common infectious diseases in 2001 (Chlamydia, gonorrhea and hepatitis C). The rates for these diseases were based on positive provincial lab test counts for new cases in 2001 and not for investigations or treatment. Vital statistics information included teen births (15-19 years old) and low birth weights (less than 2,500 grams). All cause mortality and infant mortality for the year 2001 were also included. Public Health and vital statistics information were generated by Saskatchewan Health and verified by Population Health Surveillance at the Saskatoon Health Region.

Age standardized rates were computed for the diseases and disorders mentioned above for the low income neighbourhoods, the rest of Saskatoon and the affluent neighbourhoods. Age standardization used a direct method with the 2001 Canadian population as the standard. The denominator was per 100,000 population in 2001 for all variables except teen birth and infant mortality (per 1,000 live births). Population size was based on the population covered by Saskatchewan Health insurance. Ninety-five percent confidence intervals were built around all rates. Rate ratios were computed for healthcare utilization data (hospital discharge, physician visit, medication usage) and incidence rate ratios were computed for incidence data (public health and vital statistics) for the year 2001.²¹ Rate ratios were computed between 1) the low income neighbourhoods and the rest of Saskatoon and 2) the low income neighbourhoods in comparison to the affluent neighbourhoods. Ninety-five percent confidence intervals were built around the rate ratios.

Healthcare utilization information submitted to the research team was de-identified and in aggregate form. The project received ethics approval from the University of Saskatchewan Behavioural Research Ethics Board.

Results

The low income neighbourhoods are significantly different in income status in comparison to the rest of Saskatoon and the affluent neighbourhoods as well as education status and employment status (Table 1). There were no statistically significant socioeconomic differences between the six low income neighbourhoods themselves or the five affluent neighbourhoods.

Comparing 2001 age-standardized hospital separations between the low income neighbourhoods and the rest of Saskatoon, the rate ratio was significantly different for suicide attempts (RR=3.75), mental disorders (RR=1.85), injuries and poisonings (RR=1.54), diabetes (RR=3.98), chronic obstructive pulmonary disease or COPD (RR=1.38) and coronary heart disease or CHD (RR=1.34). Comparing the low income neighbourhoods to the affluent neighbourhoods, significant differences were observed for suicide attempts (RR=15.58), mental disorders (RR=4.27), injuries and poisonings (RR=2.46), diabetes (RR=12.86) and CHD (RR=1.70). There were no statistically significant differences observed for stroke or cancer (Table 2).

For overall number of physician visits in 2001, the rate ratio between the low income neighbourhoods and the rest of Saskatoon had significant differences for mental disorders (RR=1.52), injuries and poisonings (RR=1.35), diabetes (RR=1.71), COPD (RR=1.43) and CHD (RR=1.12). Comparing the low income neighbourhoods to the affluent neighbourhoods, significant rate ratios were observed for mental disorders (RR=2.28), injuries and poisonings (RR=1.91), diabetes (RR=2.11), COPD (RR=2.42), CHD (RR=1.44) and stroke (RR=1.58). Overall cancer treatments by physicians were lower in the low income neighbourhoods in comparison to the rest of Saskatoon (RR=0.77) (Table 2).

The rate ratio for prescriptions filled for mental disorders in the low income neighbourhoods to the rest of Saskatoon was significant (RR=1.21) as was diabetes medications (RR=1.80). Comparing the low income neighbourhoods to the affluent neighbourhoods, significant differences were observed for both mental disorders (RR=1.62) and diabetes medications (RR=2.60) (Table 2).

Reviewing public health information, we found that comparing the low income neighbourhoods to the rest of Saskatoon resulted in incidence rate ratios of 4.32 for chlamydia, 7.76 for gonorrhea and 8.04 for hepatitis C. Comparing the low income neighbourhoods to the affluent neighbourhoods, the rate ratio for chlamydia was 14.89 and 34.60 for hepatitis C. There was no gonorrhea diagnosed in the affluent neighbourhood in 2001 (Table 2).

Significant differences were observed in rate ratios comparing the low income neighbourhoods to the rest of Saskatoon for teen births (RR=4.21), low birth weight (RR=1.46) and infant mortality (RR=5.48). Significant differences were also found comparing the low income neighbourhoods to the affluent neighbourhoods for teen births (RR=16.49), low birth weight (RR=1.10), infant mortality (RR=3.23) and all cause mortality (RR=2.49) (Table 2).

Discussion

Previous reports have found associations between neighbourhood socioeconomic status and all cause mortality, infant mortality, infant birth weight, suicide, long term illness, coronary heart disease, disability, chronic conditions and depression.^{11,13} The neighbourhood effects found in previous multivariate analysis studies that control for individual SES are modest and at times contradictory.^{9,11-16,22}

The investigators reviewed cross sectional ecological data to determine the association between neighbourhood income and healthcare utilization in the City of Saskatoon. Significant differences were found for suicide attempts, mental disorders, injuries and poisonings, diabetes, chronic obstructive pulmonary disease, coronary heart disease, chlamydia, gonorrhea, hepatitis C, teen birth, low birth weight, infant mortality and all cause mortality. The rates ratios were larger when

comparing low income neighbourhoods to high income neighbourhoods. No clear or consistent pattern was observed for stroke or cancer. This finding for cancer has been demonstrated previously.⁷

There are several limitations that must be discussed. First, the study design is cross sectional. Any finding must be seen as associative and not cause and effect. Second, information on individual income was not collected. The study design was not intended to review the independent effect of neighbourhood income while controlling for individual income status or other covariates. Third, the study only gathered data on those who presented to healthcare and as such there is no way of knowing true disease prevalence or incidence. Finally, the authors do not address the issue of selection: does income cause health or does health cause income?

Most researchers conclude that where you live matters to health but not as much as who you are.²³ Rather than being a single universal neighbourhood effect on health, there appears to be some area effects on some health outcomes, in some population groups, and in some types of areas.²³ That said, Canadian neighbourhoods have become increasingly polarized among income lines.¹⁴ As such, neighbourhoods might become more important in explaining health inequalities in the future.¹⁴ In Saskatoon, low income neighbourhoods were associated with increased healthcare utilization and, as such, neighbourhoods might have an important independent effect in a multivariate model currently being developed.

In summary, one review suggests Canada still has a poor conceptualization of the influence of income on health.²⁴ The current study represents a simple yet effective way to assess and quantify the magnitude of health disparity in an urban setting. The findings suggest that low income neighbourhoods are associated with increased healthcare utilization in Saskatoon.

Table 1 Comparison of Socioeconomic Status in Saskatoon Neighbourhoods

	Core	Rest of Saskatoon	Affluent
Population size*	18,228	184,284	16,683
Incidence low income, % (CI)**	44.0 (42.5-45.6)	12.3 (12.0-12.6)	3.7 (3.2-4.3)
Less than grade 9 education, % (CI)	14.8 (14.2-15.5)	5.3 (5.1-5.4)	2.2 (2.0-2.5)
Unemployment, % (CI)	18.1 (17.2-19.1)	6.5 (6.3-6.6)	4.3 (3.9-4.7)

Information Source: 2001 Statistics Canada Census

* Population size is based on the Saskatchewan Health covered population

** (CI) refers to 95% confidence interval

Table 2 Health Disparity by Neighbourhood Income in Saskatoon

Disease category and ICD9 code range	2001 Age-standardized rate (95% confidence intervals)			Ratios (95% CI)	Ratios (95% CI)
	Low Income Neighbourhoods	Rest of Saskatoon	Affluent Neighbourhoods	Low: Rest	Low: Affluent
	N = 18,228	N = 184,284	N = 16,683		
Number of Hospital Separations*:					
Suicide Attempt (E950-959, E980-989)	242.88 (171.12-314.65)	64.82 (53.17-76.47)	15.59 (-2.05-33.22)	3.75 (2.65-5.30)	15.58 (4.84-50.16)
Mental Disorders (290-318)	885.42 (746.49-1024.37)	479.90 (448.30-511.50)	207.20 (129.05-285.36)	1.85 (1.56-2.19)	4.27 (2.84-6.43)
Injuries and Poisonings (E800-999)	2019.94 (1813.56-2226.32)	1307.59 (1256.13-1359.05)	819.79 (674.32-965.26)	1.54 (1.39-1.72)	2.46 (2.01-3.02)
Diabetes (250)	212.43 (143.03-281.82)	53.41 (42.99-63.82)	16.52 (3.30-29.74)	3.98 (2.72-5.82)	12.86 (5.42-30.51)
Chronic Obstructive Pulmonary Disorder (490-496)	251.05 (173.25-328.85)	181.54 (162.54-200.53)	163.80 (88.13-239.47)	1.38 (1.01-1.92)	1.53 (0.88-2.67)
Coronary Heart Disease (410-414)	533.27 (418.55-648.00)	399.04 (371.20-426.89)	313.54 (208.15-418.93)	1.34 (1.07-1.68)	1.70 (1.14-2.53)
Stroke (430-438)	204.29 (131.18-277.39)	154.18 (136.82-171.54)	112.29 (42.69-181.89)	1.33 (0.91-1.93)	1.82 (0.89-3.72)
Cancer (140-.0-239.9)	428.42 (323.46-533.38)	479.90 (448.30-511.50)	421.17 (302.02-540.31)	0.89 (0.69-1.15)	1.02 (0.70-1.48)
Discrete Physician Visits*:					
Mental Disorders (290-318)	18419.05 (17790.80-19047.31)	14834.93 (14659.99-15009.87)	10324.28 (9830.58-10817.98)	1.24 (1.20-1.28)	1.77 (1.56-2.01)
Injuries and Poisonings (E850-999)	19558.08 (18959.11-20157.05)	18513.29 (18316.76-18709.83)	14031.17 (13504.34-14558.00)	1.06 (1.03-1.09)	1.38 (1.08-1.76)
Diabetes (250)	4080.39 (3767.89-4392.88)	2747.00 (2673.45-2820.56)	2295.18 (2034.59-2555.77)	1.49 (1.37-1.61)	1.77 (1.53-2.06)
Chronic Obstructive Pulmonary Disorder (490-496)	10124.6 (9705.50-10543.70)	8272.19 (8140.86-8403.51)	5021.66 (4711.96-5331.36)	1.22 (1.17-1.28)	1.98 (1.84-2.13)
Coronary Heart Disease (410-414)	2796.69 (2531.42-3061.96)	2650.73 (2578.79-2722.66)	2318.35 (2033.80-2602.91)	1.06 (0.96-1.16)	1.20 (1.04-1.39)
Stroke (430-438)	694.13 (561.98-826.27)	813.33 (773.39-853.27)	694.71 (525.82-863.60)	0.85 (0.70-1.04)	1.00 (0.82-1.21)

Cancer (140.0-239.9)	1716.09 (1508.69-1923.50)	2245.54 (2179.21-2311.87)	1947.55 (1694.75-2200.35)	0.76 (0.68-0.86)	0.88 (0.77-0.99)
Overall Number of Physician Visits*:					
Mental Disorders (290-318)	94707.59 (93273.31-96141.87)	62232.75 (61875.27-62590.23)	41261.54 (40256.35-42266.74)	1.52 (1.51-1.53)	2.28 (2.12-2.45)
Injuries and Poisonings (E850-999)	35776.38 (34953.35-36599.41)	26436.80 (26201.98-26671.62)	18444.12 (17845.01-19043.22)	1.35 (1.33-1.38)	1.91 (1.68-2.18)
Diabetes (250)	15804.63 (15187.06-16422.20)	9244.56 (9109.66-9379.46)	7456.22 (6979.05-7933.39)	1.71 (1.64-1.78)	2.11 (1.92-2.32)
Chronic Obstructive Pulmonary Disorder (490-496)	22853.39 (22234.48-23472.29)	15954.49 (15772.73-16136.25)	9277.95 (8840.36-9715.53)	1.43 (1.40-1.47)	2.42 (2.30-2.54)
Coronary Heart Disease (410-414)	9978.65 (9474.00-10483.31)	8911.89 (8780.12-9043.65)	6893.25 (6391.47-7395.03)	1.12 (1.06-1.18)	1.44 (1.33-1.56)
Stroke (430-438)	3776.37 (3465.53-4087.21)	4313.55 (4221.77-4405.33)	2391.42 (2080.32-2702.52)	0.88 (0.81-0.95)	1.58 (1.45-1.72)
Cancer (140.0-239.9)	4027.99 (3708.07-4347.91)	5233.69 (5132.43-5334.95)	4005.07 (3644.51-4365.63)	0.77 (0.71-0.83)	1.00 (0.92-1.09)
Medication Usage*					
Mental Disorders	79154.85 (77823.42-80486.27)	65159.52 (64795.81-65523.23)	48990.73 (47871.85-50109.61)	1.21 (1.20-1.23)	1.62 (1.60-1.63)
Diabetes	42902.94 (41889.07-43916.80)	23819.21 (23602.35-24036.07)	16491.26 (15793.52-17189.00)	1.80 (1.77-1.84)	2.60 (2.52-2.69)
Public Health*:					
Chlamydia	1159.06 (1004.84-1313.27)	268.25 (244.33-292.17)	77.82 (35.52-120.12)	4.32 (3.68-5.07)	14.89 (8.51-26.06)
Gonorrhea	300.33 (221.67-379.00)	38.71 (29.64-47.78)	0	7.76 (5.46-11.02)	n/a
Hepatitis C (070.41,44,50,54)	399.27 (307.04-491.49)	49.66 (39.46-59.86)	11.54 (-4.63-28.60)	8.04 (5.90-10.95)	34.60 (8.49-140.99)
Vital Statistics :					
Teen (15-19) Births**	98.13 (73.90-122.36)	23.33 (19.62-27.04)	5.95 (0.12-11.79)	4.21 (3.16-5.60)	16.49 (6.04-45.03)
Low Birth Weight (%)	9.20 (6.0-12.5)	6.30 (5.2-7.4)	8.40 (3.8-12.9)	1.46 (1.01-2.12)	1.10 (0.59-2.03)

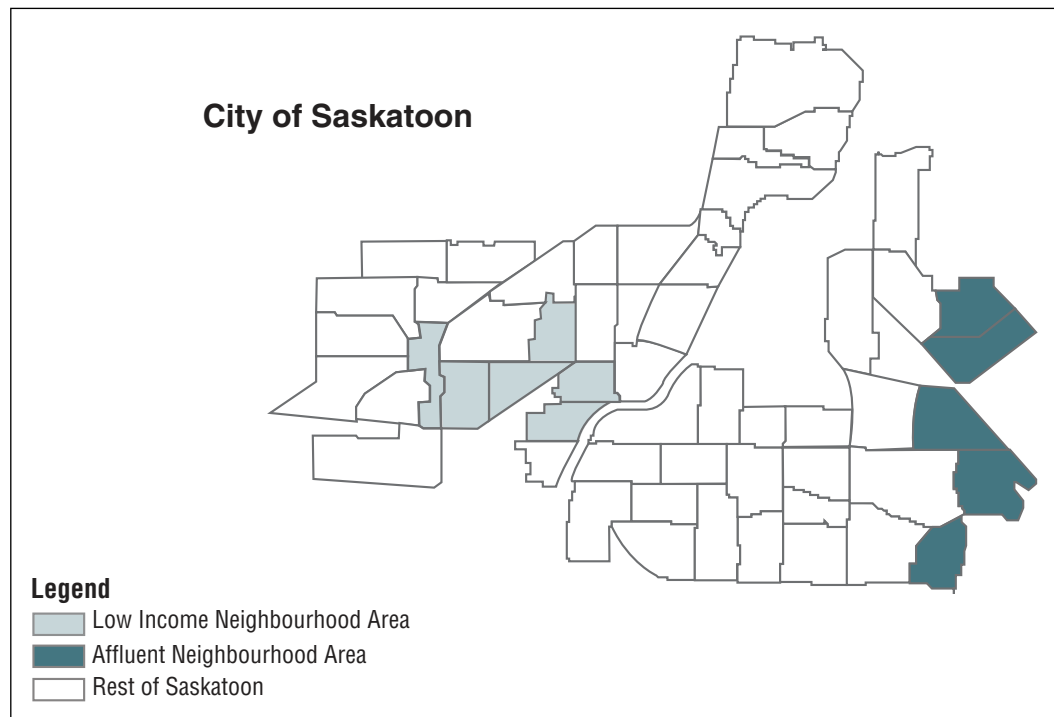
Mortality					
Infant Mortality**	20.83 (5.40-36.27)	3.80 (1.17-6.43)	6.45 (-6.19-19.10)	5.48 (2.00-15.02)	3.23 (0.40-26.02)
All Cause Mortality	671.69 (548.93-794.46)	645.21 (609.79-680.62)	269.96 (164.15-375.81)	1.04 (0.86-1.26)	2.49 (1.62-3.83)

* Age standardized rate per 100,000 population

** Rate per 100 live births

How to read: suicide attempts are 15.58 times more common in Saskatoon's six low income neighbourhoods in comparison to Saskatoon's five affluent neighbourhoods. This is a difference of 1458 percent (15.58 minus 1).

Figure 1 **Statistics Canada Low Income Cut-Off Designation for Six Saskatoon Residential Neighbourhoods in 2001**



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2.4.

Lemstra M, Neudorf C, Mackenbach J, Kershaw T, Nannapaneni U.

Health disparity: the role of economic status and Aboriginal cultural status after multivariate adjustment. Submitted for Publication.

Abstract

Introduction

The main purpose of the current study was to determine if economic status and Aboriginal cultural status were independently associated with three completely divergent health outcomes after controlling for other variables.

Methods

Data from three cycles of the Canadian Community Health Survey were merged with identical data collected by the Saskatoon Health Region in 2007. The three health outcomes included self report health, heart disease prevalence and diabetes prevalence. The risk indicators included disease intermediaries, behaviours, life stress, mental health, healthcare utilization, socioeconomic status and cultural status.

Results

5948 participants completed the survey with a response rate of 81.1%. After cross tabulation, Aboriginal cultural status and income were initially strongly associated with almost all health outcomes, disease intermediaries, behaviours, life stress and healthcare utilization variables. After full multivariate adjustment, income retained its strong association while Aboriginal cultural status had a more limited association with the three health outcomes. After controlling for all other variables, low income residents were 50% more likely to have lower self report health, 196% more likely to have diabetes and 118% more likely to have heart disease in comparison to higher income residents.

Discussion

The research contributes to the literature because there are few studies that review the association between Aboriginal cultural status and poor health outcome after multivariate adjustment. Other than age, income status had the strongest association with poor health outcomes.

Conclusion

Reduction of health disparity in low income and Aboriginal populations appears possible.

Introduction

In Canada, it is not difficult to find a government agency reporting that Aboriginal cultural status is associated with poor health.^{1,2} For example, the Health Canada website reports that First Nations are more likely to experience poor health outcomes in essentially every indicator possible.³ One of the concerns associated with this discussion is that it gives policy makers and the public at large the impression that health disparity is not preventable because a major determinant of health (cultural status) is not modifiable.

A comprehensive report on socioeconomic inequalities in health suggests that the main factors contributing to health inequity include: behavioural factors (smoking, alcohol, exercise, fruit and vegetables, and obesity), psychological factors (stress), material or environmental factors (income, education, living in a disadvantaged neighbourhood and working conditions), access to health care and cultural status.⁴ These specific risk indicators for health disparity formed the basis of our study and analysis.

After determining the covariates associated with poor health outcome, the purpose of the current study was to determine if economic status and Aboriginal cultural status are independently associated with three completely divergent health outcomes in the Saskatoon Health Region after controlling for other covariates.

Methods

The Canadian Community Health Survey (CCHS) is administered by Statistics Canada with the central objective of collecting health related data at the level of health regions; where an increasing number of decisions to improve population health are made in Canada.⁵ The sample size for each health region is chosen to represent a sample large enough to provide valid and reliable information for a health region within any given cycle.⁵ The decision to use this dataset was based on the fact that every health region in Canada would be able to replicate the study design in order to facilitate local decision making.

The CCHS consists of cross sectional self report surveys in 2000/01, 2003 and 2005. Data that was collected by Statistics Canada on all three cycles of the CCHS were merged with identical questions asked in February of 2007 by the Saskatoon Health Region (SHR). The four datasets were merged in order to gain precision on risk indicators for health outcomes. All four cycles were random phone survey samples. The target population included approximately 98% of the SHR. The methodology of the CCHS has been documented in detail previously.⁵

The health outcomes in the current study included self report health (excellent, very good, good, below average, poor), heart disease prevalence and diabetes prevalence.

The baseline demographics included family income (0-\$25,000, \$25,001-\$75,000 and above \$75,000), neighbourhood income (six contiguous low income neighbourhoods defined by the 2001 census Low Income Cut-Off⁶, rest of Saskatoon and rural), individual education (less than high school graduate, high school graduate, post secondary graduate), cultural status (Caucasian, Aboriginal or Other), age and gender. Disease intermediaries included high blood pressure diagnosed by a physician and a body mass index over 30. Behaviours included physical inactivity (composite index including multiple activities, frequency, duration and MET intensity), daily smoking, having more than five drinks of alcohol at one time at least once per

week in the past twelve months and consuming less than five fruits and vegetables (within six different categories) on a daily basis. Life stress was measured by asking one question on current amount of stress in daily life. Mental health included one question of lifetime suicide ideation. Consultations with a family physician and consultations with a mental health worker (social worker, counsellor or psychologist) in the past year were also included. All of the main risk indicators for health inequality mentioned in the introduction were able to be tested by using the CCHS except working conditions; which was not asked in the survey.⁴

Cross tabulations were computed between the demographics of income (family and neighbourhood), education and cultural status and the various health outcomes: disease intermediaries, behaviours, life stress and health care consultation variables. Three separate binary logistic regression models were built to describe the relationship between the three outcome variables of a) lower self report health (good, below average or poor), b) presence of heart disease, and c) presence of diabetes and all remaining covariates. A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.⁷ In the final model, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the $-2 \log$ likelihood and the Wald test.⁸ The final models included factors with beta values for which the p values were less than 0.05.⁸ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.⁸ Interaction was assessed with product terms.⁸ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.⁸ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.⁸ The final results were presented as adjusted odds ratios with 95 percent confidence intervals.⁸ All analyses were performed with an SPSS 13.0 software package.⁹

The study design and the analysis plan were determined a priori as part of a Canadian Institutes of Health Research grant. Ethical approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board.

Results

Over four cycles in 2001, 2003, 2005 and 2007, 7332 residents of SHR were asked to complete a health survey with 6127 residents agreeing to participate (83.6%) and valid data available on 5948 participants (81.1%). By individual cycle, the sample sizes were 1174, 1082, 1177 and 2515 which totals to 5948. Overall, the mean age was 46.3 (SD 20.32). Females represented 55.2% of the sample and Caucasians represented 82.9% of the sample while Aboriginal people represented 10.4% of the sample. In comparison to 2001 census data for SHR, the sample had a statistically significant difference in age (22.0% of the sample was over the age of 65 in comparison to 13.2% of census) but not gender or cultural status. The only variable to have a statistically significant difference between the individual cycles was physical activity rates (higher in cycle four).

At the cross tabulation level, family income below \$25,000 per year was associated with lower self report health, higher rates of diabetes, higher rates of heart disease, higher rates of suicide ideation, high blood pressure, physical inactivity, daily smoking, lower fruit and vegetable consumption, higher life stress and higher healthcare utilization. Living in one of six contiguous low income neighbourhoods was associated with lower self report health, higher

rates of diabetes, higher rates of suicide ideation, physical inactivity, daily smoking, lower fruit and vegetable consumption and higher healthcare utilization. Aboriginal cultural status was associated with lower self report health, higher rates of diabetes, higher rates of suicide ideation, high blood pressure, high BMI, physical inactivity, daily smoking, higher alcohol consumption, lower fruit and vegetable consumption and higher healthcare utilization (Table 1).

The first stage of regression model building for the three health outcomes included the covariate of cultural status followed by either family income or neighbourhood income (depending on statistical significance). At this first stage of model building, the association between Aboriginal cultural status and poor health outcome reduced from odds ratios of 1.40 to 1.14 for self report health (Table 2); from 1.72 to 1.33 for diabetes prevalence (Table 3); and from 0.84 to 0.53 for heart disease prevalence (Table 4). Family income or neighbourhood income acted as a confounder to the relationship between Aboriginal cultural status and lower self report health, diabetes prevalence and heart disease prevalence.

In the final multivariate regression models, age and income had the strongest associations with lower self report health, diabetes prevalence and heart disease prevalence. After full multivariate adjustment, Aboriginal cultural status had a reduced association with all three health outcomes (Tables 2-4).

Interaction was only present between family income and high blood pressure in its relationship with diabetes prevalence. Increased or decreased utilization of healthcare services was not independently associated with the prevalence of health outcomes and was not a factor in the association between Aboriginal cultural status and poor health outcomes.

The R^2 for the final three regression models suggest reasonable explanation of the proportion of variance in the outcome variables explained by the knowledge of the explanatory covariates. The goodness-of-fit test results suggest that the final models are appropriate and that the predicted values are accurate representations of the observed values in an absolute sense (results listed at bottom of Tables 2-4).

Conclusions

There are few studies that review the association between Aboriginal cultural status and poor health outcome after multivariate adjustment for covariates. One Canadian study found that lower self report health and diabetes prevalence were not associated with Aboriginal cultural status after controlling for socioeconomic confounders.¹⁰ Another Canadian study found that after controlling for socioeconomic status, Aboriginal Canadians no longer differed from other Canadians in levels of depression.¹¹

In our study, Aboriginal cultural status and income status were initially strongly associated with essentially all health outcomes, disease intermediaries, behaviours, life stress and healthcare utilization at the cross tabulation level. After full multivariate adjustment for covariates including income status, Aboriginal cultural status had a reduced and more limited association with the three health outcomes under review. Income acted as a confounder between the relationship of Aboriginal cultural status and the health outcomes of low self report health, higher diabetes prevalence and heart disease. Income status alone, however, was not able to explain all of the inequity between Aboriginal cultural status and other cultural groups. In each of the three health outcomes reviewed, behaviours, life stress and healthcare utilization played limited roles as risk

indicators for health disparity after multivariate adjustment. The more limited role of behaviours after multivariate adjustment for variables like socioeconomic status has been found previously.¹² The limited role of access to healthcare and disease prevalence (not disease outcome) has also been found previously.¹³

From the current study, it is clear that low income is associated with disparity in health outcomes, disease intermediaries and behaviours. There are various theories as to why. Some suggest income inequality translates into inequity in access to material conditions like adequate nutrition, housing and protection (materialist/structuralist).¹⁴ Others suggest lower income groups tend to exhibit higher prevalence of risk behaviours harmful to health (cultural/behavioural).¹⁵ Some suggest that low income groups are more likely to experience unequal levels of chronic stress (stress theory).¹⁶ Others suggest neighbourhoods influence health.⁶ A review on health disparity in Canada argues that colonialism, oppression, racism and discrimination are linked to unequal access to resources, education and employment for Aboriginal people and that these factors (not cultural status) result in poor health.¹⁷

A limitation of the study design is that it is cross sectional and can therefore only imply association and not causation.

One of the most vexing problems facing health disparity researchers is the confounding relationship between cultural status and socioeconomic status.¹⁸ In his Pulitzer Prize winning novel, Diamond suggests that the biological explanation for inequalities between cultural groups is wrong but, unfortunately, we're not told what the correct explanation is.¹⁹ Economic and political interests have always affected both the explanation of health disparities and responses to them.²⁰ The current study suggests that income status is the largest modifiable risk indicator for disparity in health status in the Saskatoon Health Region and that Aboriginal cultural status has a more limited association with poor health outcomes after full multivariate adjustment. While Aboriginal cultural status is not a major risk indicator for poor health once other covariates have been statistically controlled for, the reality is that Aboriginal cultural status is currently associated with poverty and impoverished social conditions and therefore acts as a pathway to poor health. As such, targeted policies to improve the social conditions for Aboriginal people in Canada, coupled with generic policies to reduce social inequalities, would provide helpful adjuncts to population based health strategies.

Table 1 Prevalence Rates for Health Outcomes, Disease Intermediaries, Behaviours, Life Stress and Healthcare Utilization by SES and Cultural Status

Variable	Self Report Poor/Fair /Good %	95 % CI	Has Diabetes %	95 % CI	Suicide Ideation %	95 % CI	Has Heart Disease %	95 % CI
Family Income	.006		.000		.000		.000	
0 – 25 000	54.2	51.5-56.8	9.8	8.2-11.5	21.1	18.7-23.7	9.8	8.3-11.5
25 001 – 75 000	44.4	42.4-46.5	5.7	4.8-6.8	10.1	8.7-11.7	5.6	4.7-6.7
> 75 000	35.6	32.4-38.7	3.7	2.6-5.1	6.9	5.2-8.9	2.6	1.7-3.8
NH Income Type	.006		.001		.000		.116	
6 Low Income	53.8	48.7-58.9	10.4	7.4-13.9	26.9	21.7-32.6	4.4	2.5-7.0
Rest of Saskatoon	44.8	43.2-46.4	6.3	5.5-7.1	10.5	9.5-11.7	6.8	6.0-7.6
Rural	45.3	42.4-48.1	5.1	4.0-6.5	6.6	4.9-8.7	5.7	4.5-7.2
Education	.000		.000		.010		.000	
< secondary	53.3	50.8-55.9	8.7	7.3-10.3	13.7	11.6-16.1	10.4	8.9-12.1
Secondary Grad	48.8	46.0-51.6	5.8	4.5-7.2	13.2	11.1-15.4	6.6	5.3-8.2
Post-sec/ Graduate	42.5	40.8-44.2	5.6	4.9-6.5	10.5	9.3-11.8	4.3	3.6-5.1
Cultural Status	.002		.001		.000		.288	
Caucasian	45.9	44.4-47.3	6.1	5.4-6.9	9.7	8.7-10.8	6.7	6.0-7.5
Aboriginal	55.4	51.1-59.6	10.6	8.0-13.7	29.3	24.9-33.9	5.1	3.3-7.4
Other	46.9	41.7-52.2	6.6	4.3-9.8	12.3	8.7-16.7	5.5	3.3-8.4

Table 1 Prevalence Rates for Health Outcomes, Disease Intermediaries, Behaviours, Life Stress and Healthcare Utilization by SES and Cultural Status Continued. Continued

Variable	Has High BP %	95 % CI	BMI-Over-weight /Obese %	95 % CI	Life Stress Very much %	95 % CI
Family Income	.000		.528		.000	
0 – 25 000	21.8	19.6-24.1	55.1	52.2-57.9	24.7	22.3-27.1
25 001 – 75 000	15.7	14.2-17.3	56.6	54.4-58.8	18.8	17.1-20.5
> 75 000	11.2	9.2-13.4	57.5	54.1-60.8	25.7	22.8-28.7
NH Income Type	.131		.111		.355	
6 Low Income	13.4	10.1-17.3	59.6	54.1-64.9	23.6	19.3-28.5
Rest of Saskatoon	17.4	16.2-18.6	54.7	53.0-56.4	21.8	20.4-23.1
Rural	17.8	15.6-20.0	57.4	54.2-60.5	20.3	18.0-22.8
Education	.000		.213		.000	
< secondary	23.1	20.4-24.7	57.1	54.1-60.2	19.7	17.5-22.0
Secondary Grad	17.5	15.4-19.8	58.1	55.1-61.0	18.6	16.4-20.9
Post-sec/Graduate	14.3	13.1-15.5	55.2	53.4-57.0	23.4	22.0-25.0
Cultural Status	.046		.000		.082	
Caucasian	17.8	16.6-18.9	56.9	55.3-58.6	21.0	19.8-22.3
Aboriginal	13.9	11.0-17.3	62.0	57.3-66.5	24.6	20.8-28.8
Other	14.7	11.2-18.9	44.6	38.9-50.5	24.5	19.9-29.5

Table 1 Prevalence Rates for Health Outcomes, Disease Intermediaries, Behaviours, Life Stress and Healthcare Utilization by SES and Cultural Status. Continued

Variable	Physically In-Active %	95 % CI	Daily Smoker %	95 % CI	> 5 Drinks at one time of Alcohol %	95 % CI
Family Income	.000		.000		.431	
0 – 25 000	45.8	43.1-48.6	29.4	26.9-31.9	7.1	5.7-8.8
25 001 – 75 000	45.3	43.2-47.4	19.7	18.1-21.5	6.2	5.2-7.4
> 75 000	37.0	33.9-40.2	13.7	11.5-16.1	7.5	5.8-9.5
NH Income Type	.001		.000		.103	
6 Low Income	42.2	37.1-47.5	43.9	38.7-49.1	7.5	4.9-11.0
Rest of Saskatoon	44.5	42.9-46.1	18.4	17.1-19.6	6.7	5.9-7.6
Rural	50.1	47.2-53.0	17.9	15.8-20.2	4.9	3.6-6.5
Education	.042		.000		.003	
< secondary	48.0	45.3-50.7	23.9	21.8-26.2	7.0	5.5-8.8
Secondary Grad	44.8	41.9-47.6	25.8	23.3-28.3	8.6	7.0-10.4
Post-sec/Graduate	44.0	42.2-45.7	16.8	15.6-18.2	5.6	6.4-8.8
Cultural Status	.000		.000		.000	
Caucasian	46.2	44.7-47.7	18.6	17.5-19.8	6.0	5.3-6.8
Aboriginal	36.3	32.1-40.8	44.7	40.2-49.2	10.5	7.9-13.7
Other	44.8	39.5-50.3	13.3	9.9-17.3	3.7	1.8-6.7

Table 1 Prevalence Rates for Health Outcomes, Disease Intermediaries, Behaviours, Life Stress and Healthcare Utilization by SES and Cultural Status. Continued

Variable	< 5 Fruit and Veggies/Day %	95 % CI	Consult Mental Health (Mean #)	95 % CI	Consult Dr. (Mean #)	95 % CI
Family Income	.000		.000		.000	
0 – 25 000	71.0	68.2-73.7	1.5	1.2-1.7	4.9	4.5-5.3
25 001 – 75 000	65.9	63.5-68.1	0.7	0.4-0.8	3.8	3.5-4.1
> 75 000	59.1	55.4-62.8	0.4	0.1-0.8	3.0	2.5-3.4
NH Income Type	.000		.000		.040	
6 Low Income	76.6	71.5-81.1	1.8	1.3-2.3	4.7	4.0-5.3
Rest of Saskatoon	63.9	62.1-65.7	0.7	0.6-0.9	3.9	3.7-4.1
Rural	70.6	67.3-73.8	0.4	0.2-0.7	3.7	3.4-4.1
Education	.000		.074		.127	
< secondary	73.2	70.4-75.9	0.6	0.4-0.9	4.1	3.8-4.4
Secondary Grad	71.2	68.2-74.0	1.0	0.8-1.3	4.1	3.7-4.5
Post-sec/Graduate	61.5	59.5-63.5	0.7	0.6-0.9	3.8	3.5-4.0
Cultural Status	.000		.000		.000	
Caucasian	65.6	64.0-67.1	0.6	0.5-0.7	3.9	3.7-4.1
Aboriginal	75.4	71.2-79.2	2.4	2.0-2.8	5.2	4.6-5.8
Other	64.1	57.9-70.1	0.5	0.0-1.0	3.0	2.3-3.7

Table 2 Stepwise Regression Model for Self Rated Health among Adults in Saskatoon Health Region

Independent Variable	Model 0		Model 1		Model 2		Model 3		Model 4	
	Crude OR	95 % CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Aboriginal	1.40	1.07-1.84	1.14	.84-1.56	1.29	.93-1.80	1.20	.85-1.71	1.19	.83-1.70
Family Income 0-25,000	2.14	1.80-2.54	1.83	1.52-2.21	1.70	1.39-2.08	1.59	1.28-1.97	1.50	1.21-1.87
Family Income 25,001-75,000	1.45	1.24-1.67	1.36	1.17-1.64	1.33	1.12-1.59	1.24	1.03-1.49	1.19	.99-1.44
Age 60 and above	3.00	2.44-3.70			3.44	2.52-4.68	3.31	1.98-5.54	3.17	1.89-5.32
Age 50-59	2.07	1.65-2.60			2.90	2.09-4.00	2.73	1.62-4.62	2.52	1.49-4.27
Age 40-49	1.76	1.41-2.20			2.43	1.77-3.34	2.34	1.39-3.92	2.19	1.30-3.69
Age 30-39	1.32	1.05-1.65			1.82	1.32-2.49	1.77	1.05-2.97	1.64	.97-2.77
Age 20-29	1.30	1.04-1.64			1.61	1.17-2.22	1.61	.96-2.71	1.52	.90-2.56
BMI – Over Wt./ Obese	1.41	1.26-1.57					1.21	1.05-1.40	1.24	1.07-1.44
Smoker -Daily	1.40	1.22-1.58							1.21	1.02-1.43
Physically Inactive	1.39	1.25-1.54							1.18	1.03-1.36

Reference Category for Dependent Variable: poor/fair/good

Reference category for Independent Variables: Cultural Status – Non-Aboriginal; Family Inc - > 75,000; Age - 12-19; BMI - Normal/Under weight; Smoker - Occasional/Former/Never; Physical Activity - Active

R²=0.161; goodness of fit test result 0.280

Table 3 Stepwise Regression Model for Diabetes Prevalence among Adults in Saskatoon Health Region

Independent Variable	Model 0		Model 1		Model 2		Model 3	
	Crude OR	95 % CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Aboriginal	1.72	1.04-2.85	1.33	.76-2.32	1.90	1.05-3.45	1.48	.79-2.76
6 Low Inc NHs	2.25	1.49-3.41	2.05	1.28-3.28	2.60	1.59-4.26	2.96	1.74-5.04
Rest of Saskatoon	1.24	0.93-1.66	1.37	1.00-1.88	1.42	1.02-1.96	1.32	.92-1.91
Age 60 and above	17.16	7.03-41.87			17.01	6.91-41.85	5.32	1.27-22.28
Age 50-59	9.06	3.62-22.66			7.20	2.84-18.26	2.45	.58-10.43
Age 40-49	4.79	1.88-12.20			3.36	1.29-8.76	1.44	.33-6.24
Age 30-39	3.54	1.37-9.180			2.55	.96-6.76	1.08	.25-4.74
Age 20-29	1.56	.55-4.40			1.09	.37-3.21	0.70	.15-3.26
Has High Blood Pressure	6.08	4.91-7.53					3.14	2.37-4.17
BMI – Over weight/ Obese	3.39	2.58-4.45					2.67	1.93-3.71

Reference category: Diabetes prevalence = Yes

Reference category for Independent variables: Cultural status – Non-Aboriginal; Neighbourhood Income – Rural; Age – 12-19; Blood Pressure – No Blood Pressure; BMI – Normal/Under weight

R²=0.263; goodness of fit test result 0.772

Table 4 Stepwise Regression Model for Heart Disease Prevalence among Adults in Saskatoon Health Region

Independent Variable	Model 0		Model 1		Model 2		Model 3	
	Crude OR	95 % CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Aboriginal	0.84	.45-1.54	0.53	.260-0.9	0.98	.44-2.18	0.96	.43-2.16
Family Income 0 - 25,000	3.94	2.55-6.10	4.25	2.67-6.69	2.25	1.36-3.73	2.18	1.31-3.63
Family Income 25,001 – 75,000	2.15	1.39-3.33	1.98	1.26-3.10	1.22	.75-1.99	1.2	.73-1.96
Age 60 and above	64.17	31.68-130.01			67.54	27.47-166.01	50.39	20.31-125.04
Age 50-59	19.25	9.09-40.79			19.03	7.34-49.30	15.54	5.96-40.48
Age- 40-49	7.01	3.11-15.80			8.78	3.23-23.79	8.37	3.09-22.69
Gender - Male	1.31	1.06-1.62			1.74	1.30-2.33	1.76	1.31-2.37
Has High BP	5.85	4.71-7.26					2.13	1.58-2.86

Reference category for Dependent variable: Heart Disease Prevalence – Yes

Reference category for Independent variables: Cultural status – Non-Aboriginal; Family Income - > 75,000; Age – 12-39; Gender – Female; Blood Pressure – No blood pressure

R²=0.272; goodness of fit test result 0.894

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2.5.

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Suicide ideation: the role of economic and Aboriginal cultural status after multivariate adjustment. Accepted for publication in the Canadian Journal of Psychiatry.

Abstract

Introduction

The main objective was to determine if economic status and Aboriginal cultural status were independently associated with lifetime suicide ideation in the Saskatoon Health Region after controlling for other variables.

Methods

Data that was collected by Statistics Canada on all three cycles of the Canadian Community Health Survey were merged with identical questions asked in February of 2007 by the Saskatoon Health Region. The health outcome was lifetime suicide ideation. The risk indicators included demographics, socioeconomic status, cultural status, behaviours, life stress, healthcare utilization and other health problems.

Results

5948 participants completed the survey with a response rate of 81.1%. The prevalence of lifetime suicide ideation was 11.9%. After stratification, it was found that high income Aboriginal people have similar low levels of suicide ideation in comparison to high income Caucasian people. After full multivariate adjustment, Aboriginal cultural status had a substantially reduced association with lifetime suicide ideation. The odds of lifetime suicide ideation for Aboriginal people reduced by 129% after controlling for income alone and reduced by 184% after controlling for all other variables. After controlling for all other variables, low income residents were 367% more likely to have thoughts of suicide ideation in comparison to higher income residents.

Discussion

Without statistical adjustment, Aboriginal cultural status had the strongest association with suicide ideation. After statistical adjustment, income had the strongest association with suicide ideation.

Conclusions

The results of this study suggest reductions in lifetime suicide ideation can be observed in Aboriginal residents by adjusting levels of household income. Given this finding, future policies to reduce levels of suicide ideation should consider reducing income disparity as well.

Introduction

In Canada, it is not difficult to find a government agency reporting that Aboriginal cultural status is associated with poor health.¹⁻³ One of the concerns associated with this discussion is that it gives policy makers and the public at large the impression that health disparity is not preventable because a major determinant of health (cultural status) is not modifiable.

In 2005, Health Canada published *A Statistical Profile on the Health of First Nations in Canada* for the year 2000.³ The report concluded that suicide was among the leading causes of death in First Nations for those aged 10 to 44 years; accounting for 22% of all deaths in youths aged 10-19 and 16% of all deaths in young adults aged 20 to 44 years. In 2000, the suicide rate in First Nations populations was 24.1 per 100,000 population in comparison to the national average of 13.2 (almost double the national average). In 2000, suicide accounted for 1096.2 potential years of lost life per 100,000 First Nations population in Canada. This represents more premature mortality than for all circulatory diseases and cancers combined. The highest rates of suicide were among First Nation males aged 15 to 24 years old at approximately five times the national average.³ Another report found that suicide accounted for 38% of all deaths in Aboriginal youth aged 10-19 and 23% of all deaths in adults aged 20-44. Suicide was found to be the leading cause of death in Aboriginal people aged 10-19 and 20-44 with deaths resulting from motor vehicle collisions a distant second.⁴

A review of the risk factors associated with suicide behaviour in Aboriginal populations suggests that the most relevant risk factors include the physical and social environment (i.e., isolation, neighbourhood/community income), cultural factors (i.e., historical factors and acculturation issues), childhood adversity (trauma and single parent families), alcohol abuse and poverty.⁵

The authors were unable to find a report that reviewed the odds of suicide ideation in Aboriginal people after multivariate adjustment for other covariates like income status. As such, the purpose of the current study was to determine if Aboriginal cultural status is independently associated with lifetime suicide ideation in the Saskatoon Health Region after controlling for other covariates; namely income status.

Methods

The Canadian Community Health Survey (CCHS) is administered by Statistics Canada with the central objective of collecting health related data at the level of health regions; where an increasing number of decisions to improve population health are made in Canada.⁶ The sample size for each health region is chosen to represent a sample large enough to provide valid and reliable information for a health region within any given cycle.⁶ The decision to use this dataset was based on the fact that every health region in Canada would be able to replicate the study design in order to facilitate local decision making.

The CCHS consists of cross sectional surveys in 2000/01, 2003 and 2005. Data that was collected by Statistics Canada on all three cycles of the CCHS were merged with identical questions asked in February of 2007 by the Saskatoon Health Region (SHR). The four datasets were merged in order to gain precision on risk indicators. All four cycles were random digit dialling phone survey samples with computer assisted interviewing. The target population included approximately 98% of the SHR. Aboriginal people sampled were off reserve. Missing

data was excluded from the analysis. The methodology of the CCHS has been documented in detail previously.⁶

The health outcome in the current study was lifetime suicide ideation.

The baseline demographics included household income (0-\$25,000, \$25,001-\$75,000 and above \$75,000), neighbourhood income (six contiguous low income neighbourhoods defined by 2001 Census low income cut-off⁷ or rest of Saskatoon), individual education (less than high school graduate, high school graduate, post secondary graduate), cultural status (Caucasian or Aboriginal- defined as First Nations or Métis), age and gender. Current health status included self report health (good/fair/poor compared to excellent/very good), heart disease prevalence, diabetes prevalence and the intermediaries of high blood pressure diagnosed by a physician and a body mass index over 30. Behaviours included physical inactivity (composite index including multiple activities, frequency, duration and MET intensity), daily smoking and having more than five drinks of alcohol at one time at least once per week in the past twelve months. Life stress was measured by asking about current amount of stress in daily life. Self report consultations with a family physician and with a mental health worker (social worker, counsellor or psychologist) in the past year were also included.

Cross tabulations were computed between all variables and the outcome of lifetime suicide ideation. Stratified analysis was conducted between lifetime suicide ideation and cultural status by household income. A risk hazard model was built to determine the independent effects of family income and neighbourhood income in comparison to age on a logistic regression model of lifetime suicide ideation that already includes Aboriginal cultural status.^{8,9} A binary logistic regression model was built to describe the relationship between the outcome variable of lifetime suicide ideation and all remaining covariates. A hierarchal well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.¹⁰ Stepwise models began with cultural status and then progressively include demographics (age and gender), socioeconomic status (household income, neighbourhood income, education), life stress, health status (self report health, heart disease, diabetes, blood pressure and BMI), behaviours (physical activity, smoking and excessive alcohol use) and access to healthcare (physician and mental health). In the final model, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the $-2 \log$ likelihood and the Wald test.¹¹ The final models included factors with beta values for which the p values were less than 0.05.¹¹ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.¹¹ Interaction was assessed with product terms.¹¹ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.¹¹ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.¹¹ The final results were presented as adjusted odds ratios with 95 percent confidence intervals.¹¹ All analyses were performed with an SPSS 15.0 software package.

Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board.

Results

Over four cycles in 2001, 2003, 2005 and 2007, 7332 residents of SHR were asked to complete a health survey with 6127 residents agreeing to participate (83.6%) and complete data available

on 5948 participants (81.1%). By individual cycle, the sample sizes were 1174, 1082, 1177 and 2515 which totals to 5948. Overall, the mean age was 46.3 (SD 20.32). Females represented 55.2% of the sample. Caucasians represented 82.9% of the sample (N = 4930) while Aboriginal people represented 10.4% of the sample (N = 618). In comparison to 2001 census data for SHR, the sample had a statistically significant difference in age (22.0% of the sample was over the age of 65 in comparison to 13.2% of census) but not gender or cultural status. The only variable to have a statistically significant difference in answers between the individual cycles was physical activity rates (higher in cycle four).

Over four cycles, the prevalence of lifetime suicide ideation was $11.9\% \pm 0.3$. After cross tabulation, lifetime suicide ideation was most likely to be associated with younger ages (12-44), Aboriginal cultural status, lower household income (0-\$25,000), living in a low income neighbourhood, less than high school graduation, quite a bit or extreme life stress, lower self report health, daily smoking and excessive alcohol usage (Table 1). Only variables with statistical significance are presented in the table.

Stratified analysis was employed to determine prevalence of lifetime suicide ideation by cultural status and household income. Of low income Caucasians, 17.5% had a lifetime suicide ideation in comparison to 6.1% of high income Caucasians. Of low income Aboriginal people, 33.1% had a lifetime suicide ideation in comparison to 3.8% of high income Aboriginal people (Table 2). In other words, 6.1% of high income Caucasians and 3.8% of high income Aboriginal people had lifetime suicide ideation.

A risk hazard model was built to determine the independent effects of age and income status (household and neighbourhood income) on a logistic regression model of lifetime suicide ideation that includes Aboriginal cultural status. Table 3 demonstrates a larger direct and independent effect of income status (57.1%) in comparison to the independent effect of age (11.9%) in explaining the association between Aboriginal cultural status and lifetime suicide ideation.

In the final adjusted logistic regression model, lifetime suicide ideation was independently associated with Aboriginal cultural status, younger age, lower household income, living in a low income neighbourhood and quite a bit or extreme life stress. Residents from lower household incomes were 4.67 times more likely to have lifetime suicide ideation than higher income households. After including age, the association between Aboriginal cultural status and lifetime suicide ideation reduced from 3.59 to 3.28 (a reduction of 31%). After including household income, the association between Aboriginal cultural status and lifetime suicide ideation reduced from 3.28 to 1.99 (a reduction of 129%). After including neighbourhood income, the association between Aboriginal cultural status and lifetime suicide ideation reduced from 1.99 to 1.79 (reduction of 20%). After including life stress, the association between Aboriginal cultural status and lifetime suicide ideation reduced from 1.79 to 1.75 (reduction of 4%). Household income was a direct confounder to the relationship between Aboriginal cultural status and lifetime suicide ideation. Interaction was not present in the final model.

The R^2 for the final model was 0.248 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory covariates. The goodness-of-fit test result ($p = .488$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense.

Conclusions

In our study, Aboriginal cultural status and income status were strongly associated with lifetime suicide ideation at the cross tabulation level. After stratification, it was found that high income Aboriginal people have similar low levels of suicide ideation in comparison to high income Caucasian people. The risk hazard model demonstrated a larger direct and independent effect of income status in explaining the association between Aboriginal cultural status and lifetime suicide ideation in comparison to the independent effect of age. Controlling for age, the odds of lifetime suicide ideation for Aboriginal people decreased from 3.28 to 1.99 (a reduction of 129%) after adjusting for household income alone. The variable of household income acted as a direct confounder between the relationship of Aboriginal cultural status and lifetime suicide ideation. After full multivariate adjustment for covariates, Aboriginal cultural status had a substantially reduced association with lifetime suicide ideation. However, household income status and the other covariates were not able to explain all of the inequity between Aboriginal and Caucasian people. In fact, Aboriginal people were still 75% more likely to report lifetime suicide ideation even after controlling for all other covariates.

The authors were unable to find a report that reviewed the odds of lifetime suicide ideation in Aboriginal people after multivariate adjustment for other covariates like income status. However, one paper reviewed data on depression from the National Population Health Survey with a sample size of 81,804 Canadians. The baseline analysis revealed that Aboriginal Canadians experienced significantly more depressive symptoms than non-Aboriginal Canadians. After multivariate adjustment, the authors found that an increase in family income reduced the level of depression. After controlling for socioeconomic status, Aboriginal Canadians no longer differed from non-Aboriginal Canadians in level of depression. The authors concluded that socio-demographic variables were responsible for mental health disadvantages between the groups.¹²

Another paper reviewed data from the 2001 Canadian Community Health Survey to determine the levels of depression within the off-reserve Aboriginal population. In this report, 13.2% of the Aboriginal population had a major depressive episode in the past twelve months in comparison to 7.3% of the Canadian population. After adjusting for household income through stratification, 21% of Aboriginal people in low income households had a major depressive episode in comparison to 13% for those living in middle income households and 8% for those living in high income households. The crude odds ratio for off reserve Aboriginal people to have a major depressive episode in the past year in comparison to non-Aboriginals was 1.9 (99% CI- 1.6-2.3). After adjusting for socioeconomic status in a multivariate model, the odds ratio was reduced to 1.5 (99% CI- 1.3-1.9).¹³

In a school health survey conducted for youth aged 10-15 years old, the unadjusted odds ratio for the association between Aboriginal cultural status and depressed mood was 2.81 (95% CI 2.09-3.77) and was subsequently reduced to 1.13 (95% CI 0.68-1.88) after full multivariate adjustment in the final logistic regression model. In this study, the socioeconomic variables of education status and hunger were confounders to the relationship between Aboriginal cultural status and depressed mood in youth.¹⁴

In our study, access to physicians and mental health providers was not associated with lifetime suicide ideation. A study from Manitoba found that only 21.9% of non-Aboriginal people sought

professional help prior to a suicide attempt and only 6.6% of Aboriginal people sought care.¹⁵ Our finding that younger ages and life stress are associated with suicide ideation are well supported within the literature but the finding that excessive alcohol usage is not independently associated with suicide ideation after controlling for other covariates appears to be a new finding.⁵

A limitation of the study is that it is cross sectional and therefore can only describe associations and not causation. A second limitation is that the CCHS does not ask about mood disorders in each cycle and as such no information on variables like depression is presented. Although the association between mood disorders and suicide ideation is well established, the purpose of the current paper was to explore the importance of risk indicators. If depression is a cause of suicide ideation, this paper hopes to explore the causes of the causes. For example, a meta-analysis reviewing socioeconomic inequalities in major depression in adults (56 studies published from 1979 to 2001) found that lower socioeconomic status individuals were 81% more likely to be depressed than high socioeconomic status individuals and 106% more likely to have persisting depression.¹⁶ In other words, lower socioeconomic status appears to be a risk indicator for both suicide ideation and depression. Nevertheless, the questions asked in the CCHS limit the review of all potential covariates associated with lifetime suicide ideation. Third, the data on Aboriginal residents is limited to the off-reserve population. Fourth, there appears to be a sampling bias by age within the study; which is adjusted for in the analysis.

The results of this study suggest reductions in lifetime suicide ideation can be observed in Aboriginal Canadians by adjusting levels of household income. Given this finding, future directions to reduce levels of suicide ideation should include policies to reduce income disparity as well. While Aboriginal cultural status has a more limited association with suicide ideation once other covariates like income have been statistically controlled for, the reality is that Aboriginal cultural status is currently associated with poverty and impoverished social conditions and therefore acts as a pathway to suicide ideation. For example, 55.2% of the Aboriginal sample in this study had an income between \$0-25,000 whereas only 18.7% of Caucasians had a similar income in the Saskatoon Health Region. As such, targeted policies to improve the social conditions for Aboriginal people, coupled with generic policies focusing on reducing socioeconomic inequalities, would provide helpful adjuncts to individual treatment strategies to prevent suicide ideation and attempts. A recent report from Health Canada on suicide prevention confirms that a broad public health approach to intervention is required along with participation from Aboriginal communities in order to reduce prevalence of suicide ideation and attempts.¹⁷

In summary, all of society feels the impact of health disparities – directly and indirectly.¹ Health disparities are inconsistent with Canadian values.¹ In addition to the excess burden of illness on those who are already disadvantaged, health disparities threaten the cohesiveness of community and society, challenge the sustainability of the health system and have an impact on the economy.¹ These consequences are avoidable and can be successfully addressed.¹

Table 1 Cross-Tabulations for Lifetime Suicide Ideation by Independent Variables

Independent Variables	Suicide Ideation (%)	95 % CI
Aboriginal cultural status	27.9	27.58 – 28.22
Caucasian cultural status	9.7	9.39 – 9.81
Household income \$0 – 25,000	21.1	17.39 – 25.60
Household income \$25,001 – 75,000	10.2	8.52 – 12.22
Household income > \$75,000	7.1	5.26 – 9.59
Live in a low income neighbourhood	26.6	17.21 – 41.12
Rest of Saskatoon	10.6	10.13 – 11.10
Less than high school graduate	13.7	10.54 - 17.81
High school graduate	13.1	10.71 - 16.03
University graduate	10.6	9.55 - 11.77
Quite a bit/extreme life stress	21.0	17.57 - 25.10
No life stress	9.5	8.74 - 10.33
Excellent/very good self report health	10.4	9.17 - 11.80
Good/fair/poor self report health	13.4	11.94 - 15.03
Daily smoker	22.0	18.41 - 26.29
Occasional/never smoker	9.2	8.46 - 10.0
Had 5 or more drinks at one time		
1 or more times per week	17.7	11.27 - 27.80
Less than 1 time per week	11.8	11.37 - 12.24

Table 2 Stratified Analysis: Lifetime Suicide Ideation by Cultural Status Stratified by Household Income

Independent Variable	Considered Suicide (%)	95 % CI
Caucasian		
\$0-25,000	17.5	16.08 - 19.04
\$25,001 – 75,000	9.1	8.36 - 9.90
\$75,001 and above	6.1	5.61 - 6.64
Aboriginal		
\$0-25,000	33.1	30.42 - 36.02
\$25,001 – 75,000	23.6	21.69 - 25.62
\$75,001 and above	3.8	3.49 - 4.13

Table 3 Risk Hazard Model for Lifetime Suicide Ideation

Cultural Status	Base Model = Cultural Status	Model 1 + Household Income + NH Income	Model 1 + Age	Full Model	Independent effect of Household Income + NH Income	Overlap of Age	Independent effect of Age
	Model 1	Model 2	Model 3	Model 4			
	1.00	1.00	1.00	1.00			
Aboriginal	3.59	2.11	3.28	1.79			
	(2.83-4.55)	(1.52-2.92)	(2.56-4.20)	(1.28-2.52)	69.1-12.0 =	57.0-57.1 =	12- (-0.1) =
% Change		57	12	69.1	57.1	-0.1	11.9

Calculating % Change = (RH Model 1) – (RH Model 2, 3, or 4) / [(RH Model 1) -1]

Model 1 = Cultural Status

Model 2 = Cultural Status + Income (Household Income and Neighbourhood Income)

Model 3 = Cultural Status + Age

Model 4 = Cultural Status + Income + Age

Independent effect of Income = Model 4 – Model 3

Overlap effect of Age = Model 2 – Independent effect of Income

Independent effect of Age = Model 3 – Overlap of Age

Table 4 Crude and Adjusted Estimates for Lifetime Suicide Ideation among Adults in Saskatoon

Independent variables	Crude OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI
	Model 0		Model 1		Model 2		Model 3		Model 4	
Aboriginal cultural status	3.59	2.83-4.55	3.28	2.56-4.20	1.99	1.50-2.65	1.79	1.28-2.52	1.75	1.24-2.46
Age 12 - 44	3.15	2.30-4.30	2.91	2.02-4.20	3.21	2.15-4.79	3.29	2.14-5.03	3.11	2.01-4.80
Age 45 - 64	2.91	2.10-4.03	2.67	1.83-3.91	3.18	2.10-4.82	3.35	2.15-5.22	3.15	2.00-4.96
Household income \$0-25,000	3.51	2.57-4.80			4.96	3.30-7.46	4.80	3.09-7.46	4.67	2.98-7.28
Household income \$25,001 – 75,000	1.48	1.08-2.04			2.15	1.44-3.20	2.21	1.45-3.36	2.29	1.50-3.50
Live in a low income neighbourhood	5.11	3.43-7.61					2.50	1.41-4.43	2.62	1.47-4.64
Quite a bit /extreme life stress	2.53	2.08-3.07							2.05	1.56-2.71

Reference category for dependent variable: Suicide Ideation – No.

Reference categories for independent variables: Age - >65; Neighbourhood – Rest of Saskatoon; Family Income - >75,000; Life Stress – No extreme life stress; Cultural Status – Caucasian

Independent variables (Model 1) = Cultural status + Age

Independent variables (Model 2) = Model 1 + Household income

Independent variables (Model 3) = Model 2 + Neighbourhood income

Independent variables (Model 4) = Model 3 + Life stress

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Daily smoking in Saskatoon: the independent effect of income and cultural status. Accepted for publication in the Canadian Journal of Public Health.

Abstract

Introduction

Smoking prevalence in the Saskatoon Health Region (SHR) went from 23.9% in 2003 to 23.3% in 2005 to 26.2% in 2007. The prevalence of smoking within the SHR Aboriginal population is substantially higher than the rest of the population. The purpose of the current study was to determine the independent effects of Aboriginal cultural status and income status on daily smoking status.

Methods

Data from three cycles of the Canadian Community Health Survey (2001, 2003, 2005) were merged with identical data collected by the SHR in 2007. All four cycles were random telephone survey samples.

Results

5948 participants (81.1% response rate) completed the survey. After cross tabulation, Aboriginal cultural status and income were strongly associated with daily smoking status. Using logistic regression, the odds of daily smoking for residents of Aboriginal cultural status was reduced substantially by 117% after adjusting for income alone and reduced by 186% after full multivariate adjustment. After controlling for all other variables, low income residents were 130% more likely to be daily smokers in comparison to higher income residents.

Discussion

Without statistical adjustment, Aboriginal cultural status had the strongest association with daily smoking. After statistical adjustment, income had the strongest association with daily smoking.

Conclusion

Given the association between smoking status and income status, future policies to reduce smoking prevalence should include generic policies to reduce income disparity as well as targeted strategies to improve the social conditions of Aboriginal people.

Introduction

In Canada, it is not difficult to find a government agency reporting that Aboriginal cultural status is associated with smoking. For example, the Health Canada website reports that 57% of Aboriginal adults are current smokers; which is twice the rate of the Canadian national average.¹ Statistics Canada reports that 51.4% of the off-reserve Aboriginal population are smokers; which is 1.9 times higher than the non-Aboriginal population.² More importantly, Statistics Canada reports that smoking rates among Aboriginal people are not decreasing.²

In the Saskatoon Health Region (SHR), Saskatchewan, daily smoking prevalence was 23.9% in 2003 and 23.3% in 2005 but then increased to 26.2% in 2007; despite a population health promotion plan to reduce tobacco use.³⁻⁶ In comparison, smoking prevalence in Canada remained relatively constant from 22.9% in 2003 to 21.7% in 2005 to 21.9% in 2007.³⁻⁵ The prevalence of smoking within the SHR Aboriginal population is substantially higher than the rest of the population. This leads to the question: are differences in the prevalence of daily smoking in SHR really due to cultural status or are they due to other factors like socioeconomic status?

In response, the authors were able to find only one study that reviewed the association of Aboriginal cultural status with smoking after adjustment for socioeconomic status. The US Surgeon General's Report indicates that after adjustment for the confounding of education, the difference in the prevalence of smoking between American Indians and Caucasians was not significant.⁷ Another report from the United States found that the odds of smoking are not higher for minority African Americans in comparison to Caucasians after adjustment for socioeconomic status.⁸

The purpose of the current study was to determine the independent effects of Aboriginal cultural status and income status on daily smoking status in the Saskatoon Health Region.

Methods

The Canadian Community Health Survey (CCHS) is administered by Statistics Canada with the central objective of collecting health related data at the level of health regions.⁹ The sample size for each health region is chosen to represent a sample large enough to provide valid and reliable information for a health region within any given cycle.⁹

The CCHS consists of cross sectional surveys in 2000/01, 2003 and 2005. Data that was collected by Statistics Canada on all three cycles of the CCHS were merged with identical questions asked in February of 2007 by the Saskatoon Health Region (SHR). All four cycles were random digit dialling telephone survey samples with computer assisted interviewing. The target population included approximately 98% of the SHR. Aboriginal people sampled were off reserve. Missing data was excluded from the analysis. Although the methodology of the CCHS has been documented in detail previously; there are no publications citing validity or reliability.⁹

The outcome in the study was current daily smoking status based on those who reported smoking cigarettes every day at the present time.

The baseline variables included 1) cultural status (Caucasian, Aboriginal or Other), 2) socioeconomic status a) family income: 0-\$25,000, \$25,001-\$75,000 and above \$75,000; b) neighbourhood income: six contiguous low income neighbourhoods¹⁰ and rest of Saskatoon; and c) individual education: less than high school graduate, high school graduate and post

secondary graduate; 3) demographics (age and gender); 4) self report health (excellent, very good, good, fair - not below average, poor); 5) mental health (lifetime suicide ideation); 6) life stress measured by current amount of stress in daily life; 7) behaviours: a) physical inactivity (composite index including activities, frequency, duration and intensity), b) having more than five drinks of alcohol at one time at least once per week in the past twelve months; 8) body mass index over 30 and 9) consultations with a family physician or with a mental health worker (social worker, counsellor or psychologist) in the past year were also included. Only results with statistical significance are presented.

The main cross tabulations to be computed were between the demographics of income and cultural status with the outcome of daily smoking status. A logistic regression model was built to describe the relationship between the outcome of a) daily smoking status and b) non daily smoking status and all covariates. A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.¹¹ Stepwise models were built that start with cultural status and then progressively include socioeconomic status (family income and neighbourhood income then education) then demographics and so on (entered in same order listed in previous paragraph). In the final model, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the -2 log likelihood and the Wald test.¹² The variables were tested independently in a hierarchical fashion but are presented in blocks in the table for clarity. The final regression model included factors with beta values for which the *p* values were less than 0.05.¹² Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.¹² Interaction was assessed with product terms.¹² *R*² was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.¹² Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.¹² The final results were presented as adjusted odds ratios with 95 percent confidence intervals.¹² All analyses were performed with an SPSS 15.0 software package.

Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board. The research was conducted in partnership with the Saskatoon Tribal Council and the principles of OCAP were followed.

Results

Over four cycles in 2001, 2003, 2005 and 2007, 7332 residents of SHR were asked to complete a health survey with 6127 agreeing to participate (83.6%) and complete data available on 5948 participants (81.1%). By individual cycle, the sample sizes were 1174, 1082, 1177 and 2515 which totals to 5948. Overall, the mean age was 46.3 (SD 20.3). Females represented 55.2% of the sample and Caucasians represented 82.9% of the sample (*n* = 4930) while Aboriginal people represented 10.4% of the sample (*n* = 619). In comparison to 2001 census data for SHR, the sample had a statistically significant difference in age (22.0% of the sample was over the age of 65 in comparison to 13.2% of census) but not gender or cultural status. The only variable to have a statistically significant difference between the individual cycles was physical activity rates (higher in cycle four).

At the descriptive level, the variables of Aboriginal cultural status, family income, and neighbourhood income were all strongly associated with daily smoking status. For example,

44.0% of Aboriginal residents were daily smokers in comparison to 18.6% of Caucasians. As well, 44.1% of residents living within low income neighbourhoods smoked daily in comparison to 18.5% of other city residents and 29.5% of low income earners smoked daily in comparison to 13.6% of high income earners. The other variables with significance included educational status, age, self report health, life stress, suicide ideation and excessive alcohol consumption (Table 1).

A hierarchal model building strategy is presented by blocks in Table 2. At the first stage of model building, the crude odds ratio for Aboriginal cultural status reduced from 3.43 to 2.26 when adjusted for family income and neighbourhood income (a 117% reduction in odds). The introduction of educational status into the model had limited influence (2.26 to 2.20). Age had an impact on the association between Aboriginal cultural status and daily smoking status (OR reduced from 2.20 to 1.76). The odds of Aboriginal people smoking daily reduced to 1.55 after adjusting for suicide ideation and extreme life stress. The odds of Aboriginal people smoking daily actually increased from 1.55 to 1.57 after adjusting for excessive alcohol consumption. After full multivariate adjustment, Aboriginal cultural status had a much more limited association with daily smoking status (OR= 1.59; 95% CI 1.16-2.17) than its unadjusted association (OR= 3.43; 95% CI- 2.84-4.13).

Family income, neighbourhood income and age were all confounders to the relationship between Aboriginal cultural status and daily smoking status. There was no interaction in the final regression model. Other significant covariates associated with daily smoking status included educational status, suicide ideation, extreme life stress and excessive alcohol use. Increased or decreased utilization of physicians or mental health services was not associated with daily smoking status. The R^2 for the final model was 0.166 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory covariates. The goodness-of-fit test result ($p = .821$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense. The estimated slope coefficients and standard errors presented are small so co-linearity is not suspected.

Conclusions

There are very few studies that review the association of Aboriginal cultural status with smoking after multivariate adjustment for variables like socioeconomic status. The results from the American Surgeon General's Report indicates that after adjustment for the confounding of education, odds of smoking between American Indians and Caucasians were not statistically significant (OR=1.20; 95% CI- 0.95-1.51).⁷ The results of our study indicate that the initial odds of daily smoking for residents of Aboriginal cultural status was 3.43, but reduced substantially to 2.26 after adjustment for income alone (117% reduction in odds) and 1.57 after full multivariate adjustment. It is important to note, however, that Aboriginal cultural status was still independently associated with daily smoking status after multivariate adjustment. This might represent true cultural differences in usage, the macro social effects of being of Aboriginal cultural status acting as an intermediary (i.e. the impact of discrimination) or mediating effects (i.e. less resources available to those most in distress).

Family income, neighbourhood income and education have been found to be associated with smoking prevalence previously.^{7,8,13-18} Mental health (i.e. suicide ideation, life stress and excessive

alcohol intake) have also been demonstrated previously to be associated with smoking status; although mental health can also be seen as an intermediary between behaviour and outcome.¹⁹⁻²¹

A limitation of the study design is that it is cross sectional and can therefore only imply association and not causation. Second, the questions asked in the CCHS limit the review of all potential covariates associated with daily smoking (i.e. psychosocial motives, self esteem, social influences and social networks).²³ Third, the data on Aboriginal residents is limited to the off-reserve population. Fourth, there appears to be a sampling bias by age within the study; which is adjusted for in the analysis.

There are important policy implications to discuss. A fundamental assumption of anti-smoking campaigns is that individuals will enact behavioural change when they are given knowledge.¹⁴ Recent declines in smoking prevalence, however, have been more rapid in individuals with higher socioeconomic status (SES) than those of lower SES.^{14,22} As such, future strategies will need to address SES.^{14,22,23} Second, Aboriginal cultural status is currently associated with poverty and impoverished social conditions and therefore acts as a pathway to daily smoking status.²³ As such, targeted strategies will also be required specifically for Aboriginal people to improve their life situation.²³

Smoking prevalence in the Saskatoon Health Region (SHR) went from 23.3% in 2005 to 26.2% in 2007. Future directions to reduce smoking prevalence should include policies to reduce socioeconomic disparity as helpful adjuncts to other individual and population based strategies.

Table 1 Cross Tabulations for all Independent Variables by Daily Smoking Status among Adults in Saskatoon

Independent Variables	Daily Smoker (%) (n = 1215)	Sig.
Aboriginal cultural status	44.0	<.000
Caucasian cultural status	18.6	
0-25,000 Family income	29.5	<.000
25,001 – 75,000 Family income	20.0	
> 75,000 Family income	13.6	
Neighbourhood income - 6 low income neighbourhoods	44.1	<.000
Neighbourhood income – rest of Saskatoon	18.5	
< Than secondary grad. education	23.9	<.000
Secondary grad. education	25.8	
University education	17.1	
Age 12-19	11.1	<.000
Age 20-29	24.4	
Age 30-39	23.8	
Age 40-49	28.8	
Age 50-59	24.4	
Age 60 and above	12.6	
Males	19.9	0.227
Females	20.7	
Excellent / very good self report health	18.0	<.000
Good / fair / poor self report health	23.4	
Has considered suicide	38.8	<.000
Has not consider suicide	18.5	
Not at all / not very / a bit of life stress	20.2	<.000
Quite a bit/extreme life stress	24.8	
Less than 5 drinks once per week in a year	20.9	<.000
More than 5 drinks once per week in a year	43.6	

Table 2 Stepwise Model Building for Daily Smoking among Adults in Saskatoon Health Region

	Crude OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI
Independent variables	Model 0		Model 1		Model 2		Model 3		Model 4		Model 5	
Aboriginal cultural status	3.43	2.84-4.13	2.26	1.76-2.90	2.20	1.71-2.84	1.76	1.36-2.30	1.55	1.14-2.10	1.57	1.15-2.15
Family Income 0-25,000	2.66	2.13-3.31	1.80	1.39-2.34	1.69	1.30-2.21	2.12	1.59-2.83	2.13	1.52-3.01	2.30	1.61-3.29
Family income 25,001-75,000	1.59	1.28-1.97	1.44	1.13-1.82	1.38	1.08-1.75	1.62	1.26-2.08	1.68	1.26-2.25	1.83	1.35-2.49
6 Low income neighbourhoods	3.60	2.80-4.63	2.33	1.67-3.25	2.41	1.72-3.37	2.31	1.63-3.28	2.47	1.60-3.82	2.39	1.51-3.78
< Than secondary education	1.52	1.30-1.77			1.20	0.96-1.50	1.87	1.46-2.41	1.82	1.35-2.45	1.83	1.34-2.50
Secondary grad. education	1.68	1.44-1.96			1.37	1.12-1.68	1.43	1.15-1.77	1.38	1.08-1.76	1.39	1.08-1.78
Age 12-19	0.86	0.63-1.17					0.52	0.31-0.85	0.60	0.27-1.34	0.64	0.28-1.45
Age 20-29	2.23	1.80-2.77					2.06	1.54-2.77	1.66	1.18-2.34	1.50	1.05-2.15
Age 30-39	2.16	1.75-2.68					2.36	1.76-3.17	1.98	1.40-2.79	1.84	1.28-2.65
Age 40-49	2.79	2.27-3.43					3.29	2.47-4.37	2.83	2.04-3.93	2.69	1.90-3.82
Age 50-59	2.24	1.79-2.78					2.64	1.96-3.56	2.28	1.63-3.19	2.06	1.44-2.93
Has considered suicide	2.78	2.30-3.37							1.59	1.20-2.11	1.51	1.27-2.03
Extreme life stress	1.30	1.12-1.51							1.24	0.97-1.58	1.31	1.02-1.69
More than 5 drinks once per week – in year	2.92	2.32-3.68									2.60	1.79-3.76

n = 5948; missing = 39 cases

Reference category for dependent variable – Daily smoker

Reference category for independent variables: Caucasian cultural status; Family income > 75,000; Rest of Saskatoon ; University graduate education; Age 60 and above; Has not considered suicide; No extreme life stress; Less than 5 drinks once per week – in year

Independent variables (Block 0) = Crude ORs for the independent variables tested independently

Independent variables (Block 1) = Cultural status + Family income + Neighbourhood income

Independent variables (Block 2) = Block 1 + Education

Independent variables (Block 3) = Block 2 + Age

Independent variables (Block 4) = Block 3 + Suicide ideation + Life stress

Independent variables (Block 5) = Block 4 + Alcohol use (FINAL MODEL)

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Lemstra M, Neudorf C, Opondo J, Kurgi A, Toye J, Kunst A, Tournier C.

Disparity in childhood immunizations: limited association with Aboriginal cultural status. *Paediatrics and Child Health* 2007;12(10):847-852.

Abstract

Introduction

Incomplete immunization coverage is common in low income and Aboriginal children in Canada.

Methods

We determined if child immunization coverage rates at age two were lower in low income neighbourhoods of Saskatoon. We then contacted parents that were behind and not behind in child immunization coverage to determine differences in knowledge, beliefs and opinions on barriers and solutions. We then built a multivariate regression model to determine if Aboriginal cultural status was associated with being behind in childhood immunizations after controlling for low income status.

Results

Reviewing the last five years in Saskatoon, the six low income neighbourhoods had complete child immunization coverage rates of 43.7% for MMR and 42.6% for DaPTP-Hib while the five affluent neighbourhoods had 90.6% immunization coverage rates for MMR and 78.6% for DaPTP-Hib. After cross tabulation, parents that were behind in immunization coverage with their children were more likely to be single, be of Aboriginal or Other (non-Caucasian or non-Aboriginal) cultural status, have lower family income and have significant differences in reported beliefs, barriers and potential solutions. In the final regression model, Aboriginal cultural status had a more limited association with lower child immunization rates. After controlling for other variables, low income children were 72% less likely to be fully immunized at age two.

Discussion

Child immunization coverage rates in Saskatoon's six low income neighbourhoods are approximately half the rate of the affluent neighbourhoods. The variables with the strongest independent association with complete childhood immunization status were low income and Other cultural status (non-Caucasian and non-Aboriginal). Aboriginal cultural status had a more limited and statistically non-significant association with lower child immunization status after controlling for income status.

Conclusion

Future policies to improve low levels of child immunization coverage in Saskatoon will likely need to address income disparity in order to be successful.

Introduction

Few measures in preventative medicine are of such proven value and as easy to implement as routine immunization against infectious disease.¹ Unfortunately, infectious disease outbreaks were observed in Canada for measles from 1989 to 1995, mumps in British Columbia in 1997 and Quebec in 1998 and rubella outbreaks were reported in Manitoba in 1997 and in Ontario in 2005.^{1,2}

Previous reports indicate that low immunization coverage rates for children are associated with low socioeconomic status, urban dwelling, impoverished neighbourhoods, single parent families, mobile populations and minority cultural status.³⁻¹¹ A recent publication from Ontario indicates that 26.6% of urban children in the lowest income neighbourhoods did not have up to date immunizations in comparison to 14.3% of children in the most affluent neighbourhoods.¹² In contrast, a report from Manitoba found high child immunization coverage rates with very small socioeconomic disparities after introducing the Manitoba Immunization Monitoring System (MIMS) to inform health providers and parents which children are behind in order to actively track down children with incomplete coverage.¹³

There were four objectives to the current study: 1) to use the Saskatchewan Immunization Management System (SIMS) to determine if child immunization coverage rates at age two were lower in low income neighbourhoods of Saskatoon; 2) to use SIMS to identify and then contact parents that were behind and not behind in child immunization coverage to determine differences in awareness, knowledge, beliefs and opinions on barriers and solutions, 3) build a regression model to determine which demographic covariates were associated with parents that have incomplete immunization coverage for their children in order to 4) determine if Aboriginal cultural status is independently associated with low child immunization coverage rates after adjusting for low income status.

Methods

SIMS uses vital statistics and health insurance information to create a population database to determine the percentage of children that have the recommended number of immunizations for their age. The immunization coverage schedule specific to Saskatchewan includes the combination vaccine measles/mumps/rubella (MMR) at twelve months and eighteen months and the combination vaccine for diphtheria/pertussis/tetanus/polio/heamophilus influenza typeB (DaPTP-Hib) at two months, four months, six months and eighteen months. The definition of complete coverage is therefore two MMR and four DaPTP-Hib immunizations by eighteen months old. Incomplete coverage is defined as less than six immunizations at two years old or at least six months behind the recommended schedule. The child immunization schedule is different in each province in Canada and, as such, this paper reviews the effectiveness of accomplishing goals specific to Saskatchewan alone. The SIMS database is on average more accurate and more complete than the clinical hard copies.¹⁴

Postal code information from the 2001 census was used to identify six existing residential neighbourhoods in the city of Saskatoon that were defined as "low income cut-off neighbourhoods" by Statistics Canada.^{15,16} All six neighbourhoods were touching or contiguous pre-existing municipal boundaries (Figure 1). For the first objective, the percentage of two year old children that had their recommended number of immunizations for MMR and DaPTP-Hib

in Saskatoon's low income neighbourhoods ($n = 16,683$) were compared to the rest of the Saskatoon ($n = 184,284$) and five affluent contiguous neighbourhoods ($n = 18,228$). There was no statistically significant heterogeneity between the six low income neighbourhoods themselves or between the five affluent neighbourhoods themselves in neighbourhood income, education or employment. Complete immunization coverage rates with 95% confidence intervals were computed for the years 2001 to 2005.

For the second objective, a list of names was generated for all children that had their second birthday in 2004 or 2005 and were at least six months behind in immunizations as of June 2006 when the electronic database SIMS was accessed. The SIMS database has immunization information from all Saskatoon healthcare practitioners except First Nations practitioners from the Saskatoon Tribal Council. As such, Saskatoon children behind in their immunization coverage were manually cross referenced to children immunized on seven Reserve Communities adjacent to Saskatoon (five Saskatoon children immunized in 2004 and 2005). An equal number of names were chosen at random by computer from children who were up to date in immunization coverage on their second birthday in 2004 and 2005. Parents or guardians of children from both groups were asked to complete a telephone survey on their awareness, knowledge, beliefs and opinions on barriers and solutions. Parents were notified if their child was up to date upon completion of the phone survey or contact. Parents were contacted in June and July of 2006. Chi square tests were used to assess differences between groups without correcting for multiple comparisons.

For the third objective, binary logistic regression was used to describe the relationship between the outcome variable of a) a parent whose child was at least six months behind on childhood immunizations and b) a parent whose child was not behind in childhood immunizations and the explanatory demographic variables. Stratification was used to assess for confounding and effect modification in the first step of model building.¹⁷ A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.¹⁷ The unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the $-2 \log$ likelihood and the Wald test.¹⁸ The final model includes factors with beta values for which the p values were less than 0.05.¹⁸ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the demographic covariates.¹⁸ Interaction was assessed with product terms.¹⁸ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.¹⁸ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.¹⁸ The final results were presented as adjusted odds ratios with 95 percent confidence intervals.¹⁸ All analyses were performed with an SPSS 13.0 software package.¹⁹ The research project received ethics approval from the University of Saskatchewan Behavioural Research Ethics Board.

Results

Reviewing the last five years in Saskatoon, the six low income neighbourhoods had child immunization coverage rates of 43.7% (95% CI 41.2-45.9) for MMR and 42.6% (95% CI 40.1-45.1) for DaPTP-Hib while the rest of Saskatoon had 69.1% (95% CI 68.2-70.0) for MMR and 71.9% (95% CI 71.0-72.8) for DaPTP-Hib. The five affluent neighbourhoods had 90.6% complete

immunization coverage for MMR (95% CI 88.9-92.3) and 78.6% for DaPTP-Hib (95% CI 76.2-81.0). Given that the coverage rates for the two immunizations are somewhat different, data are presented separately (Table 1).

The second objective was to contact parents that were behind and not behind in child immunization coverage to determine differences in awareness, knowledge, beliefs and opinions on barriers and solutions. There were 1,047 children in 2004 and 2005 that were behind in either MMR or DaPTP-Hib immunizations. Of those, there were 274 disconnected phone numbers, 305 wrong numbers and 110 households with no answer after 10 attempts. Of the remaining 358 parents, 271 agreed to participate in the survey (75.7%). We chose 1,047 parent names at random whose children were completely up to date in immunization coverage. Of those, there were 192 disconnected phone numbers, 188 wrong numbers and 121 households without any answer. Of the remaining 546, 418 parents were willing to complete the phone survey (76.6%). There was no difference in response rate between the two groups (75.7% and 76.6%) and there was no difference between responder and non-responder in terms of neighbourhood income or neighbourhood education levels.

Parents that were behind in immunization coverage for their children were more likely to have the demographic characteristics of being divorced/separated or single, Aboriginal (First Nations, Métis or self declared) or Other (non-Caucasian and non Aboriginal) cultural background and lower family income (Table 2).

Parents behind in immunization coverage were more likely to believe that immunizations weaken the immune system, natural medicines provide better and safer protection, their child will develop natural immunity and immunizations are associated with serious known and unknown side effects. Parents behind in immunization coverage were more likely to list barriers including lack of time, no location nearby, transportation problems, childcare issues, safety concerns for their child, lack of trust with the medical community, concerns about immunizations that have not been addressed and previous negative experience while immunizing their child (Table 3).

In terms of solutions, parents behind in immunization were more likely to suggest home visits by a nurse or doctor, the provision of a clinic in their neighbourhood, that only physicians immunize their child and that someone spend more time with them to talk about immunizations and the health of their child (Table 4). In an absolute sense, solutions with strong majority support from both groups of parents to keep their children up to date in immunization coverage included reminder telephone calls, reminder letters in the mail, reminders from healthcare practitioners when the parent is present for another matter, flexible walk in scheduling and extended clinical hours on weekends and evenings (Table 4).

It is of particular interest that 63.9% of parents whose child was behind in immunization coverage believed that their child was fully up to date (Table 3). Of the parents that believed their child was up to date, 27.7% indicated that they simply forgot to immunize their child in comparison to 47.4% of the parents that did not believe their child was up to date ($p = .002$). In other words, most parents did not forget that their child was behind- they simply did not know that their child was not fully immunized. Of the same parents whose child was behind in immunization coverage but the parent believed their child was up to date, 91.0% would have liked a reminder telephone call, 87.3% would have liked a reminder letter and 81.2% would have liked to have been reminded by their doctor or nurse while present for another matter.

It is also of interest to review the parents who were behind in immunization coverage but knew their child was behind. The greatest barrier is that 44.8% believe immunizations are associated with serious known side effects and 32.2% believe that immunizations are associated with serious unknown side effects.

For the third objective, binary logistic regression was used to determine if any demographic variable had an independent effect on the outcome of a child falling behind on immunization coverage. Variables with the strongest unadjusted association during model building included parent cultural status (Aboriginal and Other), lower household income status and being a single parent. In the final regression model, Aboriginal cultural status no longer had a statistically significant association with the outcome; but Other cultural status remained (OR = 2.25; 95% CI 1.306-3.909). Low income acted as a confounder for Aboriginal cultural status. Lower income status remained statistically significant in the final model (OR = 1.72; 1.16-2.54) (Table 5). The variable of single parent lost its statistical significance after controlling for other covariates. There was no effect modification. The R^2 of the final model was .390 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables. The goodness-of-fit test result ($p = .975$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense.

Discussion

Child immunization coverage rates are routinely lower in Saskatoon's six low income neighbourhoods in comparison to the rest of the city and are approximately half the rate of the affluent neighbourhoods. Although this trend is consistent with other jurisdictions in Canada, the magnitude of the disparity is disproportionate.¹² Similar to other reports, Saskatoon parents that were behind in immunization coverage with their children were more likely to have the demographics of being divorced/separated or single, Aboriginal or Other culture, have lower family income and list barriers including risk of adverse effects, access problems, distrust of the medical community, lack of knowledge about immunizations and had a desire for clinicians to spend more time with them.^{3-11,20,21} The authors caution that some of the relative differences observed are small in an absolute sense.

Perhaps surprisingly, 63.9% of parents with children who were at least six months behind in immunization coverage believed their children were up to date. This is a new finding that suggests the need to use a reminder system in Saskatoon. Approximately 90% of those behind in coverage that believed their children were up to date would have liked a reminder phone call or letter to keep them up to date. This request from Saskatoon parents is evidence based. A meta-analysis on patient reminder systems to improve immunization rates in children found these systems to be effective (OR = 1.45; 95% CI 1.28-1.66).⁴ As well, a report from Manitoba indicates that their electronic monitoring system has actually been used to remind parents and practitioners to track down children with incomplete coverage in order to reduce socioeconomic disparities in childhood immunization.¹³

Previous reports indicate that Aboriginal children in Canada are more likely to be behind in immunization coverage but the authors were not able to find a study that statistically controlled for potential confounding variables like low income status.²² Although Aboriginal cultural status was initially strongly associated with child immunization status in our study, Aboriginal culture did

not have a statistically significant association with incomplete immunization coverage in children after adjusting for low income status. This is a new finding and is important because it prevents the negative stereotype that it is more difficult to immunize Aboriginal children. Aboriginal children in Alaska routinely have immunization coverage rates in excess of 90% despite traditional risk factors like poverty, a higher proportion of uneducated mothers and remote access. High child immunization coverage rates in Alaska is the result of the utilization of an electronic monitoring system, collaboration between the state government and local tribal councils, willingness of public health nurses to perform home visits and making vaccination delivery a high priority.^{23,24}

There is a study limitation to discuss. A majority of parents were not able to be contacted. This introduces a potential selection bias that we are unable to control for in our analysis. Once parents were contacted, response rates were similar. This finding does suggest, however, that more efforts are required to keep telephone numbers current if telephone reminders are to be used to keep parents and their children up to date in immunization coverage. The only question with a response rate below 80% was income status of parents with children who were up to date. Using neighbourhood income as a proxy for individual income did not significantly influence the final regression model.

Future research should evaluate if a reminder system in Saskatoon is effective in increasing overall immunization coverage rates up to the national goal of 95%.¹

Table 1 Complete Immunization Coverage Percentages of Two Year Old Children by Neighbourhood Income

	Immunization Coverage Rates (95% CI)		
	Low Income Neighbourhoods	Rest of Saskatoon	High Income Neighbourhoods
Measles/ Mumps/ Rubella (Two doses)			
2001	134/289	1517/2232	225/236
	46.4% (40.7-52.1)	68.0% (66.1-69.9)	95.3% (92.7-97.9)
2002	144/341	1480/2218	227/227
	42.2% (38.5-45.9)	66.7% (64.7-68.7)	100% (98.7-101.3)
2003	136/362	1482/2040	184/214
	37.6% (32.7-42.5)	72.6% (70.7-74.5)	86.0% (81.4-90.6)
2004	140/292	1421/2092	229/257
	47.9% (42.2-53.6)	67.9% (65.9-69.9)	89.1% (85.3-92.9)
2005	124/266	1427/2028	147/183
	46.6% (40.6-52.6)	70.3% (68.3-72.3)	80.3% (74.5-86.1)
Total 2001-2005	678/1550	7327/10610	1012/1117
	43.7% (41.2-45.9)	69.1% (68.2-70.0)	90.6% (88.9-92.3)
Diphtheria/Tetanus/Pertussis/Polio/Influenza B (Four doses)			
2001	136/289	1663/2232	211/236
	47.1% (41.4-52.8)	74.5% (72.7-76.3)	89.4% (85.5-93.3)
2002	133/341	1663/2218	183/227
	39.0% (33.8-44.2)	75.0% (73.2-76.8)	80.6% (75.5-85.7)
2003	130/362	1483/2040	166/214
	35.9% (31.0-40.8)	72.7% (70.8-74.6)	77.5% (71.9-83.1)
2004	134/292	1360/2092	166/257
	45.9% (40.2-51.6)	65.0% (63.0-67.0)	64.6% (58.8-70.4)
2005	128/266	1457/2028	152/183
	48.1% (42.1-54.1)	71.8% (69.8-73.8)	83.1% (77.7-88.5)
Total 2001-2005	661/1550	7626/10610	878/1117
	42.6% (40.1-45.1)	71.9% (71.0-72.8)	78.6% (76.2-81.0)

Table 2 Demographic Differences between Parents with Children that are Up-To-Date in Immunization Coverage in Comparison to Parents with Children that are Behind in Immunization Coverage

Demographic Information	Child Immunization Status		
	n = 271	n = 418	
	Behind	Up to Date	Significance
A. Respondent/ Primary Care Giver			
Gender, Female	34/265 (88.3%)	369/405 (91.1%)	.239
Marital Status			.034
Divorced or Separated	17/259 (6.6%)	15/401 (3.7%)	
Married or Common Law	200/259 (77.2%)	341/401 (85.0%)	
Single	42/259 (16.2%)	45/401 (11.2%)	
Education Level			
Did not Complete High School	20/258 (7.8%)	20/400 (5.0%)	
Completed High School	59/258 (22.9%)	71/400 (17.8%)	
University or Tech Diploma	179/258 (69.4%)	309/400 (77.3%)	
Occupation			.100
Clerical/Sales/Service	74/261 (28.4%)	117/400 (29.3%)	
Homemaker	68/261 (26.1%)	104/400 (26.0%)	
Manual/Construction/Farmer/Transport	8/261 (3.1%)	29/400 (7.3%)	
Professional/ Management	75/261 (28.7%)	112/400 (28.0%)	
Student	11/261 (4.2%)	15/400 (3.8%)	
Unemployed	4/261 (1.5%)	8/400 (2.0%)	
Other	21/261 (8.0%)	15/400 (3.8%)	
Cultural Background			.000
Caucasian	179/258 (69.4%)	336/399 (84.2%)	
Aboriginal	35/258 (13.6%)	32/399 (8.0%)	
Other	44/258 (17.1%)	31/399 (7.8%)	
Annual Family Income			.006
Less than \$25,000	54/234 (23.1%)	51/320 (15.9%)	
\$25,000 - \$49,999	76/234 (32.5%)	80/320 (25.0%)	
\$50,000 - \$99,999	73/234 (31.2%)	141/320 (44.1%)	
Above \$100,000	31/234 (13.2%)	48/320 (15.0%)	

B. If Spouse or Common Law Present in Home			
Education Level			.208
Did not Complete High School	13/193 (6.7%)	12/338 (3.6%)	
Completed High School	52/193 (26.9%)	86/338 (25.4%)	
University or Tech Diploma	128/193 (66.3%)	240/338 (71.0%)	
Occupation			.005
Clerical/Sales/Service	46/192 (24.0%)	69/339 (20.4%)	
Homemaker	7/192 (3.6%)	5/339 (1.5%)	
Manual/Construction/Farmer/Transport	42/192 (21.9%)	117/339 (34.5%)	
Professional/ Management	72/192 (37.5%)	120/339 (35.4%)	
Student	6/192 (3.1%)	7/339 (2.1%)	
Unemployed	2/192 (1.0%)	9/339 (2.7%)	
Other	17/192 (8.9%)	12/339 (3.5%)	
Cultural Background			.001
Caucasian	148/196 (75.5%)	290/337 (86.1%)	
Aboriginal	12/196 (6.1%)	21/337 (6.2%)	
Other	36/196 (18.4%)	26/337 (7.7%)	

Table 3 Beliefs and Barriers towards Child Immunizations between Parents that are Behind and Parents that are not Behind in Child Immunizations

	Child Immunization Status		
	n = 271	n = 418	Significance
	Behind	Up to Date	
Do you believe that your infant child is fully up to date with immunization coverage?, Yes	168/263 (63.9%)	388/406 (95.6%)	.000
Beliefs about Immunizations			
1. Immunizations are no longer necessary because the diseases they protect against have been eliminated from society, True	9/259 (3.5%)	8/404 (2.0%)	.314
2. Immunizations weaken the immune system, True	38/243 (15.6%)	21/396 (5.3%)	.000
3. Natural medicines provide better and safer protection than immunizations, True	47/235 (20.0%)	32/382 (8.4%)	.000
4. I believe my child will develop natural immunity if we do not immunize, True	39/252 (15.5%)	31/388 (8.0%)	.004
5. I do not think you should immunize when a child has a minor illness like a cold, True	183/251 (72.9%)	242/390 (62.1%)	.005
6. Immunizations are associated with serious known side effects, True	112/250 (44.8%)	109/389 (28.0%)	.000
7. Immunizations are associated with serious unknown side effects, True	78/242 (32.2%)	85/383 (22.2%)	.007
Barriers toward Immunizations			
1. I simply forget to immunize my child, Yes	91/261 (34.9%)	115/403 (28.5%)	.087
2. I do not have enough time in my busy day, Yes	36/262 (13.7%)	31/402 (7.7%)	.017
3. I do not have a location nearby, Yes	24/261 (9.2%)	15/403 (3.7%)	.006
4. I do not have access to transportation, Yes	28/262 (10.7%)	18/402 (4.5%)	.003
5. I have other children to attend to, Yes	62/261 (23.8%)	46/402 (11.4%)	.000
6. I would prefer another healthcare practitioner to perform my child's immunization, Yes	34/260 (13.1%)	35/401 (8.7%)	.090
7. I fear for the safety of my child, Yes	70/262 (26.7%)	60/402 (14.9%)	.000
8. I do not like seeing my child in pain or crying, Yes	55/261 (21.1%)	82/401 (20.4%)	.845
9. I have cultural barriers that discourage immunization, Yes	11/259 (4.2%)	10/401 (2.5%)	.257
10. I do not trust the medical community, Yes	31/257 (12.1%)	22/401 (5.5%)	.003
11. I have concerns about immunizations that have not been addressed to my satisfaction, Yes	70/258 (27.1%)	64/401 (16.0%)	.001
12. I had a previous negative experience with immunizing my child, Yes	31/259 (12.0%)	22/401 (5.5%) ¹³	.003
13. I had a previous negative experience with healthcare, Yes	37/259 (14.3%)	46/402 (11.4%)	.282

14. Where did the negative immunization experience with your child occur?	23/31 (74.2%)	16/22 (72.7%)	.789
Public Health Clinic	23/31 (74.2%)	16/22 (72.7%)	
Physician's Clinic	8/31 (25.8%)	6/22 (27.3%)	
Paediatrician's Clinic	0/31 (0.0%)	0/22 (0.0%)	

Table 4 Solutions Listed by Parents to Increase Child Immunization Coverage Rates

	Child Immunization Status		
	n = 271	n = 418	Significance
	Behind	Up to Date	
Solutions to Keep Children Up-To-Date			
1. Reminder telephone calls, Yes	216/262 (82.4%)	349/401 (87.0%)	.117
2. Reminder letters in mail, Yes	208/262 (79.4%)	345/401 (86.0%)	.032
3. Home visits by nurse or doctor, Yes	97/261 (37.2%)	101/398 (25.4%)	.002
4. Reminded by my doctor or nurse when I am present for another matter, Yes	189/260 (72.7%)	335/402 (83.3%)	.001
5. General advertising, Yes	117/261 (44.8%)	232/400 (58.0%)	.001
6. Flexible walk in scheduling, Yes	186/260 (71.5%)	319/402 (79.4%)	.025
7. Extended clinical hours on weekends, Yes	187/260 (71.9%)	316/402 (78.6%)	.051
8. Extended clinical hours at night, Yes	198/261 (75.9%)	316/401 (78.8%)	.391
9. Reduced waiting times in clinic, Yes	153/260 (58.8%)	208/401 (51.9%)	.079
10. Provide child with other health services at same time as immunization, Yes	176/259 (68.0%)	261/401 (65.1%)	.500
11. Provide a clinic in your neighbourhood, Yes	160/261 (61.3%)	205/401 (51.1%)	.011
12. Provide transportation to nearest clinic, Yes	79/261 (30.3%)	106/402 (26.4%)	.288
13. Provide babysitting at clinic, Yes	96/259 (37.1%)	145/400 (36.3%)	.869
Preferences to Keep Children Up-To-Date			
1. Prefer only public health nurses to immunize my child, Yes	89/261 (34.1%)	127/403 (31.5%)	.498
2. Prefer only physicians to immunize my child, Yes	62/261 (23.8%)	70/403 (17.4%)	.047
3. Prefer only Paediatricians to immunize my child, Yes	48/260 (18.5%)	55/403 (13.6%)	.100
4. Prefer someone spend more time with me to talk about child immunizations during my appointment, Yes	109/259 (42.1%)	134/401 (33.4%)	.026
5. Prefer that someone spend more time with me to talk about health of my child during immunization appointment, Yes	138/258 (53.5%)	168/401 (41.9%)	.004
6. Prefer that someone spend more time with me to talk about my health during child immunization appointment, Yes	63/258 (24.4%)	78/402 (19.4%)	.144
7. Prefer someone spend more time with me to talk about child immunizations during my appointment, Yes	109/259 (42.1%)	134/401 (33.4%)	.026
8. Prefer that someone spend more time with me to talk about health of my child during immunization appointment, Yes	138/258 (53.5%)	168/401 (41.9%)	.004
9. Prefer that someone spend more time with me to talk about my health during child immunization appointment, Yes	63/258 (24.4%)	78/402 (19.4%)	.144

Table 5 Independent Variables Associated with Parents whose Child was not Up to Date in Immunization Coverage

	Dependent Variable:				
	Child Behind in Immunization Coverage. n = 689.				
Independent Variables:	Beta	SE	Unadjusted OR	Adjusted OR (95% CI)	Significance
1. Cultural Status of Parent					
Caucasian (Ref*)					
Aboriginal	0.348	0.293	2.05	1.41 (0.79-2.51)	.235
Other (Non-Caucasian or Non Aboriginal)	0.815	0.28	2.66	2.25 (1.30-3.90)	.004
2. Income of Family					
More than \$100,000 per year (Ref*)					
Less than \$50,000 per year	0.543	0.200	1.91	1.72 (1.16-2.54)	.007
\$50,000- \$99,999 per year	0.225	0.274	1.24	1.25 (0.73-2.14)	.412

* Reference Category

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2.8.

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Risk indicators for depressed mood in youth: lack of association with Aboriginal cultural status. *Paediatrics and Child Health* 2008;13(3):285-290.

Abstract

Introduction

There have been too few studies on urban Aboriginal youth to permit inferences about depressed mood in this subgroup. The purpose of the current study was to determine if Aboriginal cultural status is independently associated with moderate or severe depressed mood in youth after controlling for other variables; including socioeconomic status.

Methods

Every student in grades 5 to 8 in the City of Saskatoon, Canada, was asked to complete a questionnaire in February of 2007. Depressed mood was measured with a 12 question depression scale derivative of the 20 question CES-D.

Results

4,093 youth participated in the school health survey. For Aboriginal youth, the prevalence rate of moderate or severe depressed mood was 21.6% in comparison to 8.9% for Caucasian youth. Aboriginal cultural status was not associated with depressed mood after multivariate adjustment for other variables in the final multivariate model (OR= 1.13; 95% confidence interval 0.682-1.881). After controlling for other variables, children that were hungry some or most of the time were 107% more likely to have depressed mood and children from a lower socioeconomic home were 50% more likely to have depressed mood.

Discussion

The recognition that Aboriginal cultural status is not independently associated with moderate or severe depressed mood in youth after full multivariate adjustment allows policy makers to acknowledge that mental health disparity prevention is possible because the determinants of mental health (i.e., socioeconomic status) are modifiable (in comparison to Aboriginal cultural status).

Conclusion

Future policies to improve mental health in youth will likely need to address socioeconomic status in order to be successful.

Introduction

In Canada, it is not difficult to find a government agency reporting that Aboriginal cultural status is associated with poor health.¹⁻³ One of the concerns associated with this discussion is that it gives policy makers and the public at large the impression that health disparity is not preventable because a major determinant of health and behaviour (cultural status) is not modifiable.

There is growing awareness that the association between cultural status, socioeconomic status and mental health status is neither simple nor straightforward, especially for youth.⁴ Unfortunately, there is limited data to test this specific hypothesis. Data from the Canadian Community Health Survey is too limited to examine specific sub-groups like the Aboriginal adolescent population.⁵ A review on depression in adolescence concluded that too few studies have included subgroup analysis to permit drawing inferences about depression in Native American adolescents.⁶

The purpose of the current study was to determine if Aboriginal cultural status is independently associated with moderate or severe depressed mood in youth after controlling for other covariates; including socioeconomic status.

Methods

Every student attending school in the City of Saskatoon, Canada, in grades 5-8 was asked to complete a questionnaire in February of 2007. There were 9,958 youth registered in these grades. The survey instrument used in the study was taken from the National Longitudinal Survey for Children and Youth (NLSCY) developed by Statistics Canada.^{7,8} The scope of the NLSCY is comprehensive dealing with multiple health, social and educational outcomes that have been validated for Canadian youth aged 10/11 and 12/13.^{7,8}

Depressed mood was measured in the NLSCY with a 12 question depression scale derivative of the 20 question CES-D.⁹ In terms of content validity, the CES-D-12 and the 20-item CES-D correspond well to each other and to the DSM-IV symptoms of major depressive disorder.^{10,11} Almost all of the somatic symptoms of depressed mood are represented in the scale except irritability, which could result in the underestimation of the prevalence of depression among adolescents.¹⁰ The CES-D-12 has good internal consistency with a Cronbach alpha of 0.85 and demonstrates good discrimination in terms of categorizing depressive symptoms.¹⁰ The outcome for the study was moderate or severe depressed mood, which required a score of 16 or above on the CES-D-12.

Socioeconomic status was measured by parental educational status (coded as university education or not), parental occupational classification (coded as employed in a professional trade/management or not) and neighbourhood income status. Neighbourhood income status was calculated with census information to identify six contiguous low income cut-off neighbourhoods.⁷ Cultural status was stratified by Caucasian, Aboriginal (First Nation or Métis) and Other (coded as non-Caucasian and non-Aboriginal) cultural status.

A five stage informed consent protocol was employed. Written consent was obtained from both Public and Catholic School Boards. Verbal consent was obtained from the principal of each individual school and the teacher from each individual classroom. Written informed consent was obtained from each parent. If the parent consented, written informed consent was obtained from each youth. The classroom teacher (not the researchers) asked the students to complete the

questionnaire in the classroom. At that time, the students were given additional information that they were free to consent or not consent and were free to not complete any question that made them feel uncomfortable. This information was also on the questionnaire. Students provided written informed consent that they understood the study, its voluntary nature and were willing to participate. Students and parents that chose to not participate were not isolated in any way.

Cross tabulations were computed between moderate and severe depressed mood and parental educational status, parental occupational classification, neighbourhood income status and cultural status. Stratification was used to assess for confounding and effect modification in the first step of model building.¹² Binary logistic regression was used to describe the relationship between the outcome variable of a) moderate or severe depressed mood and b) no moderate or severe depressed mood and all remaining covariates. A risk hazard model was built to determine the independent effect of cultural status and parental educational status on a logistic regression model of depressed mood that includes age and gender.^{13,14} A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.¹² The unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the -2 log likelihood and the Wald test.¹⁵ The final model included factors with beta values for which the p values were less than 0.05.¹⁵ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.¹⁵ Interaction was assessed with product terms.¹⁵ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.¹⁵ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.¹⁵ The final results were presented as adjusted odds ratios with 95 percent confidence intervals.¹⁵ All analyses were performed with an SPSS 13.0 software package.¹⁶

The study design and the analysis plan were all determined a priori as part of a Canadian Institutes of Health Research grant. Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board (BEH# 06-237).

Results

Of 9,958 eligible respondents, 4,093 youth participated in the school health survey (41.1%). The demographics of the participants are presented in Table 1. There were statistically significant differences between respondents and non-respondents by gender and neighbourhood income. In Saskatoon, 51.2% of youth aged 5-14 are male in comparison to 46.5% of the sample and 9.9% of youth live in one of six low income neighbourhoods in comparison to 2.5% of the sample.

In the Saskatoon School Health Survey, 9.8% of the youth aged 9-15 had moderate or severe depressed mood. For youth aged 9-12, the prevalence of moderate or severe depressed mood was 9.1% in comparison to youth aged 13-15, where the prevalence rate was 12.0% (RR=1.32; 95% CI 1.09-1.60). The prevalence rate for moderate or severe depressed mood for females was 12.5% in comparison to 7.2% for males (RR=1.74; 95% CI 1.43-2.12). For youth whose parents did not have a professional occupation, the prevalence rate of moderate or severe depressed mood was 10.7% in comparison to 8.1% for youth whose parents had a professional occupation (RR=1.32; 95% CI 1.07-1.63). For youth whose parents did not have a university education, the prevalence rate of moderate or severe depressed mood was 14.4% in

comparison to 7.9% for youth whose parents had a university education (RR=1.82; 95% CI 1.48-2.24). For youth who lived in a low income neighbourhood, the prevalence rate of moderate or severe depressed mood was 16.3% in comparison to 9.8% for youth who did not live in a low income neighbourhood (RR=1.66; 95% CI 1.05-2.62). For youth whose parents were of Aboriginal cultural status, the prevalence rate of moderate or severe depressed mood was 21.6% in comparison to 8.9% for youth whose parents were Caucasian (RR=2.43; 95% CI 1.92-3.08).

Stratification was used to disentangle the complex relationship between socioeconomic status, cultural status and moderate or severe depressed mood. Youth whose parents had a non-professional occupation and who had Aboriginal parents were 73% more likely to have depressed mood in comparison to youth whose parents also had non-professional occupations but whose parents were of Caucasian cultural status (RR=1.73; 95% CI 1.13-2.64). Youth whose parents did not have a university degree and who had Aboriginal parents were 38% more likely to have depressed mood in comparison to youth whose parents also did not have a university degree but whose parents were of Caucasian cultural status (RR=1.38; 95% CI 0.89-2.14). The results are not statistically significant. Youth whose parents lived in one of six contiguous low income neighbourhoods and who had Aboriginal parents were 178% more likely to have depressed mood in comparison to youth that also lived in the low income neighbourhoods but whose parents were of Caucasian cultural status (RR=2.78; 95% CI 0.68-11.4).

It appears that of the three socioeconomic variables, parental education status is the most likely to have either an effect modifier or confounding relationship with the association between Aboriginal cultural status and moderate or severe depressed mood. Both effect modification and confounding were formally assessed. There was a difference between the rate ratio of low education by cultural status (RR=1.30) and the rate ratio of high education by cultural status (RR=2.85). As such, effect modification by education status is present. There was a difference between the two rate ratios of low education by cultural status and high education by cultural status in comparison to the overall rate ratio (RR=2.42). As such, confounding is suspected. However, the presence of effect modification means it is much more difficult to determine if confounding is present. It is therefore necessary to compare the prevalence rate of depressed mood in the non-exposed and look at exposure between the cultural groups by educational status. In both cases, confounding is suspected.

The first stage of model building included adding age and gender because they had associations with moderate or severe depressed mood after cross tabulation and this finding was supported by the literature. The next step was to add cultural status and the socioeconomic status variable of parental educational status. As can be seen by the results of Table 2, the introduction of age, gender and parental education status into the logistic regression model acted as confounders between the relationship of cultural status and outcome of moderate or severe depressed mood. After the introduction of four covariates, the independent effect of Aboriginal cultural status on the outcome of depressed mood was reduced, but not eliminated, from a crude odds ratio of 2.812 to an adjusted odds ratio of 2.35. In other words, age, gender and parental educational status were not able to fully explain the association between Aboriginal cultural status and depressed mood in the first stages of model building.

A risk hazard model was built to determine the independent effect of cultural status and parental educational status on a logistic regression model of moderate or severe depressed mood that

includes age and gender. Table 3 demonstrates a larger direct and independent effect of parental educational status (18%) in comparison to the independent effect of cultural status (6.2%) in explaining the association between the demographic variables of age and gender on depressed mood.

In the final adjusted logistic regression model, moderate or severe depressed mood was more likely to be associated with female gender, low self esteem, feeling like an outsider at school, being bullied within the past year, alcohol usage, high levels of anxiety, suicide ideation, being hungry some or most of the time and parents having a lower education status. Aboriginal cultural status was not associated with higher levels of moderate or severe depressed mood after adjustment for other covariates in the final multivariate model (OR= 1.13; 95% CI 0.68-1.88). Age was also dropped from the final model. The results are presented in Table 4.

Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates. Although gender and parental education status were confounders to the relationship between Aboriginal cultural status and moderate or severe depressed mood, it was not until the introduction of other covariates, which were also potentially influenced by gender and parental educational status, that the association between Aboriginal cultural status and moderate or severe depressed mood became non-statistically significant. There was no effect modification in the final model. The estimated slope coefficients and standard errors presented are small, so co-linearity is not suspected in the final model.

The R^2 for the final model was .504 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory covariates. The goodness-of-fit test result ($p = .410$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense.

Discussion

In the Saskatoon School Health Survey, 9.8% of the youth aged 9-15 had moderate or severe depressed mood. Depressed mood was 32% more common in youth aged 13-15 than youth aged 9-12. A review of three American population based studies suggests that depressive symptoms start at approximately age 12 and peak between the ages of 15 and 17.¹⁷ Depressed mood was 74% more common in female youth than male youth. Gender differences in rates of depressed mood have been found to emerge around the age of 13 years of age.¹⁸⁻²¹

In our study, moderate or severe depressed mood was 32% more common in youth whose parents did not have a professional occupation, 82% more common in youth whose parents did not have a university diploma, 66% more common in youth who lived in one of six contiguous low income neighbourhoods and 143% more common in Aboriginal youth in comparison to Caucasian youth. The association between socioeconomic status and depressed mood in youth has been demonstrated previously.²²⁻³⁰ Regrettably, there is limited data from Canada or the United States regarding depressed mood in Aboriginal youth, let alone sub-group analysis by socioeconomic status.^{5,6} The lack of research in this area provides a rationale for the current study.

All three socioeconomic variables (parental educational status, parental occupational status and neighbourhood income) and Aboriginal cultural status had important associations with moderate or severe depressed mood after cross tabulation. The main objective of the study was to determine if socioeconomic status was a confounder or effect modifier of the association

between depressed mood and cultural status in youth. After stratification, it was determined that parental educational status was both a confounder and an effect modifier. In the first stage of model building, age, gender and parent educational status reduced the association between Aboriginal cultural status and depressed mood but did not eliminate it. After full multivariate adjustment, gender and parental educational status were confounders to the relationship between Aboriginal cultural status and depressed mood but not effect modifiers. The unadjusted odds ratio for the association between Aboriginal cultural status and depressed mood was 2.81 (95% CI 2.097-3.771) and was subsequently reduced to 1.13 (95% CI 0.68-1.88) after full multivariate adjustment in the final logistic regression model. In other words, Aboriginal cultural status was strongly associated with moderate or severe depressed mood after cross tabulation, stratification and the first stages of model building but was not associated with moderate or severe depressed mood after full multivariate adjustment.

As mentioned, parental educational status was the only socioeconomic variable associated with outcome after multivariate adjustment. Education is the most common overall index of social class in psychiatric epidemiology and public health research.³¹ The stability of education over adult life – as well as its reliability, efficiency of measurement, and good validity – are presumably the main reasons for its popularity.³²

It is perhaps somewhat surprising that neighbourhood income and parental occupational status were not associated with depressed mood in youth after multivariate adjustment. Some suggest that very young people, whose lives are substantially confined to the boundaries of a community and its schools, may be more sensitive to strains within this context than those less confined.³³ In the Whitehall studies, occupational status was a better predictor of depression in adults than years of education.³⁴

The authors were unable to find any high quality studies that reviewed the relationship between Aboriginal cultural status, socioeconomic status and depressed mood in youth. The authors were able to find studies that examined this complex relationship in adults. For example, one study reviewed data from the Canadian National Population Health Survey with a sample size of 81,804. The baseline analysis revealed that Aboriginal Canadians and French Canadians experience significantly more depressive symptoms than non-Aboriginal Canadians. After multivariate adjustment, the authors found that an increase in family income reduces the level of depression and the risk of a major depressive episode. After controlling for socioeconomic status, Aboriginal Canadians and French Canadians no longer differed from non-Aboriginal Canadians in levels of depression or risk of a major depressive episode.³⁵

The other associations found between the covariates in the multivariate model and depressed mood in youth have been demonstrated previously. Low self esteem is seen as both a cause and consequence of depression.^{18,36-39} The association between depression and exposure to violence is well established for youth.⁴⁰⁻⁴² More specifically, bullying has been identified as a risk factor in the development of depression in youth with the greatest incidence occurring as a result of social isolation.⁴³ Depressive symptoms have also been linked previously to substance abuse.^{36-39,44,45} Co-morbidity between depression and anxiety is well documented and established.^{20,46,47} Adolescent depression has been associated with suicide.⁴⁸⁻⁵⁸ Up to 41% of adolescents with depressive disorder report suicide ideation and 21% of depressed youth attempt suicide.¹⁸ Hunger and living in disadvantaged circumstances have also been found to be associated with greater levels of depression and emotional distress in adolescents.⁵⁹⁻⁶¹

There is a study limitation to discuss. Written consent was obtained for 41.1% of eligible students. It appears the study does not have adequate representation from males and low income neighbourhoods. The under representation of males tends to overestimate the prevalence while the under representation of low income youth tends to underestimate the prevalence. Combined, it is hoped that the estimate is valid; although it is impossible to know with certainty.

Economic and political interests have always affected both the explanation of health disparities and responses to them.^{62,63} As such, it will be important to transfer knowledge that Aboriginal cultural status is not associated with poor mental health outcome in youth after controlling for other covariates; including socioeconomic status.

In summary, all of society feels the impact of health disparities – directly and indirectly.¹ Health disparities are inconsistent with Canadian values.¹ In addition to the excess burden of illness on those who are already disadvantaged, health disparities threaten the cohesiveness of community and society, challenge the sustainability of the health system and have an impact on the economy.¹ These consequences are avoidable and can be successfully addressed.¹

Table 1 Demographics of School Health Survey Respondents	
Grade	
Grade 5	1078/4093 (26.3%)
Grade 6	969/4093 (23.7%)
Grade 7	925/4093 (22.6%)
Grade 8	869/4093 (21.2%)
Missing	252/4093 (6.2%)
Age Group	
9-10	369/4093 (9.0%)
11	1287/4093 (31.4%)
12	993/4093 (24.3%)
13-15	1290/4093 (31.5%)
Missing	154/4093 (3.8%)
Gender	
Male	1903/4093 (46.5%)
Female	2131/4093 (52.1%)
Missing	59/4093 (1.4%)
Cultural Status	
Caucasian	3170/4093 (77.4%)
Aboriginal	324/4093 (7.9%)
Other (Non-Caucasian/Non-Aboriginal)	457/4093 (11.2%)
Missing	142/4093 (3.5%)
Father's Occupation	
Professional	1097/4093 (26.8%)
Non-Professional	2263/4093 (55.3%)
Missing	733/4093 (17.9%)
Mother's Occupation	
Professional	1338/4093 (32.7%)
Non-Professional	2116/4093 (51.7%)
Missing	639/4093 (15.6%)
Father's Education	
Less than High School/ High School	1411/4093 (34.5%)
University	2006/4093 (49.0%)
Missing	676/4093 (16.5%)

Mother's Education	
Less than High School/ High School	1244/4093 (30.4%)
University	2311/4093 (56.5%)
Missing	538/4093 (13.1%)
Neighbourhood Income	
Six contiguous low income	103/4093 (2.5%)
Rest of neighbourhoods	3990/4093 (97.5%)

Table 2 First Stage of Logistic Regression Model Building including Age, Gender, Parental Educational Status and Cultural Status on Moderate or Severe Depressed Mood

Variable	Crude OR	95 % CI	Sig.	Beta	S.E.	Adjusted OR	95 % CI	Sig.
Age 13-15	1.364	1.100-1.692	.005	0.232	0.124	1.261	0.988-1.609	.062
Females	1.840	1.480-2.286	.000	0.65	0.127	1.915	1.494-2.454	.000
Aboriginal	2.812	2.097-3.771	.000	0.857	0.175	2.355	1.672-3.318	.000
Parents' Low Education	1.963	1.549-2.489	.000	0.598	0.126	1.819	1.421-2.329	.000

Reference categories: Age: 9-12 yrs; Gender: Males; Cultural Status: Caucasian; Parents' Education: High Education (University Degree)

Table 3 Risk Hazard Model to Determine Independent Effect of Parental Education Status and Cultural Status on Model of Moderate or Severe Depressed Mood with Age and Gender

Age	Base Model = Age + Gender Model 1	Model 1 + Cultural Status = Model 2	Model 1 + Education = Model 3	Full Model = Model 4	Independent effect of cultural Status	Overlap effect of Education	Independent effect of Education
	1.00	1.00	1.00	1.00			
Age 13-15	1.366	1.327	1.284	1.261			
	(1.100- 1.697)	(1.062- 1.658)	(1.010- 1.632)	(0.988- 1.609)	28.6 – 22.4 = 6.2	10.6 – 6.2 = 4.4	22.4 – 4.4 = 18
% Change		10.6	22.4	28.6			

Calculating % Change = (RH Model 1) - (RH Model 2, 3 or 4) / [(RH Model 1) -1]

Model 1 = Age + Gender

Model 2 = Age + Gender + Cultural Status

Model 3 = Age + Gender + Parental Education

Model 4 = Age + Gender + Cultural Status+ Parental Education

Independent effect of Culture = Model 4 – Model 3

Overlap effect of Parental Education = Model 2 – Independent effect of Culture

Independent effect of Parental Education = Model 3 – Overlap of Parental Education

Table 4 Final Logistic Regression Model with Crude and Adjusted Estimates for Moderate or Severe Depressed Mood

Covariate	Crude OR	95 % CI	Sig.	Beta	S.E.	Ad-justed OR	95 % CI	Sig.
Female	1.840	1.480 -2.286	.000	0.510	.176	1.665	1.179- 2.352	.004
Low Self Esteem	11.028	8.565 -14.199	.000	1.159	.217	3.185	2.084- 4.870	.000
Felt Like an Outsider at School	6.713	5.340 -8.438	.000	1.213	.175	3.364	2.386- 4.743	.000
Was Bullied at School and Outside	4.062	3.150 -5.236	.000	.631	.196	1.879	1.278- 2.761	.001
Alcohol Use	3.744	3.008 -4.735	.000	.923	.192	2.518	1.730- 3.666	.000
High Anxiety	53.318	38.391 -74.050	.000	3.099	.228	22.171	14.170- 34.690	.000
Suicide Ideation	12.883	10.033 -16.534	.000	1.317	.204	3.734	2.502- 5.572	.001
Was Hungry - Some/Most of Time	3.577	2.788 -4.590	.000	.728	.216	2.071	1.357- 3.162	.001
Parents' Low Education	1.963	1.549 -2.489	.000	.408	.175	1.503	1.066- 2.120	.020
Aboriginal Cultural Status	2.812	2.097 -3.771	.000	.124	.259	1.132	0.682- 1.881	.631

Reference Categories: Gender: Male; Alcohol: None; Suicide: No; Self-Esteem: High; School-Outsider: Rarely/ Never; Anxiety: Low; Bullying: No; Parents' Education: University Graduate; Hunger: Never/Rarely; Culture: Caucasian

Appendix A Self Report Symptoms, Social Factors, Behaviours and Mental Health Outcomes by Socioeconomic Status and Cultural Status			
	Prevalence %	95% CI	Rate Ratio (95%CI)
Self-Reported General Health-Good/Fair/Poor			
Parental Occupation			
Non-Professional	358/1435 (24.9%)	22.7-27.3	
Professional	282/1851 (15.2%)	13.6-17.0	
Non-Professional vs. Professional			1.64 (1.43-1.89)
Parental Education			
Less than High School/High School	268/873 (30.7%)	27.6-33.9	
University Graduate	443/2609 (17.0%)	15.6-18.5	
Less than University vs. University			1.81 (1.59-2.06)
Neighbourhood Income			
Low	43/102 (42.2%)	32.4-52.3	
Rest	839/3946 (21.3%)	20.0-22.6	
Low vs. Rest			1.98 (1.57-2.50)
Cultural Status			
Aboriginal	137/322 (42.5%)	37.1-48.1	
Caucasian	600/3142 (19.1%)	17.7-20.5	
Aboriginal vs. Caucasian			2.22 (1.92-2.57)
Self-Reported Mental Health- Good/Fair/Poor			
Parental Occupation			
Non-Professional	299/1413 (21.2%)	19.1-23.4	
Professional	263/1835 (14.3%)	12.8-16.0	
Non-Professional vs. Professional			1.48 (1.27-1.72)
Parental Education			
Less than High School/High School	395/2587 (15.3%)	13.9-16.7	
University Graduate	221/864 (25.6%)	22.7-28.6	
Less than University vs. University			1.67 (1.44-1.93)
Neighbourhood Income			
Low	43/100 (43.0%)	33.1-53.3	
Rest	732/3891 (18.8%)	17.6-20.1	
Low vs. Rest			2.29 (1.81-2.90)
Cultural Status			
Aboriginal	118/313 (37.7%)	32.3-43.3	
Caucasian	522/3107 (16.8%)	15.5-18.2	
Aboriginal vs. Caucasian			2.24 (1.90-2.64)

	Prevalence %	95% CI	Rate Ratio (95%CI)
Body Mass Index-Overweight/Obese			
Parental Occupation			
Non-Professional	250/1267 (19.7%)	17.6-22.0	
Professional	272/1666 (16.3%)	14.6-18.2	
Non-Professional vs. Professional			1.21 (1.04-1.41)
Parental Education			
Less than High School/High School	161/763 (21.1%)	18.3-24.2	
University Graduate	383/2332 (16.4%)	14.9-18.0	
Less than University vs. University			1.29 (1.04-1.52)
Neighbourhood Income			
Low	15/64 (23.4%)	13.7-35.7	
Rest	625/3443 (18.2%)	16.9-19.5	
Low vs. Rest			1.29 (0.82-2.02)
Cultural Status			
Aboriginal	66/241 (27.4%)	21.9-33.5	
Caucasian	495/2820 (17.6%)	16.2-19.0	
Aboriginal vs. Caucasian			1.56 (1.25-1.95)
Physical Activity Composite – Meets Criteria			
Parental Occupation			
Non-Professional	115/1402 (8.2%)	6.8-9.8	
Professional	188/1835 (10.2%)	8.9-11.7	
Non-Professional vs. Professional			1.24 (0.99-1.55)
Parental Education			
Less than High School/High School	64/854 (7.5%)	9.0-11.3	
University Graduate	260/2575 (10.1%)	5.8-9.5	
Less than University vs. University			1.35 (1.04-1.75)
Neighbourhood Income			
Low	7/98 (7.1%)	2.9-14.2	
Rest	357/3876 (9.2%)	8.3-10.2	
Low vs. Rest			1.30 (0.63-2.67)
Cultural Status			
Aboriginal	21/311 (6.8%)	4.2-10.1	
Caucasian	296/3091 (9.6%)	8.6-10.7	
Aboriginal vs. Caucasian			1.41 (0.92-2.16)

	Prevalence %	95% CI	Rate Ratio (95%CI)
Smoking - Yes			
Parental Occupation			
Non-Professional	55/1426 (3.9%)	2.9-5.0	
Professional	39/1847 (2.1%)	1.5-2.9	
Non-Professional vs. Professional			1.86 (1.24-2.79)
Parental Education			
Less than High School/High School	44/862 (5.1%)	3.7-6.8	
University Graduate	73/2605 (2.8%)	2.2-3.5	
Less than University vs. University			1.82 (1.26-2.62)
Neighbourhood Income			
Low	28/98 (28.6%)	19.9-38.6	
Rest	119/3939 (3.0%)	2.5-3.6	
Low vs. Rest			9.53 (6.65-13.65)
Cultural Status			
Aboriginal	63/317 (19.9%)	15.6-24.7	
Caucasian	64/3132 (2.0%)	1.6-2.6	
Aboriginal vs. Caucasian			9.95 (7.17-13.81)
Drinking Alcohol- Yes			
Parental Occupation			
Non-Professional	237/1425 (16.6%)	14.7-18.7	
Professional	253/1852 (13.7%)	12.1-15.3	
Non-Professional vs. Professional			1.21 (1.03-1.42)
Parental Education			
Less than High School/High School	180/864 (20.8%)	18.2-23.7	
University Graduate	365/2612 (14.0%)	12.7-15.4	
Less than University vs. University			1.49 (1.27-1.75)
Neighbourhood Income			
Low	38/98 (38.8%)	29.1-49.1	
Rest	584/3942 (14.8%)	13.7-16.0	
Low vs. Rest			2.62 (2.02-3.40)
Cultural Status			
Aboriginal	91/316 (28.8%)	23.8-34.1	
Caucasian	461/3137 (14.7%)	13.5-16.0	
Aboriginal vs. Caucasian			1.96 (1.62-2.38)

	Prevalence %	95% CI	Rate Ratio (95%CI)
Marijuana - Yes			
Parental Occupation			
Non-Professional	59/1427 (4.1%)	3.2-5.3	
Professional	52/1842 (2.8%)	2.1-3.7	
Non-Professional vs. Professional			1.46 (1.01-2.11)
Parental Education			
Less than High School/ High School	68/860 (7.9%)	6.2-10.0	
University Graduate	82/2598 (3.2%)	2.5-3.9	
Less than University vs. University			2.47 (1.81-3.37)
Neighbourhood Income			
Low	35/98 (35.7%)	26.3-46.0	
Rest	149/3922 (3.8%)	3.2-4.4	
Low vs. Rest			9.39 (6.90-12.79)
Cultural Status			
Aboriginal	68/316 (21.5%)	17.1-26.5	
Caucasian	84/3121 (2.7%)	2.1-3.3	
Aboriginal vs. Caucasian			7.96 (5.91-10.72)
Self Esteem Scale- Low			
Parental Occupation			
Non-Professional	142/1413 (10.0%)	8.5-11.7	
Professional	107/1837 (5.8%)	4.8-7.0	
Non Professional vs. Professional			1.72 (1.35-2.19)
Parental Education			
Less than High School/ High School	109/863 (12.6%)	10.5-15.0	
University Graduate	165/2577 (6.4%)	5.5-7.4	
Less than University vs. University			1.97 (1.57-2.48)
Neighbourhood Income			
Low	19/100 (19.0%)	11.8-28.1	
Rest	320/3890 (8.2%)	7.4-9.1	
Low vs. Rest			2.32 (1.53-3.52)
Cultural Status			
Aboriginal	57/309 (18.4%)	14.3-23.2	
Caucasian	220/3117 (7.1%)	6.2-8.0	
Aboriginal vs. Caucasian			2.59 (1.98-3.38)

	Prevalence %	95% CI	Rate Ratio (95%CI)
Anxiety Scale – High			
Parental Occupation			
Non-Professional	91/1364 (6.7%)	5.4-8.1	
Professional	86/1781 (4.8%)	3.9-5.9	
Non Professional vs. Professional			1.40 (1.05-1.86)
Parental Education			
Less than High School/ High School	70/829 (8.4%)	6.6-10.5	
University Graduate	129/2499 (5.2%)	4.3-6.1	
Less than University vs. University			1.61 (1.22-2.13)
Neighbourhood Income			
Low	10/88 (11.4%)	5.6-19.9	
Rest	229/3753 (6.1%)	5.4-6.9	
Low vs. Rest			1.87 (1.03-3.40)
Cultural Status			
Aboriginal	41/297 (13.8%)	10.1-18.3	
Caucasian	153/3002 (5.1%)	4.4-5.9	
Aboriginal vs. Caucasian			2.71 (1.96-3.74)
Suicide Ideation - Yes			
Parental Occupation			
Non-Professional	119/1390 (8.6%)	7.1-10.2	
Professional	130/1822 (7.1%)	6.0-8.4	
Non-Professional vs. Professional			1.21(0.95-1.54)
Parental Education			
Less than High School/High School	99/849 (11.7%)	9.6-14.0	
University Graduate	195/2541 (7.7%)	6.7-8.8	
Less than University vs. University			1.52 (1.20-1.90)
Neighbourhood Income			
Low	16/94 (17.0%)	10.0-26.2	
Rest	333/3837 (8.7%)	7.1-9.6	
Low vs. Rest			1.95 (1.23-3.08)
Cultural Status			
Aboriginal	59/306 (19.3%)	15.0-24.1	
Caucasian	228/3064 (7.4%)	6.5-8.4	
Aboriginal vs. Caucasian			2.61 (2.01-3.39)

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Lemstra M, Neudorf C, Nannapaneni U, Bennett N, Scott C, Kershaw T.

The role of economic and cultural status as indicators for alcohol and marijuana use among adolescents. Submitted for publication.

Abstract

Introduction

The prevalence of marijuana and alcohol risk behaviour among youth has been steadily increasing since the 1980s with sharp inclines since the early 1990s. A number of reports suggest that Aboriginal cultural status is a major risk indicator. The primary purpose of this paper was to determine if Aboriginal cultural status is independently associated with the risk behaviours of marijuana usage and being drunk among youth after multivariate adjustment for other factors like socioeconomic status (SES).

Methods

Every student in grades 5-8 in the City of Saskatoon, Canada, was asked to complete a questionnaire in February of 2007. Logistic regression was used to determine the independent risk indicators associated with being drunk and marijuana use.

Results

4,093 youth participated in the school health survey. At the cross-tabulation level cultural status and neighbourhood income were both strongly associated with alcohol and marijuana use. After multivariate adjustment, the association between Aboriginal cultural status and being drunk was not statistically significant (crude OR = 3.52 to adjusted OR = 0.80) and for marijuana use the association was significantly reduced (crude OR = 9.91 to adjusted OR = 2.79). After controlling for all other variables, the independent association between Aboriginal cultural status and being drunk was reduced by 272% and was reduced by 712% for having used marijuana. After controlling for all other variables, low income youth were 163% more likely to be drunk at least once and 163% more likely to have tried marijuana at least once.

Discussion

The recognition that Aboriginal cultural status has either no association, or a greatly reduced association, with alcohol and marijuana usage allows policy makers to recognize that risk behaviour prevention is possible because the main determinants of behaviours (i.e., income) are modifiable.

Conclusion

Future policies to reduce risk behaviours among youth should consider neighbourhood income characteristics in order to be more successful.

Introduction

The prevalence of marijuana and alcohol risk behaviour among youth in North America has been steadily increasing since the 1980s with sharp inclines since the early 1990s.¹⁻¹¹ Alcohol is the drug of choice among North American adolescents and it is used by more young people than tobacco or illicit drugs.¹²⁻¹⁴ A review of American population based studies suggests that drug and alcohol risk behaviours start at approximately age 10 and peak between the ages of 14-15 years.^{15,16} A national study suggests that for Canadian youth aged 15 years, the prevalence of alcohol use was 25% for males and 19% for females.⁴ Prevalence of alcohol use for Canadian youth aged 11-13 years was 12% for males and 8% for females.⁴ A Canadian Addictions Survey indicates that 61.4% of youth aged 15-17 years have used marijuana in their lifetime and 37% have used it at least once in the past 12 months.¹⁷

The Centre for Addictions and Mental Health in 2004 reported that Aboriginal youth are two to six times at higher risk for every alcohol related problem compared to other young people.¹⁸ Results from the Alberta Youth Experience Survey (2002) indicate that a higher percentage of Aboriginal youth than non-Aboriginal youth reported signs of alcohol abuse (34.5% and 12.3% respectively) and twice as many Aboriginal youth (52.1%) in grades 7-9 had used marijuana compared to non-Aboriginal youth (26.8%).¹⁹ These data suggest that being Aboriginal increases the risk of adolescent use of marijuana or alcohol.

Through an extensive literature search, the authors found no studies that reviewed the independent association between Aboriginal cultural status and marijuana use after multivariate adjustment. Only one American study was found by the authors that reviewed the independent association of Aboriginal cultural status with alcohol use after multivariate adjustment for variables like socioeconomic status.²⁰ In this study, initial differences in alcohol use by cultural status were no longer statistically significant in the final multivariate model.²⁰

The primary purpose of this paper was to determine if Aboriginal cultural status is independently associated with the risk behaviours of marijuana usage and alcohol use (being drunk) among youth after multivariate adjustment for other factors like socioeconomic status (SES).

Methods

Every student attending school in the city of Saskatoon, Canada, in grades 5 – 8 were asked to complete a questionnaire in February of 2007. There were 9,958 youth registered in these grades. The survey instrument used in the study was taken from the National Longitudinal Survey for Children and Youth (NLSCY) developed by Statistics Canada.^{21,22} The scope of the NLSCY is comprehensive dealing with multiple health, social and educational outcomes that have been validated for Canadian youth aged 10 -13.^{21, 22}

Alcohol use was measured by the question “Have you ever been drunk” with dichotomous yes/no response categories and marijuana use was measured by “Have you tried marijuana in the past 12 months” with yes/no response categories. Cultural status was stratified as Caucasian, Aboriginal or Other. Neighbourhood income was calculated with 2001 census information to identify six contiguous low income cut-off neighbourhoods compared to the rest of Saskatoon.²¹ Other covariates included were five SES variables, 10 demographic variables, 12 school related variables, 25 behaviour related variables, 13 health related variables, 24 mental health variables and 10 family and friends variables.

A five stage informed consent protocol was employed including both Public and Catholic School Boards, the principals of each individual school, the teacher from each individual classroom, each parent and written informed consent was obtained from each youth. The classroom teacher (not the researchers) asked the students to complete the questionnaire in the classroom. At that time, the students were given additional information that they were free to consent or not consent and were free to not complete any question that made them uncomfortable. This information was on the questionnaire as well. Students and parents that chose to not participate were not isolated in any way.

Cross-tabulations were performed with being drunk and marijuana use and all other variables but only the ones with significant associations are presented in Table 1. Two separate logistic regression models were built for alcohol use (being drunk) and marijuana use with all other covariates. A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.²³ Stepwise models were built that started with cultural status and progressively included socio-economic variables, demographics, school variables, behaviours, health status, mental health and then friends and family. In the final model, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the -2 log likelihood and the Wald test.²⁴ The variables were tested independently in a hierarchical fashion but are presented in blocks in the table for clarity. The final regression model included factors with beta values for which the *p* values were less than 0.05.²⁴ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.²⁴ Interaction was assessed with product terms.²⁴ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.²⁴ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.²⁴ The final results are presented as adjusted odds ratios with 95 percent confidence intervals.²⁴ All analyses were performed using SPSS 16.0 software package.

Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board (BEH # 06-237).

Results

Of the 9,958 eligible respondents, 4,093 youth participated in the school health survey (41.1%). There were statistically significant differences between the respondents and non-respondents by gender and neighbourhood income. In Saskatoon, 51.2% of youth aged 5-14 are male in comparison to 46.5% of the sample and 9.9% of youth live in one of six low income neighbourhoods in comparison to 2.5% of the sample.

At the descriptive level, Aboriginal cultural status and neighbourhood income were both strongly associated with being drunk and marijuana use among adolescents. For example, 16.7% of Aboriginal youth had been drunk at least once compared to 5.4% of Caucasians and 21.5% Aboriginal youth tried marijuana in the past 12 months compared to 2.7% of Caucasians. Similarly, 30.1% of youth in the low income neighbourhoods had been drunk compared to 5.8% in the rest of Saskatoon while 35.7% of the youth in the low income neighbourhoods had tried marijuana in the past 12 months compared to 3.8% in the rest of Saskatoon. The other covariates associated with being drunk and marijuana use are provided in Table 1.

When the outcome measures were stratified by income and cultural status at the same time, it was evident that income reduced the association between cultural status and risk behaviours. For example, 30.3% of the low income Aboriginal youth had been drunk in comparison to only 13.2% of higher income Aboriginal youth; and 42.9% of low income Aboriginal youth had tried marijuana in comparison to 16.2% of higher income Aboriginal youth (Table 2).

A hierarchical model building strategy is presented by blocks in Tables 3 and 4. At the first stage of model building, the odds ratio for Aboriginal cultural status for alcohol use (being drunk) reduced from 3.52 to 2.45 (a 107% reduction in the odds) when adjusted for neighbourhood income alone. Introduction of age did not have an impact on the model. Upon introducing the school variables (skipped school and have been bullied), the odds of Aboriginal youth being drunk reduced to 1.36. When self esteem was added to the model, the odds further dropped to 1.28. When the covariates friends tried marijuana and friends drank alcohol were added to the model, the independent association between Aboriginal cultural status and being drunk became protective; although not statistically significant (Table 3).

For marijuana use, the odds reduced from 9.91 to 6.88 after controlling for neighbourhood income alone (a reduction of 303% in the odds). Upon adding the school variables (skipped school, suspended from school and been bullied) the odds were reduced to 3.99. After adding the mental health variables (suicide ideation and self esteem), the odds dropped to 3.61. When the covariate friends tried marijuana was added to the model, the odds for Aboriginal cultural status reduced to 2.79. With the addition of all the covariates to the model, the independent association between Aboriginal cultural status and marijuana usage reduced from 9.91 to 2.79 (a reduction of 712%) (Table 4).

Neighbourhood income was a direct confounder to the relationship between Aboriginal cultural status and being drunk or having used marijuana. Interaction was not present in either of the final models.

The R^2 for the final models were 0.159 for being drunk and 0.143 for marijuana use suggesting a reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory covariates. The goodness-of-fit test results 0.380 for being drunk and 0.856 for marijuana suggest that the final models are appropriate and that the predicted values are accurate representations of the observed values in an absolute sense. The estimated slope coefficients and standard errors for the models are small and, as such, co-linearity is not suspected.

Discussion

In light of the growing trend in alcohol and marijuana use among adolescents, the authors assessed the independent association between cultural status and risk behaviours while controlling for other covariates. After stratifying by income, the prevalence of being drunk and having used marijuana reduced substantially for both Caucasians and Aboriginal youth. That said, stratification for income alone did not explain the variance that was still present in higher income Aboriginal youth in comparison to higher income Caucasian youth. Although income is an important risk indicator, it does not explain all of the variance; necessitating multivariate regression with more variables in the models than income alone.

After multivariate regression, the common risk indicators for being drunk and marijuana use were low income neighbourhoods, skipping school, being bullied, low self esteem and having friends that have tried marijuana. The individual differences between the two models were age and if their friends drank alcohol for the alcohol model, while being suspended from school and suicide ideation were additional covariates for the marijuana model after multivariate adjustment. Our study found a substantially reduced association between Aboriginal cultural status and marijuana use and no association with having been drunk.

Our results challenge the common notion that the increase in the prevalence of risk behaviours such as alcohol and marijuana use is independently associated with Aboriginal cultural status.^{25, 26} After controlling for neighbourhood income alone in the models, there was a significant reduction in the odds for alcohol (3.52 to 2.45) and marijuana (9.91 to 6.88) use among Aboriginal youth. After further multivariate adjustment, the association between Aboriginal cultural status and risk behaviours substantially reduced.

A recent systematic literature review found that marijuana and alcohol usage among adolescents does not appear to be significantly associated with SES.²⁷ The studies in this review used a range of definitions to capture SES (i.e., family income, parent's education, parent's occupation, and neighbourhood characteristics). However, there was only one study in the pool of 29 studies reviewed that used neighbourhood characteristics as a SES variable for both alcohol and marijuana use. This study found significant differences between neighbourhood schools stratified by income for both alcohol and marijuana use, which supports our finding.²⁷ Future research should investigate specific pathways that may explain the relationship between neighbourhood characteristics and risk behaviours.

Other research has found a positive association between peer influence and drug and alcohol usage in adolescents.^{28, 29} Two American national longitudinal studies on adolescent health found self esteem, school connectedness, school attendance, SES, emotional distress, suicidality, and history of victimization/witnessing violence to be risk indicators for both alcohol and marijuana use.^{30, 31} The results found in these studies are consistent with our results.

There are study limitations to discuss. First, written consent was obtained for 41.1% of the eligible students. The five stage consent protocol served as an administrative barrier in achieving higher participation rates. Second, it appears the study does not have adequate representation from males and low income neighbourhoods. However, the absence of any exclusion criteria provides a real world sample. Third, the study design is cross sectional and can only describe the associations and not causations.

Adolescence is a period of biological, intellectual and psychosocial development. Many lifelong skills and behaviour patterns are established during this time. Thus, interventions to change behaviours need to occur at an early age.³² Furthermore, it is established that school based interventions are the most effective in altering adolescent risk behaviours.³³ However, the most effective primary prevention programs for reducing marijuana and alcohol use among adolescents aged 10-15 years are comprehensive school based primary prevention programs that include anti-drug information combined with refusal skills, self-management skills and social skills training.³⁴

Conclusions

Our study suggests that income status is strongly associated with adolescent risk behaviour and, as such, interventions to prevent or reduce these behaviours should consider income during intervention design. As well, Aboriginal cultural status has a greatly reduced role in risk behaviours after multivariate adjustment. The findings in the study suggest that interventions should focus on at risk populations in low income neighbourhoods because a major risk indicator (income) is modifiable; whereas cultural status is not.

Table 1 Cross-tabulations for Variables by Being Drunk and Having Tried Marijuana among Youth Aged 9-15 in Saskatoon Schools

Independent Variables	Have Been Drunk n = 263 (%)	Sig.	Have Tried Marijuana n = 184 (%)	Sig.
Cultural Status Variables				
Aboriginal cultural status	16.7	.000	21.5	.000
Caucasian cultural status	5.4		2.7	
SES Variables				
Neighbourhood income – 6 low income neighbourhoods	30.1	.000	35.7	.000
Neighbourhood income – rest of Saskatoon	5.8		3.8	
Non-professional parent's occupation	7.0	.003	4.1	.041
Parents have a professional occupation	4.7		2.8	
High school grad. or less - level of parents' education	9.2	.000	7.9	.000
University grad. level of parent's education	5.6		3.2	
Demographic Variables				
Age 9-11	1.9	.000	1.8	.000
Age 12-15	9.9		6.6	
Male	6.1	.291	4.4	.760
Female	6.6		4.6	
School Variables				
Skipped school 1-5 times or more	33.0	.000	28.1	.000
Never skipped school	4.2		2.7	
Suspended from school 1-5 times or more	21.9	.000	26.6	.000
Never been suspended from school	5.5		3.6	
Never read for fun	15.5	.000	11.4	.000
Read for fun everyday	2.7		2.4	
Read for fun > than once a week and < than everyday	6.3		4.0	
Have been bullied	9.5	.000	6.8	.000
Not been bullied	3.1		2.3	
Behaviour Variables				
Have been drunk	----	---	39.3	.000
Have not been drunk			2.2	
Tried marijuana	39.3	.000	---	---
Never tried marijuana	2.2			

Mental Health Variables				
low self esteem	20.1	.000	11.6	.000
High self esteem	5.1		3.9	
High anxiety	17.2	.000	12.0	.000
Low anxiety	5.7		4.0	
Moderate / severe depressed mood	17.7	.000	12.7	.000
No depressed mood	5.1		3.6	
Friends and Family Variables				
My friends Have Tried marijuana	32.2	.000	28.7	.000
None of my friends tried marijuana	2.6		1.0	
My friends drank alcohol	26.2	.000	16.2	.000
None of my friends drank alcohol	1.2		1.5	

Table 2 Stratified Analysis: Cultural Status by Neighbourhood Income and the Outcome Measures

Independent variables	Have Been Drunk n = 263 (%)	Sig.	Have Tried Marijuana n = 184 (%)	Sig.
6 Low income Neighbourhoods		.578		.014
Aboriginal	30.3		42.9	
Caucasian	29.6		16.0	
Rest of Saskatoon Neighbourhoods		.000		.000
Aboriginal	13.2		16.2	
Caucasian	5.2		2.6	

Table 3 Stepwise Modelling: Crude and Adjusted Estimates of having Been Drunk among Adolescents Aged 9-15 in Saskatoon Schools

Independent variables	Crude OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI
	Model 0		Model 1		Model 2		Model 3		Model 4		Model 5	
Aboriginal cultural status	3.52	2.53-4.91	2.45	1.67-3.59	2.51	1.69-3.72	1.36	0.87-2.11	1.28	0.82-2.01	0.80	0.48-1.34
6 Low income neighbourhoods	6.97	4.48-10.84	3.96	2.33-6.75	3.94	2.26-6.89	3.81	2.07-7.03	3.55	1.91-6.60	2.63	1.30-5.32
Age 12-15	5.57	3.82-8.12			6.04	3.94-9.25	5.56	3.55-8.72	5.37	3.40-8.47	1.73	1.02-2.93
Skipped school more than once	11.27	8.48-14.98					6.75	4.78-9.51	6.03	4.24-8.58	3.25	2.18-4.84
Have been bullied	3.31	2.46-4.46					2.40	1.71-3.38	2.27	1.61-3.22	1.54	1.06-2.25
Low self-esteem	4.67	3.44-6.33							2.51	1.70-3.70	1.93	1.25-2.97
Friends tried marijuana	18.01	13.62-23.81									2.84	1.93-4.19
Friends drank alcohol	28.09	19.84-39.77									10.23	6.41-16.32

Reference category for dependent variable: Have not been drunk

Reference categories for independent variables: Cultural status – Caucasian cultural status; Neighbourhood income – Rest of Saskatoon; Age – 9-11 yrs; Skipped school – Never skipped school; Bullied – Have not been bullied; Self esteem – High self esteem; Friends tried marijuana – None of my friends tried marijuana; Friends drank alcohol – None of my friends drank alcohol

R² for the model = 0.159; Hosmer and Lemeshow Goodness-of-fit test = 0.380

Independent variables (Block 0) = Crude ORs for the independent variables tested independently (Culture step)

Independent variables (Block 1) = Cultural status and Neighbourhood income (SES step)

Independent variables (Block 2) = Block 1 + Age (Demographics step)

Independent variables (Block 3) = Block 2 + Skipped school + Have been bullied (School variables step)

Independent variables (Block 4) = Block 3 + Self esteem (Mental health step)

Independent variables (Block 5) = Block 4 + Friends tried marijuana + Friends drank alcohol (Friends and family step)

Table 4 Stepwise Modelling: Crude and Adjusted Estimates of Having Tried Marijuana among Adolescents Aged 9-15 in Saskatoon Schools

	Crude OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI	Adj. OR	95% CI
Independent variables	Model 0		Model 1		Model 2		Model 3		Model 4	
Aboriginal cultural status	9.91	7.02-13.99	6.88	4.67-10.14	3.99	2.59-6.16	3.61	2.28-5.71	2.79	1.68-4.62
6 Low income neighbourhoods	14.06	9.02-21.94	4.40	2.55-7.58	4.20	2.27-7.74	4.46	2.33-8.54	2.63	1.28-5.37
Skipped school more than once	14.34	10.41-19.74			7.70	5.16-11.50	7.03	4.62-10.69	4.13	2.58-6.61
Suspended from school more than once	7.33	5.09-10.57			3.59	2.18-5.91	4.33	2.60-7.21	3.89	2.22-6.81
Have been bullied	3.06	2.16-4.32			1.74	1.14-2.66	1.48	0.95-2.31	1.15	0.70-1.88
Considered suicide	6.86	4.93-9.54					3.59	2.26-5.72	2.56	1.51-4.34
Low self esteem	3.23	2.22-4.72					1.11	0.65-1.91	0.91	0.51-1.62
Friends tried marijuana	41.57	28.06-61.58							16.2	10.15-25.84

Reference category for dependent variable: Have not tried marijuana

Reference categories for independent variables: Cultural status – Caucasian cultural status; Neighbourhood income – Rest of Saskatoon; Skipped school – Never skipped school; Suspended from school – Never been suspended from school; Bullied – Have not been bullied; Suicide – Did not consider suicide; Self esteem – High self esteem; Friends tried marijuana – None of my friends tried marijuana

R² for the model = 0.143; Hosmer and Lemeshow Goodness-of-fit test = 0.856

Independent variables (Block 0) = Crude ORs for the independent variables tested independently (Culture step)

Independent variables (Block 1) = Cultural status + Neighbourhood income (SES step)

Independent variables (Block 2) = Block 1 + Skipped school + Suspended from school + Have been bullied (School variables step)

Independent variables (Block 3) = Block 2 + Considered suicide + Self esteem (Mental health step)

Independent variables (Block 4) = Block 3 + Friends tried marijuana (Friends and family step)

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2.10.

Lemstra M, Neudorf C, Mackenbach J, Nannapaneni U.

High healthcare utilization and costs associated with lower socioeconomic status: results from a linked dataset. Submitted for publication.

Abstract

Introduction

The purpose of this paper was to use a linked dataset to compare actual healthcare utilization rates and costs between income groups in Saskatoon, Canada.

Methods

The Canadian Community Health Survey was linked to hospital, physician and medication data in Saskatoon.

Results

3433 agreed to the health survey and data linkage with health records (83.7% response). Low income residents were 27-33% more likely to be hospitalized and 36-45% more likely to receive a medication but were 5-7% less likely to visit a physician over a one year period.

After multivariate adjustment, high healthcare utilization (upper 20th percentile) was associated with increased disease prevalence, lower self report health and higher age; with lower income status having a reduced association with high healthcare utilization.

Discussion

The results demonstrate that residents from lower income status are responsible for disproportionate high utilization of hospitals, physicians and medications; due mainly (but not entirely) to higher disease prevalence. In other words, increased health care utilization in low income residents is due mainly to increased disease prevalence and not a difference in utilization behaviour.

Conclusion

Annual healthcare cost savings of approximately \$179 million in Saskatchewan could be realized if the socioeconomic position of those less fortunate were improved.

Introduction

Canada does not have a national health disparity reduction plan despite a strong history of advocacy towards promoting the social determinants of health.^{1,2}

Persistent socioeconomic inequalities are a costly economic deadweight in terms of higher expenditures on health care, income assistance, social services, correctional services and lost tax revenue.³ Two separate reports from Canada and the European Union have come to the same conclusion: that disparities in socioeconomic status account for 20% of total health care resources.^{4,5} Theoretically, we could reduce healthcare utilization and subsequent healthcare costs by 20% if we reduced socioeconomic disparity. The concern however with using estimates of self report healthcare utilization through telephone surveys is that the recall of 'number of contacts' with healthcare services does not demonstrate good validity.⁶

The purpose of this paper was to use a linked dataset to compare actual healthcare utilization rates and costs between income groups in Saskatoon, Saskatchewan, Canada. The second purpose was to use regression analysis to determine which covariates are independently associated with high healthcare utilization. A goal of the analysis was to determine if high healthcare utilization was independently associated with low income status after multivariate adjustment for higher disease prevalence.

Methods

The Canadian Community Health Survey (CCHS) is administered by Statistics Canada with the central objective of collecting self report health related data at the level of health regions; where an increasing number of decisions to improve population health are made in Canada.⁷ The CCHS consists of cross sectional surveys conducted in 2000/01, 2003 and 2005. The methodology of the CCHS has been documented in detail previously.⁷

Income status was based on the Low Income Cut-Off (LICO) developed by Statistics Canada.⁸ Cut-off points are adjusted for family size, population of area of residence, urban/rural differences and consumer price index. For example, a single adult in Saskatoon with an income less than \$18,000, and a family of four with an income of less than \$33,000, fall below the LICO and are therefore classified as low income earners. High income earners were those who made more than \$80,000 per year. The remainder were classified as middle income earners.

The review of healthcare utilization included hospitals (including emergency room and day surgeries), physicians (including specialists) and prescription medications. Saskatchewan has universal health coverage for all residents with a centralized administrative database that collects information on all hospital separations, physician visits and medication usage. The positive predictive value of a primary diagnosis from hospital administrative data in Saskatchewan is 90%.⁹ At the time of the CCHS survey, each respondent was asked to consent to having their self report survey information linked with their provincial health records. The respondents' name and Saskatchewan Health Services number were collected at the time of interview and therefore allowed the data linkage with healthcare utilization information. Saskatchewan Health completed the data linkage and provided the de-identified dataset to the researchers. The overall counts of utilization were collected for the year in which the survey was completed (i.e., healthcare utilization for 2005 if CCHS survey was completed in 2005) and then merged into one larger sample in order to increase precision of the estimates.

Hospital costs based on ICD-10 separation codes were calculated by Strategic Health Information Planning Services and Finance of the Saskatoon Health Region. The costs provided were direct departmental costs and do not include overhead (i.e., administration) or support costs (i.e., lab or medical imaging). Costs varied widely by separation code from a low of \$121 per day in emergency to \$2099 per day in the intensive care unit. The cost of physician visits was provided by Saskatchewan Health. For medications, the average cost per drug within each class was calculated using the Saskatchewan Drug Formulary.

The first comparison was one year incidence counts of healthcare utilization for hospitals, physicians and medications by income group. The second comparison was to review high healthcare utilization of hospitals, physicians and medications by income group. High utilization was determined by calculating the upper 20th percentile of overall utilization of hospitals, then physicians and then medications for all income groups. Once determined, each income group was reviewed independently to determine what percentage of users fell above or below the upper 20th percentile of overall users of hospitals, physicians and medications. Rate ratios and 95% confidence intervals were calculated for all comparisons. The third comparison was the cost of hospitals, physicians and medications by income group in order to determine mean cost per user of hospitals, physicians or medications.

A specific goal of the analysis was to determine if high healthcare utilization (upper 20th percentile) was independently associated with low income status after multivariate adjustment for other covariates like disease prevalence. The first step was to use stratified analysis to review high healthcare utilization by income by disease prevalence. In the second step, three separate binary logistic regression models were built to describe the relationship between the outcome variables of a) high utilization of hospitals, physicians or medications (upper 20th percentile) in comparison to b) lower 80th percentile usage of healthcare.

The covariates within the regression models included the demographics of age (12-39, 40-59 and 60 and above), gender and cultural status (Caucasian and Aboriginal). Health outcomes included self report health (good/fair/poor compared to excellent/very good) and self report heart disease prevalence, diabetes prevalence and lifetime suicide ideation. Socioeconomic status included family income (described above) and individual education (less than high school grad, high school grad and university education). Disease intermediaries included blood pressure (yes/no) and body mass index (obese/overweight versus normal/underweight). Behaviours included physical activity (regular/occasional/infrequent), smoking (daily versus other), alcohol usage (5 or more drinks at a time at least once per week or not in the past year) and consumption of fruits and vegetables (5 servings per day or not). Life stress was measured by current amount of stress in daily life.

A hierarchical well-formulated step-wise modeling approach was used instead of a computer generated stepwise algorithm.¹⁰ In the final model, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the $-2 \log$ likelihood and the Wald test.¹¹ The final models included factors with beta values for which the p values were less than 0.05.¹¹ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.¹⁰ Interaction was assessed with product terms.¹¹ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.¹¹ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.¹¹ The final results were presented as adjusted odds

ratios with 95 percent confidence intervals.¹¹ All analyses were performed with an SPSS 15.0 software package.

Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board.

Results

Over three cycles in 2001, 2003 and 2005, 4103 residents of SHR were asked to complete the CCHS with 3867 agreeing to participate (94.2%) and complete data available on 3688 participants (89.9%). Of these 3688 participants, 3433 agreed to the data linkage with health records (83.7% overall). By individual cycle, the sample sizes were 1174, 1082 and 1177. With all three cycles merged, the mean age was 46.3 (SD 20.32), females represented 55.2% of the sample and Caucasians represented 73.4% of the sample. In comparison to 2001 census data for SHR, the sample had a statistically significant difference in age ($p=.01$) but not gender or cultural status. Based on the definitions of income discussed above, there were 785 low income, 1793 middle income and 855 high income participants; which is also consistent with the 2001 census.

At the cross tabulation level, low income residents were 27-33% more likely to be hospitalized and 36-45% more likely to receive a medication but were 5-7% less likely to visit a physician over a one year period in comparison to middle and high income earners (Table 1).

The upper 20th percentile for healthcare utilization over one year for the overall group (regardless of income) was determined to be greater than two hospital visits, 32 physician visits and 29 medications. High healthcare utilization rates were stratified by income group in comparison to the overall group. In comparison to middle income residents, low income residents had 56% more high users of hospitals, 166% more high users of physicians and 90% more high users of medications. In comparison to high income residents, low income residents had 28% more high users of hospitals, 226% more high users of physicians and 73% more high users of medications (Table 1).

The average cost of hospitals, physicians and medications over a one year period for low income residents who accessed healthcare was \$7186. The average costs for middle and high income residents who accessed healthcare were \$5266 and \$5478. Low income residents that used healthcare had 24-27% higher costs in comparison to middle and high income residents (Table 2). If we calculate healthcare costs for all low income residents combined (regardless of access to healthcare), the average cost for all low income residents is \$4489 in comparison to \$2964 and \$2923 for all middle and high income residents; which is 34-35% higher healthcare costs overall.

After cross tabulation, it was found that low income residents have higher prevalence rates of high blood pressure, health disease and diabetes (Table 3a). After stratification, those with higher disease prevalence were more likely to have higher healthcare utilization. However, in most cases, low income residents were still more likely to have high healthcare utilization even after controlling for disease prevalence (Table 3b).

Three separate logistic regression models were constructed to determine which covariates were independently associated with high healthcare utilization (upper 20th percentile) of hospitals,

physicians and medications. High hospital utilization was independently associated with the covariates of heart disease prevalence, lower self report health and higher age. High physician utilization was independently associated with the covariates of heart disease prevalence, lower self report health, higher age and low income. High medication utilization was independently associated with the covariates of high blood pressure, diabetes, heart disease, lower self report health and higher age. There was no confounding or effect modification in the final models. The R^2 results suggest reasonable explanation of the proportion of variance in the outcome variables explained by the knowledge of the explanatory covariates. The goodness-of-fit test results suggest that the final models are appropriate and that the predicted values are accurate representations of the observed values in an absolute sense. The results are presented in detail in Table 4.

Discussion

In 2005, Saskatchewan residents paid \$528,759,380 for physician services, \$1,875,752,000 for health regions to provide mainly hospital services and \$184,020,000 for prescription medications for a sum of \$2,588,531,380 out of a total health care budget of \$2,990,625,000 for a population of 1,020,966.^{12,13} In other words, every Saskatchewan resident consumed an average of \$2929 healthcare costs in 2005. This is very similar to the \$2964 average healthcare costs for all middle income earners and \$2923 average healthcare costs for all high income earners calculated in this study.

According to the 2001 Canadian census, low income earners in Saskatoon represented 17.1% of the entire population and, as such, should consume \$511,396,875 of healthcare costs.¹⁴ However, this study demonstrates that low income residents consume 35% more costs overall than anticipated in comparison to middle and high income residents. In other words, low income residents in Saskatchewan consume an extra \$178,988,906 in healthcare costs than if they were middle income.

The cross tabulation finding that low income residents access physicians less often, and hospitals more often, in comparison to other income groups has been demonstrated previously.^{4,15} Low income groups have more complex needs while at the same time have less continuous and comprehensive healthcare; which results in more usage of expensive services like hospitals.⁵ In fact, the highest income groups are the most likely to receive optimal primary care and obtain more referrals to specialists, which widens health disparities.⁴

In our study, low income status was also associated with high healthcare utilization (upper 20th percentile) of hospitals, physicians and medications at the cross tabulation level. However, after multivariate adjustment, low income status had a reduced association with high healthcare utilization after controlling for disease prevalence. After controlling for the prevalence of high blood pressure, heart disease, diabetes, low self report health and age, the odds of high healthcare utilization dropped for low income residents by 73% for hospitals, 60% for physicians and 58% for medications. The results suggest that most of the disparity in high healthcare utilization for lower income residents is associated with higher disease prevalence, and not merely a difference in utilization behaviour. This finding is consistent with the literature.^{16,17} In these studies, the increased use of family physician and hospital services in lower socioeconomic groups corresponded to higher needs resulting from poor health.^{16,17}

The finding that high healthcare utilization is associated with higher age and lower self report health is supported by a linked study from Nova Scotia.¹⁸ Another linked study from Manitoba found high cost users of medications were more likely to be low income, older in age and more likely to have a chronic condition; all of which are consistent with our results.¹⁹

The dataset is believed to be valid. First, the overall participation rate and consent to the data linkage was 83.7% in the sample with only a slight bias in age in comparison to the actual population. Age was adjusted for in all of the regression models. Second, the utilization rates are believed to be accurate. For example, 84.6% of middle income respondents within the sample visited a physician within one year while the annual statistical report for 2005 states that 83.6% of the Saskatchewan population accessed a physician within that year.¹² Third, the healthcare cost information from the sample is very similar to the costs from the annual statistical report presented above. There is another unique strength is using actual healthcare utilization data. The odds of agreement between self report and actual healthcare utilization data are lower for those who are males, over the age of 75, with incomes less than \$25,000 and lower self report health.¹⁸ Our study found these same covariates (other than gender) to be associated with high healthcare utilization; suggesting that studies that use self report recall to determine high healthcare utilization suffer from bias in the very groups that are most likely to have high healthcare utilization.

The limitation of the study is that it is cross sectional, and not prospective, and as such cause and effect can not be determined.

The Health Disparity Task Groups of the Federal/Provincial Advisory Committee on Population Health and Health Security concluded the most appropriate and effective way to improve overall population health status in Canada is to improve the health of those in lower socioeconomic groups.⁴ The results from this study demonstrate that residents from lower socioeconomic status are responsible for disproportionate usage of hospitals, physicians and medications; due mainly to differences in disease prevalence. The findings suggest significant healthcare cost savings could be realized if the socioeconomic position of those less fortunate were improved.

Table 1 Overall Healthcare Utilization in One Year – Including Rates of High Utilization

	Low Income	Middle Income	High Income	Low vs. Middle Income	Low vs. High Income
Healthcare utilization in one year	(n) (%)	(n) (%)	(n) (%)	RR (95% CI)	RR (95% CI)
# of people attended Hospital	387 (49.2)	692 (38.5)	315 (36.8)	1.27 (1.16-1.25)	1.33 (1.19-1.49)
# of people that visited MD	618 (78.7)	1517 (84.6)	707 (82.6)	0.93 (0.89-0.97)	0.95 (0.91-1.01)
# of people received RX	415 (52.8)	696 (38.8)	310 (36.2)	1.36 (1.25-1.49)	1.45 (1.30-1.62)
	Low Income	Middle Income	High Income	Low vs. Middle Income	Low vs. High Income
High healthcare utilization in one year *	(n) (%)	(n) (%)	(n) (%)	RR (95% CI)	RR (95% CI)
# of people attended Hospital	92 (23.8)	105 (15.2)	58 (18.5)	1.56 (1.21-2.00)	1.28 (0.96-1.72)
# of people that visited MD	169 (27.4)	298 (10.3)	126 (8.4)	2.66 (2.26-3.13)	3.26 (2.66-4.00)
# of people received RX	123 (29.7)	108 (15.6)	57 (17.1)	1.90 (1.51-2.39)	1.73 (1.31-2.28)

Total Sample size (N): 3433

Sample by Income status (n): Low Income = 785; Middle Income = 1793; High Income = 855

* > than 80th percentile for the overall group

Table 2 Total Costs of Healthcare Utilization by Income Group

	Mean costs for low income users of healthcare *	Mean costs for all low income people **	Mean costs for middle income users of healthcare *	Mean costs for all middle income people **	Mean costs for high income users of healthcare *	Mean costs for all high income people **
Hospital	\$1,208.22	\$594.40	\$929.98	\$358.00	\$973.11	\$358.10
MD	\$2,852.24	\$2,244.70	\$2,016.07	\$1,705.60	\$2,013.59	\$1,163.20
RX	\$3,125.43	\$1,650.20	\$2,319.92	\$900.10	\$2,491.16	\$901.80
Total Cost	\$7,185.89	\$4,489.30	\$5,265.97	\$2,963.70	\$5,477.86	\$2,923.10

* Average cost per user of healthcare

** Average cost per person (regardless of actual utilization) per income group

Table 3a Prevalence of Self Report Health Outcomes by Income Group

Disease outcome	Low Income n (%)	High Income n (%)	P-Value
Has high blood pressure	163 (20.8)	115 (13.5)	.000
Has heart disease	75 (9.6)	32 (3.7)	.000
Has diabetes	59 (7.5)	37 (4.3)	.018

Table 3b Stratified Analysis for High Hospital, Physician and Medication Use by Disease Outcome and Income Group

Variable	High Users + Low Income	High Users + High Income	P - Value
Hospital use			
Has high blood pressure	22.1	20.0	.000
Does not have high blood pressure	8.8	4.7	
Has heart disease	28.0	34.4	.000
Does not have heart disease	9.9	5.7	
Has diabetes	25.4	16.2	.002
Does not have diabetes	10.5	6.2	
Physician use			
Has high blood pressure	43.5	37.1	.000
Does not have high blood pressure	23.4	13.0	
Has heart disease	57.1	48.3	.000
Does not have heart disease	24.5	15.1	
Has diabetes	44.6	45.7	.003
Does not have diabetes	26.2	14.9	
Medication use			
Has high blood pressure	43.5	37.1	.000
Does not have high blood pressure	23.4	13.0	
Has heart disease	57.1	48.3	.000
Does not have heart disease	24.5	15.1	
Has diabetes	44.6	45.7	.003
Does not have diabetes	26.2	14.9	

Table 4 Crude and Adjusted Estimates for High Utilization of Hospitals Physicians and Medications

Variables	Crude OR	Adjusted OR	95 % CI	P - Value
A. Covariates of high hospital use				
Has high blood pressure	3.79	1.20	0.79-1.81	.377
Has diabetes	2.77	1.20	0.69-2.09	.514
Has heart disease	6.38	1.66	1.02-2.72	.041
Good/fair/poor self report health	4.08	2.60	1.68-4.04	.000
Age 60 and above	10.94	7.81	4.31-14.17	.000
Age 40 -59	2.40	2.98	1.59-5.58	.001
Low personal income	1.80	1.07	0.73-1.56	.726
B. Covariates for high physician use				
Has high blood pressure	3.19	1.37	0.97-1.91	.066
Has diabetes	3.27	1.44	0.90-2.30	.127
Has heart disease	6.23	1.95	1.24-3.07	.004
Good/fair/poor self report health	3.04	2.14	1.60-2.86	.000
Age 60 and above	5.50	3.29	2.27-4.77	.000
Age 40 -59	1.90	2.15	1.50-3.09	.000
Low personal income	1.96	1.36	1.03-1.80	.027
C. Covariates for high medication use				
Has high blood pressure	6.18	2.87	1.90-4.35	.000
Has diabetes	6.40	4.27	2.46-7.41	.000
Has heart disease	5.04	2.73	1.63-4.58	.000
Good/fair/poor self report health	3.52	2.59	1.61-4.17	.000
Age 60 and above	14.23	5.04	2.15-11.80	.000
Age 40 -59	4.39	2.67	1.10-6.44	.029
Low personal income	1.87	1.29	0.85-1.99	.235

Reference categories for independent variables – Blood pressure – No; Diabetes – No; Heart disease –No; Self report health – Excellent/very good; Age – 12-39 Yrs; Income \geq 80,000;

A. High hospital use: $R^2 = .217$; Goodness-of-fit = .234

B. High physician use: $R^2 = .297$; Goodness-of-fit = .438;

C. High medication use: $R^2 = .365$; Goodness-of-fit = .640

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Lemstra M, Neudorf C, Beaudin G.

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Abstract

Introduction

A number of reports suggest that we need to determine public understanding about the broad determinants of health and also determine public support for actions to reduce health disparities in Canada.

Methods

A cross sectional random survey of 5,000 Saskatoon residents was used to determine knowledge about health determinants and health disparity and then determine public support for various interventions to address health disparity.

Results

Saskatoon residents understand most of the determinants of health. Saskatoon residents do not have a good understanding of the magnitude of health disparity between income groups. A majority believe risk behaviours are mostly individual choices and are not associated with income status. Most residents believe even small differences in health status between income groups are unacceptable (most prefer 0%) and a majority (83.2%) believe that something can be done to address health disparity by income status. Interventions proposed by residents to alleviate health disparity were evidence based including work earning supplements and strengthening early intervention programs. Logistic regression revealed that greatest support for transferring money from healthcare treatment to health creation services (like education) came from young Aboriginal males with low income in comparison to middle aged Caucasian females with higher income.

Discussion

Saskatoon residents have knowledge of health determinants and have a strong desire to support health disparity intervention. More knowledge transfer is required on the magnitude of health disparity based on income status.

Conclusion

Broad based health disparity intervention in Saskatoon appears possible due to strong levels of support from the general public. The most support for interventions are for those that include children.

Introduction

A wide range of factors other than health care have an impact on health. These factors include, but are not limited to, income, social status, education, employment, working conditions, social support networks, physical environment, genetics, personal health practices, healthy child development, genetics, gender and the communities we live in.¹⁻¹⁴

Health disparities refer to differences in health status that occur among population groups defined by specific characteristics.⁴ A limited number of determinants contribute the most to health disparities.⁴ Income status is recognized as one of those key determinants.^{1,3,4} A recent report from Saskatoon found vast disparity in health status by neighbourhood income for numerous disorders.¹²

The British Medical Journal called income inequality and health “the Big Idea” and suggested that the health of a society is not overall wealth but more how evenly that wealth is distributed through taxes and transfers.¹⁵ For example, 58.2% of Canada’s seniors would live in poverty without government transfers. As a result of government programs, only 5.7% of seniors in Canada live in poverty.¹ As such, there is good reason to believe that by addressing a few but important conditions we can reduce health disparities.⁴

Prior to initiating action, it is important to determine the degree of consensus on public values and priorities for reducing health disparities.⁴ One federal/provincial committee recommended to strengthen public understanding about the broad determinants of health and to determine public support for actions to reduce health status disparities.³ Another national report concluded that little is known about 1) the Canadian public’s views on what factors influence health and if 2) people consider that factors like income, education, housing or social support could influence health and whether 3) the public believes that health could be improved by addressing these factors.⁵

One paper from Canada suggests that the most important factors that contribute to health are diet (82%), physical activity (70%) and proper rest (13%).⁵ When prompted, only one in three reported that economic and social conditions had an impact on health.⁵ Another paper suggests 19.6% of residents in Alberta view income and social status as contributors to health status.¹⁶ No papers were found that reviewed public knowledge on magnitude of health disparity between population groups. One paper from Canada reviewed poverty related policies and found greatest public support for child care programs and least support for increased welfare allowance.¹⁷

The purpose of the current study was to randomly contact Saskatoon residents to determine their knowledge of health determinants and health disparity and then determine which public policy actions they would support to help alleviate health disparity by income and socioeconomic status.

Methods

Sample size for the telephone survey was calculated with the following assumptions: 1) the standard error, variance and coefficient of variation should not exceed 0.075 of the proportion, 2) the smallest value of the proportion for which the required precision was to apply was 0.05 and 3) the population size of the Saskatoon Health Region was 287,448 in 2004.¹⁸ With these

assumptions, a sample size of at least 3,512 was required. Since a high level of precision was desired, a decision was made to use a sample size of 5,000.

Names and telephone numbers of 10,000 Saskatoon residents were generated by a third party specializing in random lists of phone numbers. The original sample included an equal gender split and equal numbers of residents from each of the ten electoral wards in Saskatoon. The questionnaire was pre-tested with residents with low education status. From April to July of 2006, five contract workers randomly contacted 5,000 Saskatoon residents. Each household was contacted up to five times before discontinuing. Respondents who answered the telephone were asked to participate if they were over the age of 18. The survey was conducted in English. Information on gender was collected on those who refused to participate.

The questionnaire had five sections: a) which factors affect how healthy we are,¹ b) are people with low income more or less likely to suffer medical conditions in comparison to people with middle income, c) are certain behaviours individual choices or do they result from how much money we make, d) which interventions would help address health disparity in groups with low income and e) what are acceptable levels of health disparity by income, can something be done about health disparity, how would we pay for new services and would you support limiting health care treatment expenditures in order to transfer money to health prevention services or health creation services like education and affordable housing.

Binary logistic regression was used to describe the relationship between the outcome variable of answering yes or no to “would you support transferring money from health care treatment resources to health creating services like education and affordable housing” and all demographic explanatory variables. Stratification was used to assess for confounding and effect modification in the first step of model building.¹⁹ A hierarchical well-formulated front-wise modeling approach was used instead of a computer generated stepwise algorithm.¹⁹ The unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the $-2 \log$ likelihood and the Wald test.²⁰ The final model includes factors with beta values for which the p values were less than 0.05.²⁰ Confounding was tested by comparing the estimated coefficient of the outcome variable from models containing and not containing the covariates.²⁰ Interaction was assessed with product terms.²⁰ R^2 was used to determine the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables but not as a measure of the appropriateness of the final model.²⁰ Goodness-of-fit of the final model was assessed by the Hosmer-Lemeshow statistical test.²⁰ The final results were presented as adjusted odds ratios with 95 percent confidence intervals.¹⁹ All analyses were performed with an SPSS 13.0 software package.²¹

Ethics approval was obtained from the Behavioural Ethics Committee of the University of Saskatchewan.

Results

We contacted 7,699 Saskatoon residents in order to obtain a sample size of 5,000 (65% overall response rate). There was a difference between responders and non-responders in terms of gender (males 62%, females 69%; $p = .000$). Responder demographics were similar to 2001 census information except gender, which had significantly more representation from females (Table 1).

More than 75% of residents believed that income, education, employment, housing, the community you live in, recreation, nutritious food and gender are associated with health. The factors with the largest support were nutritious food (97.9%) and recreation (90.9%). The variables with the least support were social status (58.7%) and gender (31.1%) (Table 2).

A majority of residents believed that disease incidence was equally likely between income groups for mental illness, injuries and poisonings, breathing problems, heart disease, stroke and cancer. A majority of residents believed suicide attempts, diabetes, sexually transmitted infections and HIV/AIDS were more likely in low income groups (Table 3).

Behaviours like alcohol abuse, illegal drug use, smoking and lack of physical activity were believed to be mostly individual choices (49.6% to 67.7% support) and not associated with income status (Table 4).

Residents believed that the interventions that would help the most to address health disparity in groups with low income include creating work earning supplements for welfare recipients (84.1%), strengthening early intervention programs for infants (i.e. poverty protection) (83.8%), providing more subsidized trades training for adults (82.3%) and providing more health promotion programs (i.e. school health promotion) (82.0%). The interventions with the least support included increasing union membership for workers (33.4%) and more control for Aboriginal groups over their own land base, their own health programs and their own social programs (42.8% to 53.6% support) (Table 5). Stratification on these final three questions revealed significant differences based on responder cultural status (on average 25% more support from Aboriginals in comparison to Caucasians; $p = 0.000$ for all three questions).

A majority of residents believed that even small differences in health status between income groups is unacceptable (most prefer 0%) and also believed that something can be done to address health disparity by income status (83.2%). Measures taken to address health disparity should come from re-distribution of current taxes (69.8%) but not new taxes. Assuming limited financial resources to pay for new services, 34% of residents supported transferring money from health care treatment resources to either health prevention services or health creating services like education or affordable housing (Table 6).

Binary logistic regression was used to determine if any variable had an independent effect on the outcome of answering yes to the question "would you support transferring money from health care treatment resources to health creating services like education and affordable housing". In the final regression model, females, Caucasians and cultural groups other than Aboriginals, those with family income higher than \$25,000 per year and age groups greater than 40 years of age were significantly less likely to support transferring money from health care treatment to health creation services. In the final model, gender was not a confounder but cultural status was. The R^2 of the final model was .448 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables. The goodness-of-fit test result ($p = .903$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense (Table 7).

Discussion

It appears that most Saskatoon residents understand most of the determinants of health although there is an emphasis on behaviours like eating nutritious food and being physically active. The importance of social class and gender are understated.^{4,8} No attempts were made to question how poverty influences health.

Saskatoon residents are correct about the non-association between cancer and income status¹⁰. They are not correct that disease incidence is equally likely between income groups for mental illness, injuries and poisonings, breathing problems, heart disease and stroke.^{6,10,12-14} The magnitude of the association between suicide attempts, diabetes, sexually transmitted infections and HIV/AIDS and income status is underestimated.¹²⁻¹⁴ For example, chlamydia incidence is 332% higher and gonorrhoea incidence is 676% higher in Saskatoon's low income neighbourhoods in comparison to the rest of the city.¹²

As well, it appears that Saskatoon residents are not aware of the social determinants of behaviour choosing instead to believe that behaviours like smoking are mostly individual choice. In terms of proposed interventions, Saskatoon residents were most willing to support earning supplements for welfare recipients and strengthen early intervention programs for infants. Both are evidence-based. Two successful pilot programs for earning supplements were recently completed in British Columbia and New Brunswick.^{22,23} Early childhood development programs obtain short and long term health and social benefits while saving up to eight dollars for every dollar invested.¹ Comparatively, less support was observed for subsidized food and recreation despite the near unanimous opinion that these are major determinants of health. Unfortunately, some Saskatoon residents do not understand the benefits of Aboriginal self determination. The Royal Commission on Aboriginal Peoples recommended Aboriginal control over services as one of four key principles for any health strategy to reduce disparity.²⁴

Large increases in healthcare expenditure (up 55% from 1997 to 2003 in Canada) have not reduced health disparities.⁴ As well, it is estimated that over 20% of all health care spending is attributable to income disparities.⁴ As such, a regression equation was used to help explain which demographic groups would support transferring money from healthcare treatment to health creation services like affordable housing and education. Greatest support was obtained from young Aboriginal males with low income. The least support came from middle age Caucasian females with middle income.

One limitation of the study is a large refusal rate of respondents to disclose family income. In response, neighbourhood income is provided as a proxy.

In summary, Saskatoon residents have a reasonable understanding of health determinants and support evidence based interventions to address health disparity. Additional knowledge transfer is required on the magnitude of health disparity between income groups and the importance of self determination for Aboriginal Peoples.

Table 1 Demographics Characteristics of Random Phone Survey Sample	
Age Group	
18-39	326/5000 (26.5%)
40-64	2064/5000 (41.3%)
65 and above	1169/5000 (23.4%)
Refused	441/5000 (8.8%)
Gender	
Male	1529/5000 (30.6%)
Female	3471/5000 (69.4%)
Education Status	
Did not complete high school	696/5000 (13.9%)
High school completed	1281/5000 (25.6%)
University degree or technical diploma	2631/5000 (52.6%)
Refused	392/5000 (7.8%)
Employment Status	
Professional/ Management	821/5000 (16.4%)
Clerical/ Sales/ Service	774/5000 (15.5%)
Student/ Homemaker	619/5000 (12.4%)
Manual/ Construction/ Transport/ Farmer	362/5000 (7.2%)
Retired/ Semi Retired	1439/5000 (28.8%)
Unemployed	202/5000 (4.0%)
Other	363/5000 (7.3%)
Refused	420/5000 (8.4%)
Cultural Status	
Caucasian	3746/5000 (74.9%)
Aboriginal (First Nations or Métis)	346/5000 (6.9%)
Other	493/5000 (9.9%)
Refused	415/5000 (8.3%)
Annual Family Income	
Less than \$25,000	820/5000 (16.4%)
\$25,000 - \$49,999	944/5000 (18.9%)
\$50,000 - \$99,999	829/5000 (16.6%)
Above \$100,000	268/5000 (5.4%)
Refused	2139/5000 (42.8%)

Neighbourhood Income ¹² (Proxy for Individual Income)	
Low Income Neighbourhoods (LICO)	587/5000 (11.7%)
Medium Income Neighbourhoods	4055/5000 (81.1%)
High Income Neighbourhoods	358/5000 (7.2%)
Missing	N/A
Urban or Rural	
Urban	4748/5000 (95.0%)
Rural	252/5000 (5.0%)

Table 2 Which Factors Affect How Healthy We Are?

Variable	Number/ Total Number (%)
Income	4117/5000 (82.3%)
Education	4255/5000 (85.1%)
Employment	4277/5000 (85.5%)
Social Status	2933/5000 (58.7%)
Housing	4063/5000 (81.3%)
Community you live in	3802/5000 (76.0%)
Recreation	4543/5000 (90.9%)
Nutritious Food	4893/5000 (97.9%)
Gender	1553/5000 (31.1%)
Genetics	4295/5000 (85.9%)

Table 3 Are People with Low Income More or Less Likely to Suffer From the Following Conditions in Comparison to People with Middle Income?

Condition	Much Less Likely	Less Likely	Equally Likely	More Likely	Much More Likely	Do Not Know
Mental Illness	56/5000	433/5000	2427/5000	1535/5000	211/5000	338/5000
	(1.1%)	(8.7%)	(48.5%)	(30.7%)	(4.2%)	(6.8%)
Suicide Attempt	36/5000	325/5000	1837/5000	2121/5000	293/5000	388/5000
	(0.7%)	(6.5%)	(36.7%)	(42.4%)	(5.9%)	(7.8%)
Injuries	38/5000	398/5000	2177/5000	1767/5000	170/5000	450/5000
	(0.8%)	(8.0%)	(43.5%)	(35.3%)	(3.4%)	(9.0%)
Diabetes	23/5000	254/5000	1814/5000	2293/5000	317/5000	299/5000
	(0.5%)	(5.1%)	(36.3%)	(45.9%)	(6.3%)	(6.0%)
Breathing Problems	26/5000	260/5000	2452/5000	1744/5000	173/5000	345/5000
	(0.5%)	(5.2%)	(49.0%)	(34.9%)	(3.5%)	(6.9%)
Heart Disease	19/5000	300/5000	2578/5000	1617/5000	164/5000	322/5000
	(0.4%)	(6.0%)	(51.6%)	(32.3%)	(3.3%)	(6.4%)
Stroke	20/5000	350/5000	2892/5000	1246/5000	124/5000	368/5000
	(0.4%)	(7.0%)	(57.8%)	(24.9%)	(2.5%)	(7.4%)
Cancer	19/5000	270/5000	3598/5000	682/5000	73/5000	358/5000
	(0.4%)	(5.4%)	(72.0%)	(13.6%)	(1.5%)	(7.2%)
Sexually Transmitted Infections	16/5000	156/5000	1617/5000	2441/5000	393/5000	377/5000
	(0.3%)	(3.1%)	(32.3%)	(48.8%)	(7.9%)	(7.5%)
HIV/AIDS	15/5000	126/5000	1790/5000	2267/5000	395/5000	407/5000
	(0.3%)	(2.5%)	(35.8%)	(45.3%)	(7.9%)	(8.1%)

Table 4 Do You Believe That Certain Behaviours are Individual Choices or Do They Result From How Much Money That We Make?

Behaviour	Mostly Individual Choice	Mostly How Much Money We Make	Both	Do Not Know
Alcohol abuse	2482/5000	104/5000	1683/5000	731/5000
	(49.6%)	(2.1%)	(33.7%)	(14.6%)
Illegal Drug use	2779/5000	100/5000	1455/5000	666/5000
	(55.6%)	(2.0%)	(29.1%)	(13.3%)
Smoking	3383/5000	46/5000	995/5000	576/5000
	(67.7%)	(0.9%)	(19.9%)	(11.5%)
Lack of Physical Activity	3158/5000	131/5000	1162/5000	549/5000
	(63.2%)	(2.6%)	(23.2%)	(11.0%)

Table 5 **If Health Status Does Differ by Income, Which Variables Would Help Address Health Disparity in Groups with Low Income?**

VariableNumber (%)	Number/ Total
Employment equity programs	3374/5000 (67.5%)
Increasing minimum wage	3566/5000 (71.3%)
Increasing pension amounts to seniors	3907/5000 (78.1%)
Increasing welfare amounts to above poverty level	2764/5000 (55.3%)
Increasing welfare amounts to above poverty level for parents with children	3304/5000 (66.1%)
Creating work earning supplements for welfare recipients	4205/5000 (84.1%)
Strengthening early intervention programs for children (i.e., poverty protection)	4190/5000 (83.8%)
Create more subsidized daycares and pre-schools	3298/5000 (66.0%)
Increase funding for education	3836/5000 (76.7%)
Create more after school or after work literacy programs	3833/5000 (76.7%)
Provide more subsidized trades training for adults	4115/5000 (82.3%)
Provide more health care treatment programs	3581/5000 (71.6%)
Provide more health promotion programs (i.e., school health promotion)	4099/5000 (82.0%)
More subsidized quality housing	3338/5000 (66.8%)
More subsidized quality housing for parents with children	3743/5000 (74.9%)
More subsidized transit	3427/5000 (68.5%)
More subsidized recreation	3246/5000 (64.9%)
More subsidized nutritious food	420/5000 (8.4%)
More subsidized nutritious food for children	3850/5000 (77.0%)
Create more community groups and social support networks	3434/5000 (68.7%)
Encourage more volunteers in community	3618/5000 (72.4%)
More ability to influence government decisions	3822/5000 (76.4%)
More control for Aboriginal groups over Aboriginal land base	2142/5000 (42.8%)
More control for Aboriginal groups over Aboriginal health programs	2320/5000 (46.4%)
More control for Aboriginal groups over Aboriginal social programs	2678/5000 (53.6%)
More self determination for Aboriginal groups	3004/5000 (60.1%)

Table 6 Policy Implications for Health Disparity Action

1. If health status does differ by income level, what would be an acceptable amount of difference in disease incidence between low income groups and middle income groups?

0 percent difference	1805/5000 (36.1%)
10 percent difference	469/5000 (9.4%)
25 percent difference	680/5000 (13.6%)
50 percent difference	816/5000 (16.3%)
100 percent difference	171/5000 (3.4%)
200 percent difference	21/5000 (0.4%)
Do not know	1038/5000 (20.8%)

2. If health status does differ by income level, can something be done to address health disparity?

Yes	4160/5000 (83.2%)
No	378/5000 (7.6%)
Do not know	462/5000 (9.2%)

3. Which measures would you support to address health disparity by income level?

Increase taxes	452/5000 (9.0%)
Do not increase taxes but re-distribute current taxes	3490/5000 (69.8%)
Neither. Nothing can be done.	316/5000 (6.3%)
Do not know	742/5000 (14.8%)

4. Assuming limited financial resources to pay for new services, would you support transferring money from health care treatment resources to health prevention services?

Yes	1686/5000 (33.7%)
No	2415/5000 (48.3%)
Do not know	899/5000 (18.0%)

5. Assuming limited financial resources to pay for new services, would you support transferring money from health care treatment resources to health creating services like education and affordable housing?

Yes	1679/5000 (33.6%)
No	2384/5000 (47.7%)
Do not know	937/5000 (18.7%)

Table 7 Independent Variables Associated with Supporting the Transfer of Money from Health Care Treatment to Health Creating Services

Dependent Variable:					
Answering yes or no to the question “would you support transferring money from health care treatment resources to health creating services like education and affordable housing”					
Independent or Explanatory Variables:	Beta	SE	Unadjusted OR	Adjusted OR (95% CL)	Significance
1. Gender					
Male (Ref*)					
Female	0.211	0.088	1.258	1.235 (1.038-1.468)	0.017
2. Cultural Status					
Aboriginal (Ref*)					
Caucasian	0.783	0.147	3.246	2.189 (1.639-2.922)	0.000
Other	0.528	0.192	2.136	1.696 (1.165-2.470)	0.006
3. Annual Family Income					
Less than \$25,000 (Ref*)					
\$25,000 - \$49,999	0.317	0.108	1.530	1.373 (1.111-1.696)	0.003
\$50,000 - \$99,999	0.518	0.116	1.883	1.679 (1.338-2.106)	0.000
Above \$100,000	0.470	0.159	1.805	1.600 (1.171-2.185)	0.003
4. Age Group					
18 - 39 (Ref*)					
40 - 64	0.220	0.092	1.545	1.246 (1.040-1.494)	0.017
Above 65	0.299	0.122	1.507	1.349 (1.061-1.714)	0.014

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2.12.

Summary of the Research Results

The main research question in Section 2 was whether or not socioeconomic status (SES) is associated with health status in Saskatoon residents. The original research results suggest that SES (mainly income) is strongly associated with multiple health and behavioural outcomes in both adults and youth in Saskatoon. The second research question in Section 2 reviewed whether or not Aboriginal cultural status was associated with poor health status and risk behaviours after multivariate adjustment for other covariates like SES. The results suggest that although Aboriginal cultural status is strongly associated with multiple poor health outcomes and behaviours at the univariate (unadjusted) level, Aboriginal cultural status had a more limited association with poor health outcomes and behaviours in adults and youth after multivariate adjustment for variables like SES. The third research question in Section 2 determined that a majority of Saskatoon residents support a variety of health disparity interventions.

Systematic Literature Reviews

A. A systematic review of depressed mood and anxiety by socioeconomic status in adolescents aged 10-15 years (2.1).

The first paper was a systematic literature review that examined depressed mood or anxiety by socioeconomic status in youth aged 10-15 years. The prevalence of depressed mood or anxiety was 2.49 times higher in youth with low SES in comparison to youth with higher SES.

B. A systematic literature review of drug and alcohol use by socioeconomic status in adolescents aged 10-15 years (2.2).

The second paper was a systematic literature review that examined marijuana and alcohol risk behaviours by socioeconomic status in adolescents aged 10-15 years. The prevalence of marijuana and alcohol risk behaviours was 22% higher in adolescents with low SES in comparison to adolescents with higher SES.

Research Articles

C. Health disparity by neighbourhood income (2.3).

The third paper compared the health status of residents within Saskatoon's six contiguous low income neighbourhoods to the rest of the city and found substantial disparities in suicide attempts, mental disorders, injuries and poisonings, diabetes, chronic obstructive pulmonary disorder, coronary heart disease and a significant disparity in the incidence of chlamydia, gonorrhoea, hepatitis C, teen births, low birth weights, infant mortality and all cause mortality.

D. Health disparity: limited association with Aboriginal cultural status (2.4).

The fourth paper described health disparity in Saskatoon adults. In this study, Aboriginal cultural status and income status initially had strong associations with essentially all health outcomes, disease intermediaries, behaviours, life stress and healthcare utilization variables at

the cross tabulation level. After multivariate adjustment in each of the three health outcomes under review, age and income were the strongest risk indicators. After full multivariate adjustment for covariates including income status, Aboriginal cultural status had a more limited association with lower self report health, heart disease prevalence and diabetes prevalence. After controlling for all other variables, low income residents were 50% more likely to have lower self report health, 196% more likely to have diabetes and 118% more likely to have heart disease. Behaviours, life stress and healthcare utilization played limited roles as risk indicators for health disparity after multivariate adjustment for age and income status.

E. Suicide ideation: the role of economic and Aboriginal cultural status after multivariate adjustment (2.5)

The fifth paper examined if economic status and Aboriginal cultural status were independently associated with lifetime suicide ideation after controlling for other covariates. The results of this study suggest significant and substantial reduction in lifetime suicide ideation in Aboriginal Canadians when levels of household income are adjusted for. The odds of lifetime suicide ideation for Aboriginal people reduced from 3.28 to 1.99 after multivariate adjustment for household income alone. After controlling for all other variables, low income residents were 376% more likely to have thoughts of suicide ideation.

F. Smoking in Saskatoon: limited association with Aboriginal cultural status (2.6)

The sixth paper reviewed daily smoking in Saskatoon. After cross tabulation, Aboriginal cultural status and income were strongly associated with daily smoking status. The odds of daily smoking for residents of Aboriginal cultural status were reduced substantially from the initial odds of 3.43 to 1.59 after multivariate adjustment. After controlling for all other variables, low income residents were 130% more likely to be daily smokers.

G. Disparity in childhood immunizations: limited association with Aboriginal cultural status (2.7).

The seventh paper reviewed disparity in childhood immunizations in Saskatoon. The results demonstrate that child immunization coverage rates are routinely lower in Saskatoon's six low income neighbourhoods in comparison to the rest of the city and are approximately half the rate of the affluent neighbourhoods. Saskatoon parents that were behind in immunization coverage with their children were more likely to have the demographics of being divorced/separated or single, being of Aboriginal or Other (non-Caucasian, non-Aboriginal) cultural status and being of lower family income. Although Aboriginal cultural status was initially strongly associated with child immunization status, Aboriginal culture status had a more limited association with incomplete immunization coverage in children after adjusting for low income status. After controlling for other variables, low income children were 72% less likely to be fully immunized at age two.

H. Risk indicators for depressed mood in youth: lack of association with Aboriginal cultural status (2.8).

The eighth paper described mental health disparity in Saskatoon youth. In this study, all three socioeconomic variables (parental educational status, parental occupational status and neighbourhood income) and Aboriginal cultural status had important associations with

moderate or severe depressed mood after cross tabulation. The unadjusted odds ratio for the association between Aboriginal cultural status and depressed mood was 2.81, but was subsequently reduced to 1.13 after full multivariate adjustment in the final logistic regression model. After controlling for other variables, children that were hungry some or most of the time were 107% more likely to have depressed mood and children from a lower socioeconomic home were 50% more likely to have depressed mood.

I. The role of economic and cultural status as risk indicators for alcohol and marijuana use among adolescents (2.9).

The ninth paper describes alcohol and marijuana use in Saskatoon youth. In this study, cultural status and neighbourhood income were both strongly associated with alcohol and marijuana use at the cross-tabulation level. After multivariate adjustment, the association between Aboriginal cultural status and alcohol use was not statistically significant (crude OR = 3.52 to adjusted OR = 0.80) and for marijuana use the association was significantly reduced (crude OR = 9.91 to adjusted OR = 2.79). After controlling for all other variables, low income youth were 163% more likely to be drunk at least once and 163% more likely to have tried marijuana at least once.

J. High healthcare utilization and costs associated with lower socioeconomic status (2.10)

The tenth paper revealed that low income residents were 27% to 33% more likely to be hospitalized and 36% to 45% more likely to receive a medication but were 5% to 7% less likely to visit a physician over a one year period. Low income residents were much more likely to have high utilization rates (upper 20th percentile) of hospitals, physicians and medications. Multivariate regression determined that high healthcare utilization was associated with increased disease prevalence, lower self report health and higher age; with low income status having a reduced association with high health care utilization after controlling for higher disease prevalence.

The results from this study demonstrated that residents from lower socioeconomic status are responsible for disproportionate high utilization of hospitals, physicians and medications; due mostly (but not completely) to higher disease prevalence. The findings suggest that an annual healthcare cost savings of approximately \$179 million in Saskatchewan could be realized if the socioeconomic position of those less fortunate were improved.

K. Health disparity knowledge and support for intervention in Saskatoon (2.11).

The eleventh paper describes health disparity knowledge and support for intervention in Saskatoon. It appears that a majority of Saskatoon residents understand most of the determinants of health although there is an emphasis on behaviours like eating nutritious food and being physically active. Saskatoon residents, however, do not have a good understanding of the magnitude of health disparity between income groups. A majority believe risk behaviours are mostly individual choices and are not associated with income status. Most residents believe even small differences in health status between income groups are unacceptable (most prefer 0%) and a majority (83.2%) believe that something can be done to address health disparity by income status. Interventions proposed by residents to alleviate health disparity were evidence based including work earning supplements and strengthening early intervention programs.

Section 3 discusses the results of a comprehensive literature review of other jurisdictions on how to reduce health and social disparity. Evidence based policy options are reviewed on how to reduce disparity in income, education, housing, employment, access to health services and how to reduce disparity between cultural groups.

3.1.

Evidence Based Policy Options to Reduce Health or Social Disparity

Our local research in Saskatoon has confirmed that health disparity is present in our population, that health disparity is extensive and that the causes of health disparity are mainly due to differences in socioeconomic status; namely income status. In other words, the solutions to resolving health disparity in Saskatoon lie largely outside of the health care treatment sector. We now turn our focus to a review of the evidence from other jurisdictions where specific policy options have been implemented and shown to be effective in reducing health disparity.

A comprehensive literature search was initiated to review evidence based policy options to reduce health and social disparity from across North America, Europe, Australia and New Zealand.

Two epidemiologists and a senior librarian performed a comprehensive literature review utilizing the databases PubMed, PsycINFO, CINAHL, ERIC, ISI Web of Knowledge and First Nations Periodical Index. Subject descriptors included the MeSH terms: Socioeconomic, Social Class, Income, Poverty, Poverty Areas, Vulnerable Populations, Education, Schools, Student Dropout, Occupation, Occupational Groups, Employment, Unemployment, Public Assistance, Social Support, Housing, Public Housing, Population Characteristics, Cohort Studies, Cross-over Studies, Randomized Trials, Cross Sectional Studies, Treatment Outcomes, Health Care Evaluation, Program Evaluation, Evaluation Studies, Health Care Quality, Health Services Research, Health Behaviour, Quality of Life, Quality Indicators and Quality of Health Care.

We also sought information pertaining to governmental or non-published papers (grey literature). In total, an additional 284 e-mail requests were sent out to all relevant health, mental health, social sciences, social services and education department heads of Canadian universities, urban health regions, municipal, provincial and federal ministries, Canadian health associations and independent research agencies (i.e., Statistics Canada). Each of the contacts were asked to forward the e-mail request to any colleague that worked within the area of health, social or educational policy as it related to disparity. From this process, 28 relevant responses were received.

Two epidemiologists independently screened abstracts of published and unpublished literature for relevance. Inclusion and exclusion criteria were developed and used to assist in the selection of articles for inclusion in the report. Accepted articles needed to be high quality and also needed pre and post quantitative evaluation data. Articles were reviewed in full when criteria within the abstract did not provide enough detail to make a decision. The reference list of each article was also examined.

10,048 publications and 28 non-published papers were identified for a total of 10,076 abstracts and articles. In the end, 300 articles were accepted for inclusion in this section.

Prior to publication of this report, policy experts from the affected government agencies and community groups were able to review this report, verify that the statistics were correct and ensure the evidence-based policy options were realistic in a Saskatchewan context. Throughout this process, an additional 100 consultations occurred.

We recognize that the evidence based policy options presented in this report will require a more detailed review prior to implementation. However, we strongly believe that the reduction of health disparities should be of sufficient importance to the residents of Saskatoon and Saskatchewan that this document should be used in a non-partisan way to create a specific action plan. We believe such a strategy will strengthen our city and province by ensuring as many people as possible have equal opportunities to be healthy.

3.1a.

Lemstra M and Kershaw T

What other Jurisdictions are Doing to Reduce Health or Social Disparity

Context

Health is higher on the international agenda than ever before and improving the health of low income residents is a central issue in policy development in many countries.¹ Europe in particular has taken the lead in reducing health inequities. The following section focuses on comprehensive poverty reduction strategies currently in place in Europe and two provinces in Canada. In these jurisdictions, policies have been put in place that tends to focus on improving health services for low income residents. However, ensuring that the low income residents have access to affordable, quality health services is not enough by itself to improve health because the major determinants of health disparity lie outside the healthcare treatment sector.¹

Literature Review

International Poverty Reduction Plans

A. Ireland

In 1997, Ireland became the first country in the European Union to set an explicit anti-poverty target.² Ireland's National Anti-Poverty Strategy outlines strategies for all aspects of poverty, but focuses on three main areas: income, unemployment and education.²

For income, the target set in 1997 was to reduce the percentage of the population recognized as poor from 15% to 10% of the population by 2007. By 2001, the poverty rate had already fallen from 15% to 5%.² For unemployment, the target in 1997 was to decrease unemployment from 11.3% to 6% and long term unemployment from 7% to 3.5%. By 2000, unemployment was already at 4% while long term unemployment dropped to 1.2%.² For education, the target was to eliminate school aged children leaving school prior to completion of the junior certificate by 2007 and the rate of students continuing senior schooling to 90% in 2000 and 98% in 2007. By 2001 these rates had not been achieved but have remained unchanged.² The results clearly demonstrate the importance of establishing objective goals and working collaboratively to achieve them.

Initiatives undertaken in Ireland to accomplish their goals included allocating more money for skills training, raising welfare payments and building more affordable housing. One initiative that proved successful in Ireland was to encourage local partnerships with business leaders, activists and low income residents. As of 2007, 93 of these partnerships had been formed.³ One in particular is the 'Dublin Docklands' also known as "the 20-per-cent solution." In order to alleviate poverty in one of Dublin's worst neighbourhoods (the 'Docklands'), 520 hectares of riverside land was bought

and turned into office towers, restaurants and condos. As an agreement between the partners, 20% of new homes were set aside as affordable housing (2,200 out of 11,000); 20% of the placements in the new National College of Ireland and 20% of the jobs in the neighbourhood were set aside for needy locals. Prior to the project, less than one percent of students in the district went to college or university. By 2007, this had increased to 10%.⁴

The Irish National Anti-Poverty Strategy plan has been renewed to 2016 with new goals, targets and commitments. Some of these include: reducing the number of people on welfare by 20% through education, training and employment programs, cutting the number of children with serious literacy difficulties in half (to less than 15%) and increasing the number of young people completing high school to over 90%.³

B. The Netherlands

Unlike other countries that have developed plans for poverty reduction as a whole, the Netherlands has produced an action plan specifically focused on reducing health inequalities. This plan is unique in that it is based on extensive research of the nature and background of socioeconomic inequalities in health in the Netherlands, as well as an evaluation of existing interventions and policy measures.⁵ The plan consists of four strategies with 26 recommendations and 11 quantitative policy targets.⁶ All of these strategies and recommendations are geared towards reaching the overall target set by the World Health Organization of achieving a 25% reduction in socio-economic inequalities in health by 2020.⁵

Compared to other western countries, the Netherlands is characterised by a relatively strong redistribution of income, and consequently a relatively small income inequity and low prevalence of poverty. Therefore, their plan differs from other countries in that there is not a large emphasis placed on policies related to income.⁵

An important aspect of the plan is the acknowledgement that not one of the four strategies outlined is powerful enough to create a substantial reduction in health inequalities by itself. In addition, the Programme Committee states that “given the diversity of causes for the development of socio-economic inequalities in health, a further reduction of such variations will require efforts in a great many policy areas. This is not a task...for the health care sector alone.”⁵

The four strategies of the Netherlands plan to reduce socio-economic inequalities in health are:⁵

1. Reduction of inequalities in education, income, and other socio-economic factors
 - Continuation of the education policy targeted at disadvantaged youth in order to increase the percentage of children from the lower socio-economic classes who leave school with a secondary education diploma to 25% or higher in 2020.
 - Further experiment in the public health care sector with targeted measures to counteract the negative health effects of poverty, such as the direct allocation of a special welfare allowance to families with children.
2. Reduction of the negative effects of health problems on socio-economic position
 - Maintain the level of benefit for the chronically ill at the level of 2000.
 - Expand the opportunities for chronically ill and disabled persons to hold on to or find gainful employment. Specifically, increase the percentage of chronically ill persons between the age of 25 and 64 in paid employment from 48% in 1995 to 57% or higher in 2020.

3. Reduction of the negative effects of socio-economic position on health
 - Make it a high priority in low SES groups to promote health behaviours, improve working conditions and to improve housing.
 - Eliminate barriers to healthy behaviours while also encouraging healthy behaviours, such as fresh fruit programs at school or a further increase on the tax on tobacco.
4. Improve access and quality of healthcare for lower socio-economic groups
 - Overcome the shortage of GPs in low income areas.
 - In order to improve health in lower socio-economic groups, more is needed than assuring good access to health care facilities alone. Persons from lower socio-economic groups may require a different approach to care to achieve similar health effects to those achieved among persons from higher socio-economic groups.

C. Sweden

Sweden's Strategy Report for Social Protection and Social Inclusion 2006-2008 focuses on social connections (i.e., social capital, supportive social environment, secure bond between children and their parents) and a sense of morality (sense of solidarity, no discrimination).⁷ The four priority objectives up until 2008 are:⁸

1. Promote work, education and training for everyone
2. Increase integration
3. Combat homelessness and exclusion from the housing market
4. Strengthen groups in particularly vulnerable situations

The foundation on which the Swedish strategy is built upon is universal welfare. The Swedish welfare system comprises: general health care and social care; social insurance that provides financial security in illness, disability, old age, and families with young children receive basic supplementary protection in the form of financial assistance.⁸ This protects the entire population and is financed through compulsory charges and taxation. This means that everyone pays towards welfare and everyone benefits from it; particularly the more vulnerable groups. Universal social welfare is intended to create equal opportunities for all and equality between men and women.⁸ Similarly, the general pension system, like health care and long-term care, covers the whole population on equal terms.⁸

Two unique aspects of Sweden's strategy are the universal leave policies for parents and the child care reform initiated in 2002/03. Under the universal leave policy, parents are entitled to thirteen months of parental leave at a replacement rate of 80%.⁹ Sweden was the first country to introduce paid leave for fathers in 1974 and has since reserved two out of the thirteen months of parental leave specifically for fathers.⁹ To be entitled to the earnings-related parental insurance, one has to work for a minimum of 240 days before the birth of the child. Those who are not eligible receive a reduced amount. This policy encourages participation in the labour force, particularly for women. On top of parental leave, parents also receive child allowances at a flat rate per month per child.⁹

The structure of the parental leave policy is often seen as a main explanation why Sweden has been able to combine high female labour force participation rates and low levels of poverty.

For instance, research has found that first-time mothers entitled to parental insurance benefits re-enter the workforce faster than non-eligible mothers and cross-national studies have found a close relationship between family policy and poverty outcomes.⁹

In 2002/03 the Swedish government initiated child care reform. By 2003 all municipalities had imposed a cap on the price of child care. The price of child care is determined as a fixed rate of household income with a cap of 38,000 SEK (approximately \$6,400 Canadian dollars). The government also implemented an obligatory 525 hours a year of child care for all children aged 4 to 5 without any direct charges. These two changes made the average cost for full-time child care decrease from 6% to 2.5% of household income. In addition, the reform also requires municipalities to supply at least 3 hours a day or 15 hours a week of child care for children whose parents are unemployed or on parental leave.⁹

The parental leave policy and the child care reform have resulted in Sweden becoming the country with the lowest rate of low income lone-parent families (6.7% in comparison to Canada at 51.6%).¹⁰ Further, the income of lone parents in Sweden is between 70 and 80 percent of similar two parent families whereas this number is less than 50% in Canada.¹¹

D. The United Kingdom

The United Kingdom is currently a leader in Europe in the development and implementation of policies to reduce poverty.⁷ The United Kingdom has so far produced three National Action Plans to reduce social exclusion and poverty containing 39 main recommendations.⁷ As of 2006, the UK had the highest employment rate of the G8 countries and for the first time in 50 years the UK also had the lowest combination of unemployment and activity rates. As a result of tax credits and the implementation of the National Minimum Wage in previous plans, there were 800,000 fewer children and 1 million fewer pensioners living in low-income in 2004/05 than in 1996/97.¹²

Two key objectives of the plan are:

1. Improving access to quality services and tackling discrimination
2. Eliminating child poverty and increasing labour market participation

In order to eliminate child poverty, the government has created policies that focus on supporting and promoting financial security for poor families in and out of work; and breaking cycles of deprivation through early-years support and education. Specifically, they have set the following targets to be met by 2010: to have 70% of lone parents employed by 2010, to have a childcare placement for all 3 to 14 year olds between the hours of 8 a.m. and 6 p.m. each weekday and to create 3,500 children's centres with high quality early-years services in every community.¹²

The United Kingdom recognizes that all determinants of health are inter-related. Therefore, in order to eliminate child poverty and increase labour market participation they recognize the importance of a safe and affordable home. The homelessness strategy for England aims to halve the number of households living in temporary accommodation by 2010. The supply of new social homes will be increased by 50% by 2008, providing 75,000 new social homes over the next three years. As a result of the initiative, there was a 27% reduction in the number of households becoming homeless in 2005 in comparison to the previous year.¹²

E. Scotland

The individual countries of the United Kingdom have all come up with their own action plans to reduce health inequality and poverty. Since 1999 Scotland has been committed to tackling poverty and disadvantage through their *Social Justice Strategy: A Scotland where Everyone Matters*. Beginning in 2003, this title was changed to “*Closing the Opportunity Gap*” with six specific objectives and ten targets announced in 2004. The six objectives of the plan are:¹³

1. To increase the chances of sustained employment for vulnerable and disadvantaged groups - in order to lift them permanently out of poverty;
2. To improve the confidence and skills of the most disadvantaged children and young people - in order to provide them with the greatest chance of avoiding poverty when they leave school;
3. To reduce the vulnerability of low income families to financial exclusion and multiple debts - in order to prevent them from becoming over-indebted and/or to lift them out of poverty;
4. To regenerate the most disadvantaged neighbourhoods - in order that people living there can take advantage of job opportunities and improve their quality of life;
5. To increase the rate of improvement of the health status of people living in the most deprived communities - in order to improve their quality of life, including their employability prospects; and,
6. To improve access to high quality services for the most disadvantaged groups and individuals in rural communities - in order to improve their quality of life and enhance their access to opportunity.

One initiative that has been introduced in order to meet the first objective to increase employment opportunities is Working for Families (WFF) which aims to ensure that access to affordable, flexible childcare is not an obstacle in preventing parents from accessing education, training or employment. The target is to increase by 15,000 the number of parents from disadvantaged areas and groups entering or moving towards employment by removing child care barriers by March 2008.¹² Evaluation of the initiative is being carried out by the Employment Research Institute (ERI) at Napier University. Both ‘hard outcomes’ (full/part time employment, sustaining or improving employment, entering or completing education/training courses, volunteering more than 16 hours a week) and ‘intermediate outcomes’ (completion of personal development skills training, completion of a structured work placement and volunteering over 3 hours a week) are evaluated. The latest data from ERI shows that as of March 31, 2006 nearly 6,000 parents had engaged with WFF across the 10 local authorities receiving funding in 2004/06. Of these parents, 2,600 had achieved one of the hard or objective outcomes listed above. Intermediate outcomes have not yet been evaluated at this time.¹²

Poverty Reduction Plans in Canada

Regrettably, Canada does not have a national anti-poverty or health disparity reduction plan. Only three provinces in Canada have developed provincial anti-poverty strategies: Québec, Newfoundland and Labrador and Nova Scotia.¹⁴ Poverty in these provinces is concentrated in specific regions/neighbourhoods and is particularly evident for lone-parent families, recent

immigrants, persons with disabilities and Aboriginal people.^{15,16} Québec in particular has a comprehensive action plan and will therefore be discussed in more detail.

F. Québec

On December 13, 2002 the National Assembly in Québec unanimously adopted Bill 112: a law to combat poverty and social exclusion. The law itself is the most important and unique part of the bill as it takes the problem of poverty and changes it into a legislative commitment.¹⁵ Following the passing of Bill 112, the Government of Québec released its Government Action Plan to Combat Poverty and Social Exclusion in April, 2004. The action plan consists of a set of five-year measures for achieving the goals set in the act to combat poverty and social exclusion. The action plan *“Reconciling Freedom and Social Justice: a Challenge for the Future”* reflects a long-term vision, but includes short-term and medium-term commitments.¹⁷

The action plan is based on two principles:¹⁸

1. Employment is the leading solution in ensuring economic security and social inclusion for people able to work
2. A higher level of protection must be granted to people with a severely limited capacity for employment

The plan focuses on four major areas:

1. Improving the lives of people living in poverty. The seven goals are:
 - a) To increase minimum wage. As a first step to improving the lives of low-income earners, measures must be implemented to ensure that work is more attractive than employment assistance in that it enables workers to progressively overcome poverty. Increasing the minimum wage is a key strategy in this regard.¹⁷ As such, minimum wage in Québec rose from \$7.30 in 2004 to \$7.75 in May of 2006.¹⁹
 - b) To provide better support for low-income earners through the Work Premium. Prior to the introduction of the Work Premium, there was no advantage for those on employment assistance to work since after a certain amount earned, each dollar was deducted from the financial assistance they received. With the Work Premium, low-income earners and employment-assistance recipients will receive additional financial assistance on top of the wages they earn.¹⁷ This will benefit approximately 536,000 low-to mid-income households (more than five times more families than under the Parental Wage Assistance program in 2004).¹⁹ Amounts vary according to income but can range from \$511 annually for a single individual, \$784 for a couple, \$2,190 for a single-parent family and \$2,800 for a couple with children.¹⁸
 - c) To provide more flexibility for assets under the Employment Assistance Program. The government intends to encourage those living in poverty to save to buy a home, go to school, or become self-employed. Beneficiaries will be able to undertake personal development projects (housing, training, employment) without affecting their eligibility for employment assistance or diminishing the amounts to which they are entitled.¹⁷
 - d) To protect recipients' employment-assistance benefits. Currently, employment-assistance recipients may see their financial support cut back for a number of reasons such as if they owe money to the Ministère de L'Emploi, de la Solidarité Sociale, et de la Famille (MESSF). By introducing a minimum benefit principle where 100% of the basic amount to which recipients are entitled will be protected against amounts owed

to the government or any penalties (except in cases of fraud or debt repayment). With the introduction of this type of low-income cut-off as part of changes to the income security system, the principle of reciprocity will be based on incentives rather than punishment. Trust and rewards are the government's chosen course.¹⁷

- e) To provide funding to the Réseau Québécois de Crédit Communautaire which is made up of 17 organizations that grant credit to people with low income who want to start their own businesses. The government will put about \$4.5 million in funding during the course of the Action Plan.¹⁷
- f) To build more decent and affordable housing. As of March, 2005, 3,196 housing units have been built and 7,167 were under construction. The target for social and community housing is 20,000 by 2008.¹⁹
- g) To ensure everyone has access to adequate amounts of nutritious food. Food security projects have been implemented in every region of Québec. These projects not only give disadvantaged people access to healthy food but also help them improve their meal preparation and food budgeting skills. Examples of projects include community kitchens, community gardens, community grocery stores, self-help food banks, cooking workshops in school settings, buyers' groups, workshops on thrifty cuisine, workshops on budgeting and publication of a directory of food resources.¹⁸

2. Preventing poverty and social exclusion by fostering development of personal potential

- Making children, low-income families and young people a priority.¹⁷
- The creation of a child assistance initiative that covers the basic needs of dependent children under 18 years old. The new measure provides more generous assistance, particularly to low-income families. In 2005, nearly \$2 billion was paid out through the initiative, a \$550 million increase from 2004.¹⁹
- Active assistance for young adults who are on government assistance in order to help them enter the work force. When people under age 25 that are able to work apply for employment assistance, they will first be directed to "Alternative Jeunesse." After an initial needs assessment, youth will be directed to a guidance phase or a youth organization and then to the most appropriate alternative (apprenticeship, work-study program, guided job search, training, etc).¹⁷

3. Involving society as a whole

- The strategy takes an integrated territorial approach. The territorial approach is the corner stone of the strategy. It requires that all regions and municipalities combine their strategies and agree on priority actions and disadvantaged areas. Further the strategy calls for an integrated approach such that all stakeholders must work together while empowering the communities and individuals that compose them.¹⁷
- Local strategies to combat poverty and social exclusion are funded by the Fonds Québécois d'Initiatives Sociales (FQIS). The FQIS enables new partnerships among the various private, public and community players. In total, 226 projects in 16 regions of Québec received funding by the end of the second year.¹⁸

4. Ensuring consistent, coherent action

- Formation of an interdepartmental committee to ensure the participation of all partners across Québec which is needed in order to coordinate and implement the Action Plan.¹⁷

- In 2005 the groundwork was laid for a Centre d'Études sur la Pauvreté et l'Exclusion Sociale within the Ministère de l'Emploi et de la Solidarité Sociale. The centre will conduct studies and research in partnership with the relevant Québec networks, the Institut de la Statistique du Québec, and the main government departments involved in combating poverty and social exclusion.¹⁹
- The government will provide regular updates to the public to encourage active participation in the fight against poverty and social exclusion.¹⁷

G. Newfoundland and Labrador

Newfoundland and Labrador initiated a government-wide integrated approach based on the principles of social inclusion and collaboration in 2006. The government has committed to transform Newfoundland and Labrador over a ten-year-period from a province with the most poverty to a province with the least poverty.

The goals and objectives of the strategy are:¹⁶

1. Improved access and coordination of services for those with low incomes
2. A stronger social safety net
3. Improved earned incomes
4. Increased emphasis on early childhood development
5. A better educated population

The 2006 budget focused heavily on poverty reduction in the province and funded 20 initiatives in the area equalling \$64 million dollars as an ongoing commitment. Some of these initiatives included:¹⁶

- A low income prescription drug program to provide prescription drug coverage to approximately 37,000 individuals and partial coverage to an additional 60,000, all of whom do not have access to public or private drug coverage. The cost will be \$8.3M in 06/07 and \$32.8M annually in the following years.
- Support for Income Support Clients who find work (\$250 for a family; \$125 for a single when clients begin working to help with financial obligations in the first month of working).
- A universal instructional grant to school boards to eliminate school fees for school materials such as course materials and student IDs. This will reduce all of parents' education-related costs, but will be of particular benefit to schools in low socio-economic regions.

H. Nova Scotia

On December 13, 2007, Nova Scotia unanimously passed Bill 94, which was an Act to establish a Poverty Reduction Working Group. The report was presented to government on June 30, 2008 for consideration. Given that this report has not been accepted by government yet, there is no discussion of the plan.

The countries and provinces discussed in this section vary in many ways but they all face the same problem of poverty, health inequality and social exclusion. Although each country and province has adapted their own plans to alleviate poverty, commonalities regarding the construction of a plan emerge. The first consistency is the need for an action plan.

Evidence Based Policy Option #1 – Develop a Multi-Year, Targeted Plan to Reduce Poverty

Develop an effective plan to reduce poverty and health inequality for Saskatoon and Saskatchewan that includes a multi-year approach with concrete measurable targets, broad support and an evaluation plan.

The plan should:

- **Consist of interventions that have been shown to be effective**
- **Include an evaluative component that continues to conduct research directed at the development of new interventions.^{5,16}**
- **Include concrete targets for each of the proposed strategy areas to measure progress.**
- **Include both short and long term targets.⁵**
- **Be broadly supported across many sectors (both public and private) in order to be effective.^{5,12,16,17}**
- **The results should be reported publicly on an annual basis**

Rationale:

As demonstrated through the literature review of efforts in other jurisdictions, successful action was based on the establishment of a nationally (or provincially) developed plan. These plans included key targets with clear commitments to change.

While the development of a plan is an important first step, evaluation of the plan's proposed interventions and policies should be a priority. In order to determine if interventions are effective, evaluation strategies need to be developed in conjunction with the plan. A common problem that emerges in the national and provincial reports on reducing poverty is the lack of evaluation. In a report written by Mackenbach and Bakker (2003) on health disparity plans in Europe, the authors conclude that:

“The available evidence on the effectiveness of policies and interventions to reduce socioeconomic inequalities in health is very limited...there seem to be many entry points, but for only some of these have policies and interventions been devised, only some of them have been evaluated, and not all of the results have been made available to policy-makers around Europe.”⁷

In a recent report evaluating plans to reduce health inequalities in Europe, the authors found that “aside from [a] few examples, there appears to be insufficient recognition that evaluation is a prerequisite for decisions as to whether a policy should be continued, expanded, adapted or curtailed.”²⁰

Although these reports on evaluation focus on European countries, Canada's three provinces with comprehensive plans are no different. Even though Québec has released two follow up reports to their plan, there is little mention of any evaluation. Instead it seems to be the norm to present general information as opposed to any actual evaluation.

In order to determine if interventions are effective, strategies to evaluate interventions need to be put in place at the same time a plan is developed.

3.1b.

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Income Disparity

Context

The purpose of this chapter is to examine income and how it contributes to health disparity in Saskatoon.

Main Points:

- a) In 2001, 17.1% of Saskatoon households lived below the Low Income Cut Off (LICO) developed by Statistics Canada
- b) 20.1% of children under 18 years of age lived below the LICO and 26.3% of children between the ages of 0 and 2 years lived below the LICO in 2004
- c) A couple with two children living on social assistance in Saskatchewan needs an extra \$8,150 annually just to reach the LICO
- d) Social assistance incomes represent only 37% of the amount necessary to bring an individual to the LICO.

Cost of Living in Saskatoon

The cost of living in Saskatchewan varies according to where people live (i.e., large city, northern town) and household type (i.e., single, family of four). Everybody needs food, clothing and shelter as these are essentials for living. A lone parent with two children receives \$725 per month from provincial social assistance for shelter, food, clothing, transportation and so on.^{21,22} The average cost of a two bedroom apartment in Saskatoon is \$694 and the average cost for a parent and two children to eat nutritious food is \$448 per month.^{23,24} This leaves a monthly net deficit of \$417 prior to the payment of other necessities like clothing, medicine, transportation, etc. Incredibly, a parent on provincial social assistance with one child receives \$255 per month for food and clothing but receives \$0 extra per month to feed and clothe all other children above and beyond one child. The federal child tax benefit and the national child benefit supplement offset some of these deficits but parents with children continue to live in poverty in Saskatchewan.

Assuming someone meets the initial eligibility requirements of the Canada Child Tax Benefit, you can receive \$106.91 per month for each of your first two children but only \$7.50 per month for your third child and every child beyond two children (providing there are no deductions based on income).²⁵ As well, the National Child Benefit Supplement pays only \$165.66 per month with lower amounts for each child after the first child. The problem, however, is that the National Child Benefit Supplement (in comparison to the Canada Child Tax Benefit) is declarable income and results in adjustments to provincial social assistance rates.²⁵ Another limitation is that you can not apply for either the Canada Child Tax Benefit or the National Child Tax Benefit supplement until you and your spouse both file your own tax returns for every year you were a resident of Canada; even if you had no income to declare.²⁵

Using the same example as above, a single parent with two children can receive \$725 per month from provincial social assistance, \$213.82 from the Canada Child Tax Credit and \$312.16 from the National Child Benefit Supplement, for a total of \$1250.98 prior to various deductions (and assuming eligibility).

According to the July 2007 - June 2008 review of Canada Child Benefits conducted by the Canada Revenue Agency, Saskatchewan is one of only three provinces in Canada without a targeted child benefit offered at the provincial level.²⁵

Low Income Levels

The Low Income Cut Off (LICO), developed by Statistics Canada, is the most commonly used measure to determine low income in Canada.²⁶ The LICO varies by the number of individuals in a family and by community size. Therefore, the LICO for a family of four living in a community the size of Saskatoon in 2006 was \$33,390, while for an individual person it was \$18,260.²⁶

According to the 2001 Canadian Census (the most recent census year for which income statistics are available), the number of households below the LICO dropped in both Saskatchewan and Saskatoon. In 2001, 17.1% of Saskatoon households were living below the LICO down from 20.2% in 1996 (see Table 1).

Table 1 Households with Low Income, Saskatoon and Saskatchewan, 1996 and 2001

Population living In low income	1996		2001	
	N	%	N	%
Saskatoon	53,130	20.2	45,960	17.1
Saskatchewan	170,450	18.3	144,435	15.8

Source: 1996 data from Statistics Canada, CANSIM Table 109-0007. 2001 data from Statistics Canada, CANSIM Table 109-0200.

In Saskatchewan, 20.1% of children under the age of 18 years lived below the LICO in 2004.²⁷ Of children aged 0 to 2 years, 26.3% (7,870) lived below the LICO, while 25.3% (8,910) of children aged 3 to 5 years lived below the LICO.²⁷ In total, 43,680 children live in poverty (as defined by those living below the LICO) in Saskatchewan.²⁷

The inadequacy of welfare incomes in relation to the LICO in Saskatchewan is readily observable.²⁸ One report documents that a single employable individual receives \$6,663 per year in welfare income, whereas the LICO at that time was \$17,895.²⁸ This means that welfare incomes represent only 37% of the amount necessary to bring an individual to the LICO. A couple with two children in Saskatchewan would need an extra \$8,150 annually to reach the LICO.²⁷ Saskatchewan, however, is not unique in this regard as every province in Canada has welfare income proportions that fall far short of the LICO. This position is justified by most governments because social assistance is intended only to provide assistance to those in need as a last resort.

Income and Social Assistance Programs in Saskatchewan

In Saskatchewan, Social Services are responsible for a number of income and social assistance programs for low income individuals. These include social assistance programs (i.e., the Saskatchewan Social Assistance Program, and Transitional Employment Allowance), child benefits, family health benefits, supports for seniors and the disabled, as well as housing supports. All programs are targeted for different subgroups and have variable eligibility requirements. Table 2 shows the number of beneficiaries for these programs for people with a Saskatoon mailing address.

Table 2 Number of Beneficiaries for Social Assistance Programs, Saskatoon, 2007

Program	Number of Beneficiaries
Social Assistance Program and Transitional Employment Allowance combined	12,971
Family Health Benefit	9,134
Employment Supplement	4,364
Rental Housing Supplement	3,742
Discount Bus Pass	2,503
Child Care Subsidy	1,065
Disability Housing Supplement	666
Training Allowance	360

Source: Department of Community Resources, 2007

The number of people on both the Saskatchewan Social Assistance Program and Transitional Employment Allowance has decreased from 58,699 in 2001/02 to 47,559 in 2005/06.²⁹ This has led to a drop in social assistance beneficiaries as a percentage of the provincial population from 6.7% to 5.4% in those same years. Aboriginal people make up about 15% of the provincial population, yet 40% to 53% of Aboriginal people use income assistance programs (depending on various definitions of Aboriginal people).²⁹

Literature Review

The Link between Income and Health

Income allows people to purchase necessary goods and services like food, shelter and clothing and is therefore a main determinant of health.³⁰ The concept that higher income is associated with better health (e.g., lower mortality and sickness rates) is now widely accepted amongst public health professionals and economists.^{31,32} For example, a Canadian longitudinal study of men showed that those with the lowest career earning levels had the highest mortality rates in comparison to high income earners.³³ A clear gradient was shown in the study between levels of low income earners. Because of the study's longitudinal design, it helped demonstrate that income causes better health, not that health results in better income.³³

Income influences health at the neighbourhood level as well. Low income neighbourhoods are less likely to have services and amenities compared to higher income neighbourhoods. Because of this, residents of low income neighbourhoods can have their health negatively

affected, irrespective of individual income.³² It has been shown in Canada that individuals living in higher income neighbourhoods have longer average life expectancy than those in low income neighbourhoods.³⁴ Similarly, individuals in Toronto's low income neighbourhoods had poor self-perceived health even after controlling for individual low income.³⁵ Finally, results from an examination of low income neighbourhoods in Saskatoon showed that individuals in low income neighbourhoods had substantially increased suicide attempts, mental disorders, injuries and poisonings, diabetes, chronic obstructive pulmonary disorder, coronary heart disease and a higher incidence of chlamydia, gonorrhoea, hepatitis C, teen births, low birth weights, infant mortality and all cause mortality.³⁶

Review of Programs to Improve Population Income Levels

While there is an abundance of literature associating income with health, very little documentation exists about how best to reduce inequalities in health as a result of inequalities in income.^{37,38} Controlled intervention studies are rare when examining interventions that could help alleviate health disparities because of the complexity in controlling for multiple determinants of health.³⁸

The following is a list of income assistance programs or policies that have been evaluated.

A. Wage subsidies and Work Earning Supplements

Human Resources Development Canada commissioned a report to examine how effective various types of programs were at integrating social assistance recipients back into the workforce.³⁹ Two programs specific to income were wage subsidies and work earnings supplements.

Wage subsidies provide employers with incentives for hiring social assistance recipients. The report states that wage subsidies can lead to employability gains, though the greater acceptance of lower paying jobs by recipients and potentially offsetting increases in Employment Insurance payouts to this target group may have nullified the benefits.³⁹

Work earning supplements (and the removal of work earning clawbacks) are income supplements that are provided to social assistance recipients who earn wages from employment. Based on short term evaluations of the Self Sufficiency Project (SSP) in British Columbia and New Brunswick in Canada and the Minnesota Family Investment Program in the United States, the earning supplement programs achieved the objective of financial self-sufficiency and reduced poverty levels.³⁹ Findings from the evaluation report showed that SSP recipients had increased earnings of \$2,405 per year compared to control group members.⁴⁰ The increased earnings helped reduce poverty amongst SSP recipients and increased employment. The net cost to government of the SSP program was \$110 per year per recipient.⁴⁰ The SSP and three additional earnings supplement programs in the United States were evaluated in a second paper.⁴¹ The main findings were that recipients of work earnings supplements are more likely to work and have more income than control group members.⁴¹ Overall, work earning supplements (and the removal of work earning clawbacks) show substantial promise in reducing low income levels.

B. Child Benefits

The federal government in Canada has a range of programs offering income assistance to families. The Canada Child Tax Benefit (CTB) is provided to approximately 80% of Canadian

families (low and middle income). The CTB benefits are paid monthly and are tax free. The National Child Benefit Supplement (NCB) was implemented in 1998 to specifically assist low income families with children and is included as a separate supplement in the CTB monthly payment.²⁵

An evaluation of the NCB was completed in 2005. Based on mathematical simulations, the NCB was estimated to help lower the number of families living below the after-tax LICO by 5.1% (22,900 families) in Canada (absolute reduction – not relative).⁴² When the data was reviewed specifically for Saskatchewan, it was determined that the Social Services' caseload for families with young children had reduced by 655 cases in the 6 months under review in 2000. One of the main contributing reasons for this result was the NCB, which the evaluators found to be beneficial in reducing poverty even after controlling for other labour force and government programming factors.⁴²

C. Employment Insurance

Employment Insurance (EI) at the federal level provides temporary income support for those individuals who are not in the workforce. The EI program has evolved to also provide support for work leaves associated with childbirth, adoption, parenting and specific injury or illness. The Employment Insurance (EI) program was evaluated and the authors found that although the benefits paid in Canada (approximately 55% of previous income to a maximum) were lower than most other countries of the world, almost 80% of clients reported being satisfied with the services provided.⁴³ Another report also states that the EI fund by itself can help to slightly reduce the poverty rate.⁴⁴ In general, EI was seen as being successful in redistributing income and contributing to a lower poverty rate, although some employees are still not eligible for the benefit (i.e., self-employed, seasonal workers).

D. Family Health Benefits

Family Health Benefits (FHB) provide health insurance coverage to low income families to offset costs of dental, optometry, chiropractic, prescription drugs, eye care, ambulance and medical supplies. Families are eligible for FHB if they qualify for the National Child Benefit Supplement. The Saskatchewan government examined how effective the Family Health Benefits plan was for low income families.⁴⁵ The results show that low income families were utilizing health services at a higher rate (prescription drug use, optometry services, chiropractic services) after the program than before, although there is no data to determine appropriateness of usage (was the service necessary?) or outcomes of the services (i.e., did health status improve?).

E. Canada Public Pensions

In 1952 the Old Age Security (OAS) program was introduced which was a universal pension for seniors that was not based on income. In 1966, the Canada Pension Plan and the Québec Pension Plan were introduced. The main difference between this plan and the OAS is that the CPP benefits were based on the amount recipients contributed. The Guaranteed Income Supplement (GIS) was introduced in 1967 to further reduce the numbers of seniors living on low income. The GIS was part of the OAS and was income-tested meaning that higher benefits were paid to the lowest income Canadian seniors.⁴⁶

The Canadian Population Health Initiative reported that if there were no government income programs like the Guaranteed Income Supplement, or the Canada Pension Plan, 58% of seniors in Canada would be living in low income compared to the actual rate of 6%.¹⁰ Another study reported that income gains for seniors between 1980 and 1990 were highest in the lowest income quintile (31% increase) compared to the highest income quintile (1%) due mainly to the existence of Canada's public pensions.⁴⁷

Canada's public pensions are a success story on how to reduce the percentage of seniors living in poverty in Canada.

F. Initiatives in Québec

The government of Québec has implemented the first comprehensive strategy to combat poverty by any province in Canada.¹⁵ *The Government Action Plan to Combat Poverty and Social Exclusion* has a variety of income related initiatives in place including: raising the minimum wage, work premiums and indexing social assistance benefits to cost of living increases. The initiative included child assistance supplements where low income parents receive up to \$2,000 for one child and up to \$5,000 for four children.¹⁷

G. Initiatives in Newfoundland and Labrador

The government of Newfoundland and Labrador has followed Québec in drawing up their own action plan to reduce poverty. Some of the key income-related actions that have been tabled with the 2006/07 budget are: job start benefits for social assistance clients who await their first cheques from employment, a 5% increase in income support rates and indexing support rates to the Consumer Price Index for at least the next 6 years, expansion of the low income prescription drug program and elimination of income tax for individuals with income up to \$12,000 and families up to \$19,000.^{48,49}

Acheson Report

The Independent Inquiry into Inequalities in Health from the United Kingdom provides a series of recommendations to end health inequalities, including income-specific recommendations.³⁸ In the income section, they suggest that women of childbearing age, expectant mothers, young children and the elderly should be the primary target of income-related interventions and that increasing benefits in cash or in kind be paid to these groups. They also recommend benefits be enhanced for these population groups and that measures be taken to increase the uptake of benefits by these groups.³⁸

Income Disparity Evidence Based Policy Options

Regional:

Evidence Based Policy Option #2 – Set Measurable Goals to Reduce Poverty

Based on the evidence, the following goals should be considered for the city of Saskatoon:

- **Reduce poverty in households from 17% to 10% in five years (2013)**
- **Reduce poverty in children from 20% to 2% in five years (2013)**

Rationale:

In Ireland, a poverty reduction target was set in 1997 to reduce the percentage of the population living in poverty from 15% to 10% by 2007. By 2001, the poverty rate had already fallen from 15% to 5%. The setting of a goal, followed by increases in social assistance payments that were coupled with employment initiatives, was key to Ireland's incredible success.

Provincial:

Evidence Based Policy Option #3 – Ensure No Child Lives in Poverty

Parents with children who are on social assistance should have their shelter allowances and their adult allowances (i.e., food, clothing) doubled in order to raise children to the LICO.

Rationale:

In Saskatchewan, a lone parent with two children receives \$725 per month from provincial social assistance for shelter, food, clothing, transportation etc; which results in a substantial monthly deficit. Using the previous example, a lone parent with two children should have their provincial benefits increased from \$725 per month to \$1,450 per month in order to prevent children from living in poverty. In Québec, the new child assistance rates to combat child poverty increased by over \$550 million annually from 2004 to 2005. An option on how to pay for extended benefits for children is detailed in option #4.

Given limited financial resources in Saskatchewan (without innovation or budgetary revisions or federal intervention), no changes are currently recommended to provincial social assistance rates to adults without children. The initial priority needs to be preventing children from living in poverty. This prioritization is consistent with the action plan for social justice for Québec where limited financial resources necessitated the prioritization of children and low income families. In the United Kingdom, children were identified as the primary target for income related interventions. The recommendation for poverty reduction in children is also consistent with Sweden's plan of social insurance for families with young children.

In Ireland, the raising of welfare payments was a key initiative in reducing the poverty rate from 15% to 5% in just four years. As such, raising welfare payments for adults without children should be considered in the future, once effectiveness has been established in raising targeted welfare payments for parents with children.

Evidence Based Policy Option #4 – Create a Child Poverty Protection Plan

Establish a Child Poverty Protection Plan or CPPP to fund the reduction of poverty in children in Saskatchewan.

Rationale:

The Canada Pension Plan is an example of a success story that reduced the number of low income seniors from 58% to 6% in Canada by every employee/employer contributing a few dollars per month. A similar employer/employee-based fund could be created to reduce poverty in children in Saskatchewan. As of November 2007, there were 503,000 employees and 98,000 employers in Saskatchewan. There are approximately 43,680 children living in poverty. Assuming there are on average two children per family, and that it would take \$8,150 to raise a family with two children to the LICO, it would take \$178 million per year to eradicate poverty in children in Saskatchewan. This would require less than six dollars per week per employee (exempting over 500,000 residents) and less than five dollars per week from every employer. It is important to note, however, this plan will only raise children to the LICO and will not necessarily allow children to thrive. As well, this is the total cost to raise all children out of poverty in Saskatchewan; not just children on social services. The new tax presented above is only one way to pay for the CPPP. The money could also come from general revenue or a small redistribution in the budgets of existing Ministries.

This policy option (CPPP) is consistent with the recommendations from the Netherlands for a special welfare allowance for families with children. In Sweden, single parents are paid an assistance grant to ensure children enjoy the same standard quality of life as other children. It is also consistent with England whereby eliminating child poverty is listed as one of two main objectives of their poverty reduction strategy which involves increasing cash benefits to assist families with young children. In Canada, the national child benefit supplement lowered the number of families living below LICO by 5.1% in an absolute sense (22,900 families in Canada). In other words, a national child benefit for low income families with children was very effective in reducing poverty in children. In Québec, the creation of a child assistance program resulted in nearly 2 billion dollars being paid out to children under the age of 18 years old.

If the government or taxpayers are concerned about proper usage of the additional funding to parents and their children, oversight can be implemented by paying landlords directly for quality housing. As well, grocery stores could be directly reimbursed for nutritious foods by using pre-existing customer cards. Although this would reduce the autonomy of recipients, the doubling of benefits would supersede concerns about independence.

The federal government should be encouraged to participate in the Saskatchewan CPPP. If the National Child Benefit was increased from a maximum of \$3,200 per child to \$5,100 per child, there could be a 37% reduction in child poverty in Saskatchewan from this national initiative alone.

Evidence Based Policy Option #5 – New Legislation to Eliminate Child Poverty

Establish a legislative requirement in Saskatchewan to eliminate child poverty.

Rationale:

In Québec, the National Assembly unanimously adopted Bill 112: a law to combat poverty and social exclusion. The law itself is the most important and unique part of the bill as it takes the problem of poverty and changes it into a legislative commitment. A similar legislative requirement in Saskatchewan to eliminate child poverty followed by increases in allowances to parents of children on social assistance should be considered.

Evidence Based Policy Option #6 – Remove Work Earning Clawbacks

Work earning supplements should be coupled with the removal of work earning clawbacks to transition return to work and promote voluntary withdrawal from social assistance.

Rationale:

Work earning clawbacks provide a disincentive for parents on social assistance to gradually progress to full time employment. Essentially, every dollar earned beyond \$125 (\$200 for an adult without children) by a family while on social assistance is deducted from their monthly benefits cheque. In order to prevent the earning clawback, a social services recipient has to apply for and receive a limited employment income supplement. Work earning supplements should be coupled with the removal of work earning clawbacks to transition return to work. Two successful pilot programs for work earning supplements were recently completed in British Columbia and New Brunswick. In these provinces, the net extra cost to government was only \$110 per year but added an extra \$2,405 per year to each recipient. Work earning supplements were the most effective initiative for getting people to return to work and stay at work while reducing poverty for social assistance recipients. Parents on social assistance should be able to earn \$33,390 combined (two parent and two child family) per year through a combination of work and work earning supplements prior to work earning clawbacks being implemented (based on the LICO).

Given the cost effectiveness of work earning supplements, an adult on social assistance (without children) should be able to earn \$18,260 per year prior to work earning clawbacks being implemented (based on the LICO).

In Québec, the removal of work earning clawbacks and the provision of a Work Premium (or work earning supplement) has been rapidly expanded from less than 100,000 people to 536,000 low to low/middle income households. Amounts for work earning supplements vary according to income but range from \$511 annually for a single individual, \$784 for a couple, \$2,190 for a single-parent family and \$2,800 for a couple with children.

Evidence Based Policy Option #7 – Index Social Assistance Rates to Inflation

Social assistance rates should be increased as suggested in policy option #3 and then index future rates to inflation.

Rationale:

Social assistance rates have been indexed in Newfoundland and Québec as part of their anti-poverty initiatives. Without indexing, history has shown that any progress made in the short term is eroded by inflation over time.

Evidence Based Policy Option #8 – Change Lower Limit Tax Exemptions

Change the lower limit tax exemption for low income workers and offset the revenue loss by removing the lower limit tax exemption for higher income earners.

- **Specifically, an income tax scheme like Newfoundland should be considered whereby a family of four earning less than \$33,390 and an individual earning less than \$18,260 pay no provincial income tax.**

Rationale:

As part of their anti-poverty initiative, Newfoundland eliminated income tax for individuals earning less than \$12,000 and for families earning less than \$19,000. In Saskatchewan, all individuals pay income tax for every dollar earned beyond \$8,778. In Alberta, this amount is \$15,435. An income tax scheme like Newfoundland should be considered whereby a family of four, earning less than \$33,390 and an individual earning less than \$18,260 pay no provincial income tax (based on 2006 data). Given the amount of income required to qualify for a provincial income tax exemption, this program would provide an incentive for those on social assistance to re-enter the workforce and also provide assistance to low income earners that are already working. In order to offset the tax loss, we should consider removing the tax exemption for every higher income taxpayer on the first \$8,778 earned.

Tax credits, along with changes to the minimum wage in the United Kingdom, resulted in 800,000 fewer children living in low income in 2004/05 in comparison to 1996/97.

Evidence Based Policy Option #9 – Review Program Effectiveness of Social Services

The Ministry of Social Services should consider reviewing the effectiveness of its programs in order to accomplish its long term objectives.

Rationale:

One example of a program that should be considered for review is the Building Economic Independence program, whereby \$60 million out of \$64 million of the budget was for wages for staff. Over a one year period, the number of those receiving social assistance reduced from 28,280 to 27,298; with almost all of the people transitioned back to work having a disability. In other words, it appears that the \$64 million was not successful in transitioning people without

disabilities back to work.

As mentioned previously, the removal of work earning clawbacks, coupled with the provision of work earning supplements, are the most effective policies to transition social service recipients back to work. At the same time, the complexity of programs, coupled with the lack of information on the programs (i.e., eligibility requirements), needs to be reviewed. It also appears that many programs have limited financial benefits for clients; suggesting that administration costs to implement programs might actually exceed the cost of the programs themselves. For example, single seniors are eligible for \$4.50 per month to assist in building their economic independence.

A number of other policies could be reviewed. For example, the fastest growing expenditure for Social Services is child and family services; where children are apprehended from parents or caregivers. This department had an expenditure of \$88 million in 2007 which is up from \$66 million in 2005. In 2005, 3053 children were under the care of the Ministry. A review of child apprehensions revealed that 46.2% of families that had children apprehended were on social assistance. This suggests that a major reason for apprehending a child is due to financial neglect or the stresses associated with financial insecurity. As such, it appears possible to reduce child apprehension from parents provided the government adequately supports the income of low income parents.

Furthermore, only 38% of children that are apprehended from parents are placed with an extended family member, although the policy of the department is to place as many children as possible with an extended family member because it is less disruptive to the child. Despite an official policy, actual placements with extended family members only increased by 1% in the last year. It is possible that this lack of success is due to the fact that extended family members are not offered the same financial supports as foster homes. Offering extended family members the same financial supports as foster homes could increase this percentage.

This review is not to place blame on Social Services or its workers. However, if objectives are not being met, it is logical to consider reviewing the policies and procedures that might be having an impact on outcomes.

Evidence Based Policy Option #10 – Increase Public Understanding of Social Determinants of Health

Enhance the understanding of the general public about the determinants of health and the economic costs of not proactively addressing poverty.

Rationale:

A population based education campaign should be considered to transfer knowledge about the main determinants of health (i.e., income, education, employment, housing) and the economic cost of ignoring poverty in terms of its health, social and justice costs. Two Canadian research papers demonstrated that only 20% to 33% of Canadians understood that economic and social conditions have an impact on health.^{50,51} The research paper in section 2.10 demonstrated that low income people use much more health services than middle income residents – especially expensive hospital services; due mainly to their disparity in disease prevalence.

Federal:**Evidence Based Policy Option #11 – Increase Support for Parents on Leave**

Increase the Employment Insurance rate for parents on parental leave from 55% to 80% of employment income prior to leave.

Rationale:

Under the universal leave policy in Sweden, parents are entitled to thirteen months of parental leave with an income replacement rate of 80% instead of 55% offered in Canada. The parental leave policy, coupled with child care reform, has resulted in Sweden having the lowest rate of lone-parent families living in poverty (6.7% in comparison to Canada at 51.6%). Furthermore, the income of lone parents in Sweden is 80% of two parent families whereas this number is less than half in Canada. Sweden has justified the initial costs of their initiative based on the subsequent high female labour force participation rate and low levels of poverty in children.

Evidence Based Policy Option #12 – Create a Single Resource for Those Unable to Work

Consolidate income assistance and disability providers into one resource with identical and equitable assistance rates for those unable to work.

- **The implementation could start with a pilot project whereby people who believe they are unable to work can present to one provider. In other words, one income assistance/disability provider should be formed to handle all claims regardless of whether the injury or illness arises from work, a motor vehicle accident or during play.**

Rationale:

Currently, there are numerous private, provincial and federal programs for income assistance and disability income replacement including, but not limited to, federal disability (Canada Pension Plan), federal employment insurance, provincial social assistance (Ministry of Social Services), provincial work related injuries (Saskatchewan Workers Compensation), provincial motor vehicle injuries (Saskatchewan Government Insurance) and private short term and long term disability through employers. These various plans offer a wide range of income support from 33% to 90% replacement of previous income with varying caps. More importantly, however, the various income assistance plans attempt to transfer responsibility to other providers through complicated eligibility requirements and expensive administrative, legal and medical inquiries. One income assistance provider could improve accountability, stabilize income in times of need (at a fixed rate of 80% of previous income), reduce anxiety of claimants, improve health outcomes and reduce overall costs. This policy option is similar to Sweden's pension system that protects the entire population regardless of mechanism of illness or injury.

For example, a review of Workers Compensation statistics revealed that there were 11,489 claims unilaterally terminated by the Board from 1998 to 2005. On appeal, 21.9% were successful.⁵² The complicated application for eligibility, as well as the denial and appeal procedures, are of no benefit to anyone, are cost ineffective and undoubtedly result in claimants

simply accessing another form of government assistance such as Social Services. Currently, 64% of Social Services recipients have a medically certified disability. It is likely that a high percentage of these recipients of social assistance originated from another disability provider.

Summary

The most significant evidence based policy option is the Child Poverty Protection Plan (CPPP) modelled after the Canadian Pension Plan for seniors. This recommendation is consistent with interventions Saskatoon residents indicated that they were willing to support (section 2.11). In that survey, 83.8% of residents were willing to strengthen early intervention programs for children (i.e. child poverty protection), 74.9% were willing to support more subsidized quality housing for parents with children, 77.0% were willing to subsidize nutritious food for children and 66.1% were willing to increase welfare amounts to above the LICO for parents with children. The recommendations are also consistent with the original research discussed previously. In section 2.3, it was demonstrated that the rate of infant mortality in Saskatoon's six low income neighbourhoods is 5.48 times higher (or 448%) in comparison to the rest of the city.

Another evidence based policy option was the removal of work earning clawbacks and the provision of work earning supplements. Out of all the recommendations that the public of Saskatoon was most willing to support, this intervention received the most support with 84.1% willing to provide work earning supplements for welfare recipients (section 2.11). As well, 71.3% of residents were willing to support increasing the minimum wage.

The importance of income to health was demonstrated in sections 2.4 and 2.5. In those articles, it was demonstrated that income was the preventable variable with the most significant association with health status; regardless of health outcome under review. Income was more important to health status than behaviours (i.e., smoking, physical activity, alcohol, diet), disease intermediaries (i.e., blood pressure, obesity), life stress and access to health care. In other words, improvements in health will be difficult to achieve without improvements to income. In section 2.6, it was discussed that income was the variable with the largest association with daily smoking status. In Section 2.9, income was one of the major risk indicators for adolescents using alcohol or marijuana.

The British Medical Journal labelled income inequality and health “The Big Idea” and suggested that the health of a society is not based on overall wealth but more on how evenly that wealth is distributed through taxes and transfers.⁵³

Appendix A Income and Social Assistance Programs in Saskatchewan, September, 2007

Program title	General description	Target population	Eligibility	How benefits are calculated
Canada Child Tax Benefit	Non-taxable monthly benefit to help eligible families with the cost of raising children under the age of 18.	Families with children.	Residents of Canada living with children.	Basic benefit depends on the number of children in a family; it is reduced by 2% of the amount of family income above the particular threshold (\$36,378 in 2006/07).
National Child Benefit Supplement	Monthly benefit for helping offset cost of raising children.			The National Child Benefit Supplement pays \$165/m with lower amounts for each child after the first child.
Saskatchewan Social Assistance Program	Program of last resort for families and individuals who for various reasons cannot meet basic living costs.	Any person in financial need.	Based on interview.	In Saskatoon, single adults receive \$255/m for food, clothing travel and personal items). Room and board allowance \$330/m. A separate shelter allowance is calculated for Saskatoon ranging from \$150/month for single individuals to \$525/m, for families with 5 or more children. Also has damage deposits and rent payment supplement.
Transitional Employment Allowance	Provides financial support for people participating in employment services.	Those participating in employment services or transitioning to a job.		In Saskatoon, general living allowance from \$520/month for single adult to \$1110/m for two parent families with 5 or more children. Separate utilities allowance is calculated for telephone, power, heat, and water.
Saskatchewan Income Plan for Seniors	Supplement for low income seniors who have little or no income other than federal OAS and GIS.	Low income seniors.	Must apply for the federal Guaranteed Income Supplement in order to get the SK Income plan.	From \$11-\$90/m for single pensioner; \$6.50-\$72.50/m for married pensioners; \$12-\$90/m for married pensioners less than 60. If seniors live in a home they get between \$5-\$25/m if single; \$4.50-\$22.50/m for married.
Child Care Subsidy	Subsidy to help families meet cost of licensed child care.	Families with children in care.	Lawful custody of child under 13 who receives care in licensed facility, Canadian citizen or permanent resident.	Subsidies paid to facilities based on family income, age of child, family size, location of facility, and fee charged. Maximum subsidy for those with gross family income below \$1640/m. In Saskatoon, subsidies range from \$275/m for part time care of school age children to \$570/m for full time care of an infant. Subsidies are paid directly to the child care centres.

Saskatchewan Employment Supplement	Income subsidy for low-income families	Low income families	Single or two parent families with children <18yrs, must receive >\$125 from employment income but less than \$3000/m, citizens or permanent residents.	Amount of money based on monthly family income, number of children and their age. Starting at \$25/m it increases as monthly income increases. Once monthly family income reaches \$1220/m then supplement starts decreasing. Supplement stops when monthly family income reaches \$2556/m.
Saskatchewan Rental Housing Supplement	Helps low to moderate income families with monthly rental costs, intended to make quality housing more affordable. Both family and disability supplement.	Low income families that pay rent for their housing costs.	Must be renting, have children <18 or disabled, and reside in housing that meets minimum standards. Room and board not eligible.	Benefits based on gross income, family size, location of accommodation, amount of rent paid, need for disability support. For Family supplement, maximum monthly amount ranges from \$134 for 1-2 children to \$172 for 5+ children. For Disability supplement, maximum monthly amount ranges for a single individual is \$158.
Saskatchewan Discount Bus Pass	Program to offset cost of transportation.	Low income individuals.	Have to receive SAP, TEA, SES.	Bus passes given out at cost of \$15 per month.
Provincial Training Allowance	For adult low income students to offset cost of education.	Adult low income students who are upgrading their skills and can be in a Quick Skills program.	Must be SK resident in an approved training program and have financial need according to criteria. Not be in default on past PTA.	This grant is administered through the Department of Advanced Education and Employment. Grants range from \$442/m for individuals living at home to \$1,047/m for married with an additional \$45 for each child if the parent is receiving the National Child Benefit.
Family Health Benefits	Helps reduce costs of health services for children.	Families receiving SES or SK Child Benefit.	Families must have at least one child <18yrs.	For families of 1-3 children, last year's family net income cannot exceed \$25,921. Add \$1,231 for each additional child. Coverage for children includes dental, prescription drugs, eye exams and eyeglasses, emergency ambulance, medical supplies and chiropractor services.

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Education Disparity

Context

Education includes the learning of specific skills but also includes the acquiring of knowledge, positive judgement and wisdom.⁵⁴ A person's social and economic success is often determined by their level of education and is therefore described as one of the most important determinants of health.³⁸ The purpose of this chapter is to review the relationship between education and health, identify current policies and programs and make recommendations for future direction.

Main Points:

- a) One estimate suggests there are approximately 690 children under the age of 19 not attending school in Saskatoon.
- b) In Saskatchewan, 10.7% of adults between the ages of 20 to 24 do not have a high school diploma and are not in school. In comparison, 48% of Aboriginal people aged 20 to 24 have not completed high school.
- c) According to the 2001 census, the unemployment rate for Aboriginal adults aged 24 to 34 with a university degree was 8%. For Aboriginal adults who had not completed grade 9, the unemployment rate was 40%.
- d) Approximately 93% of job openings in the future will require at least a high school diploma and 66% will require post-secondary credentials.

Education and Socioeconomic Status

Education plays a major role in influencing inequalities in socioeconomic status.³⁸ An individual's education is a determinant of a person's position in the labour market, which then influences their income status, housing status and other resources.³⁸ Education provides skills and information that help individuals deal with the stresses of life.⁵⁵ Consequently, education has been described as a traditional route out of poverty for those living in disadvantaged conditions.³⁸ Education increases opportunities for jobs, job satisfaction and income security.⁵⁶ Studies have established the enhanced vulnerability of adults with low levels of education in terms of employment opportunities, employment stability and earning a living.⁵⁷

The importance of higher education has been increasing with time. The changing economic and social conditions have given knowledge and skills a progressively more fundamental role in the economic success of individuals.⁵⁸ With the advent of the knowledge based economy, employment opportunities are becoming more scarce for individuals without a diploma or a degree from high school, college or university.^{59,60} The effects of poverty and low levels of education on economic strain are synergistic; each factor makes the effect of the other worse.⁵⁵ Low education translates into low income which then turns into the cause of economic

hardships.⁶¹ Therefore, it should not be surprising that poverty tends to be chronic and that poor educational achievement incurs a significant cost to individuals and society.⁶²

Educational attainment plays a key role in employment status. Studies reveal that people aged 22 to 24 who do not have a high school diploma are more likely to be unemployed than high school graduates.^{55,57,63} Furthermore, young adults with low levels of education tend to hold less stable jobs, have jobs of limited duration and have part-time employment.⁶¹ A study done by Statistics Canada found that individuals without a high school diploma contributed disproportionately to the number of full-time workers in low-wage jobs.⁶⁴

In Saskatchewan, 10.7% of adults between the ages of 20 to 24 do not have a high school diploma and are not in school; in comparison to the national average of 10.1%.⁶⁵ Approximately 51% of the Saskatchewan population has at least some post-secondary education, compared to the Canadian average of 56.3%.⁶⁶ Statistics also reveal that Saskatchewan Aboriginal people have not attained the same level of education as the overall provincial population. In 1996, 52% of Aboriginal people aged 20 to 24 had not completed secondary school. In 2001, this number was 48%.⁶⁷ For Aboriginal people, 39.2% have at least some post-secondary education (in comparison to 51% of non-Aboriginals).⁶⁸

Approximately 93% of job openings in the future will require at least a high school diploma and two-thirds (66%) will require post-secondary credentials.⁶⁸ Estimates suggest that an increase of over 30% in technical certificate and diploma graduates per year will be required over the next five years.⁶⁸ Similar increases are expected for work-based training, including apprenticeship training, adult basic education (including literacy) and essential skills training.⁶⁹

The role of education is not just limited to income and employment status; it is also a core determinant of health status.

Education and Health Status

Education has been described as one of the key factors that influences health.^{55,63,70} There has been a vast body of literature that indicates that health status improves with level of education.^{55,63,70-73} In fact, education has been shown to have a strong effect on an individual's health behaviours and health status.⁷⁴ In terms of health behaviours, individuals with higher education are more likely to exercise, drink less, smoke less, have better family functioning, eat healthier foods, receive preventive medical care and have a better knowledge of health behaviours.^{55,63,74-77} In terms of health status, people with higher education are more likely to report higher self-rated health, have decreases in activity limitation, decreases in the number of workdays lost due to illness or injury and are about half as likely to have high blood pressure, high blood cholesterol or to be overweight.^{55,56,63,78-80}

The educational attainment of a child's parent also plays a crucial role in a child's health. Children from less educated families are more likely to self report fair/poor health, have a persistent wheeze, have asthma, have higher blood pressure, are less likely to engage in physical activity, are more likely to use soft drugs, are more likely to smoke and are more likely to engage in risky behaviours compared to children of more educated families.^{72,81-90}

Literature Review

Early Childhood Education and Care

The terms “day care” and “child care” should not be confused with early childhood education and care (ECEC).⁹¹ This new term is used to describe an integrated, multifunctional approach of policies and services that are inclusive of all children and parents, regardless of occupation or socioeconomic status.⁹² ECEC can include childcare centres and other regulated care services such as preschools, pre-kindergartens and kindergarten.⁹² All these services provide learning and care for children below school age.⁹³ High quality services to meet the needs of children and parents are examples of good early childhood education.

In recent years there has been much debate in the media and among social scientists about how, where and by whom children should be looked after.⁹³ Less debate has occurred on when to initiate ECEC. Traditionally, mothers have undertaken most of the care of young children; however the percentage of children attending ECEC programs has been steadily increasing. According to Statistics Canada, 41.9% of children aged six months to five years attended some sort of ECEC in Canada from 1993 to 1995. This number rose to 53.6% in 2002.⁹¹ In Saskatchewan, the percentage of children aged six months to five years in ECEC was 44.9% from 1993 to 1995 and increased to 54.7% in 2002.⁹¹ Throughout this time children from families with high socioeconomic status were more likely to be in ECEC than children from low socioeconomic status, which suggests cost acts as a barrier to accessing ECEC.⁹¹

Research has demonstrated that children who attend high-quality ECEC programs have a greater probability of becoming productive and contributing members of society as adults.⁹⁴ ECEC can have a positive effect on a number of social outcomes for both children and their families.⁹³ ECEC can have positive effects on a child’s well-being by enhancing cognitive development and preventing later school failure.⁹³

There are three characteristics that high-quality ECEC should encompass:

1. a low adult-to-child ratio. Ideally a 1:3 ratio for children under two, 1:6 for children age two and three and 1:8 for preschool aged children and above.^{95,96}
2. an educated staff with specialized training in order to provide children with activities that are stimulating and appropriate for their age and development^{95,96} and
3. stimulating facilities and equipment.^{95,96}

These three characteristics separate high quality ECEC aimed at early childhood development from “custodial” child care.⁹⁵

The ECEC programs’ ability to set the stage for children’s transition into the formal school system can prepare children to have cognitive, emotional, language and physical skills so that they are more likely to stay in school, graduate from high school, find employment, and contribute to society as caring individuals and taxpayers.^{97,98} Research has demonstrated that programs like pre-kindergarten have both short and long-term benefits in the lives of vulnerable children.⁹⁸ Short-term benefits include improved cognitive functioning, increased social skills, improved health and higher self-esteem.⁹⁸ Long-term benefits include lower rates of juvenile crime, fewer teen pregnancies, fewer failed grades, fewer school drop-outs and fewer referrals to special education services.⁹⁸

Many researchers have looked at maternal outcomes in terms of employment and education.^{72,99,100} They have found that ECEC increases maternal employment and education, which in turn improves the socioeconomic status of the family.⁹³ Findings from one study suggest that ECEC plays a pivotal role in supporting maternal employment and was associated with higher maternal wages and more hours of employment.⁷⁵

The economic returns or cost effectiveness of investing in early childhood education and care is very high.⁹⁵ A cost-benefit analysis in Vancouver found that for every dollar invested in a high quality ECEC system there was more than a \$2 return.¹⁰¹ In Cleveland and Krashinsky's (2003) cost-benefit analysis of programs in Canada, the same 2:1 ratio was found.¹⁰² In the United States, the economic return of early childhood education and care was \$8 for every one dollar invested.⁹⁵ Investment in quality ECEC can generate two types of benefits: 1) increased productivity of the parents who become free to enter the work force and 2) future increase in productivity from the contribution of the children who have received early educational experiences.⁹⁵

School Retention

When students do not complete their high school education, there can be negative influences upon a variety of social and economic indicators such as employment and income.⁹⁴ Until recently, the compulsory age at which young people may stop attending school was 16 years old in all provinces.¹⁰³ In 1999, New Brunswick increased this age to the age of 18 or graduation from high school. Alberta also recently increased compulsory school attendance from age 16 to 17.¹⁰³

Children and youth leave school early for a variety of reasons (school, family, work-related or personal).⁹⁴ Youth who leave school early are more likely to be living without a parent, come from single-parent homes, have parents who have low levels of education or blue-collar jobs, have families who do not think that high school completion is very important, be from a low-socioeconomic background, be married, have children or have disabilities.¹⁰⁴⁻¹⁰⁷ Early school drop-outs have an increased likelihood of poor health, delinquency, crime, substance abuse, economic dependency and a lower quality of life.¹⁰⁴⁻¹⁰⁷ Young females who leave high school are more likely than young male drop-outs to be unemployed. In fact, 30% of young female drop-outs were unemployed in 1995, compared to 17% of young male drop-outs.¹⁰⁸ A 1992 study calculated that over their collective lifetimes, children dropping out of school in Canada in 1989 alone would cost Canadian taxpayers a cumulative total of \$4 billion.¹⁰⁹

A literature review examined what schools can do to prevent drop-out behaviour and found that individual characteristics are more important in the early years and family characteristics are more important in the later years.¹¹⁰ Youth in low income families are twice as likely as middle income youth and five times more likely than high income youth to drop-out of school. Both family poverty level and neighbourhood poverty level effect student drop-out behaviour.¹¹⁰ The literature review summarizes the main risk factors for children dropping out of school which include: single parent family, low income family, low neighbourhood income, parents without high school diplomas, having a sibling who dropped out, low academic achievement, being held back a grade and misbehaviour.¹¹⁰ It was also found that school related factors can account for approximately two thirds of the differences in drop-out rates between schools; suggesting successful intervention is possible.¹¹⁰

Another literature review discusses how to encourage school completion. McPartland, suggests that successful programs must include four broad intervention components: a) provide opportunities for success in schoolwork, b) create a caring and supportive environment, c) communicate the relevance of education to future endeavours and d) help with students' personal problems.¹¹¹

A literature review of school-based health centers (SBHC) and academic performance found a positive relationship between SBHCs and thirteen academic indicators.¹¹² Student progression through school was measured by four of the studies included in this review. Two of these four studies found that there was a positive relationship between SBHCs and student progression. Students who used SBHCs, for example, were significantly more likely to stay in school and graduate than those students who did not use a SBHC.¹¹² Also, a positive relationship between the use of SBHCs and attendance was reported in three studies. For example, elementary school children with asthma who attended a school without an SBHC missed more days of school in one year than asthmatic children attending a school with an SBHC. Similarly, high school students who were screened for mental health services by a SBHC decreased their absences by 50% and decreased tardiness by 25%. The literature review also found that student's use of SBHCs can improve several intermediate health outcomes which in turn can influence student academic performance.¹¹²

One of the challenges that the learning sector faces is monitoring student mobility. There is considerable mobility of students between First Nations and provincial education systems.⁹⁴ Children and youth from highly mobile families may change schools several times during a school year.⁹⁴ The ability to track enrolment, movement, and retention from pre-kindergarten to grade 12 between and among school systems (publicly-funded, First Nations and independent school systems) is necessary to monitor attendance and to intervene when students are not attending school.⁹⁴ Finding solutions and providing supports for children and youth at risk of leaving school early, and for those who are already disengaged from school, is necessary.⁹⁴

Literacy

Literacy is considered to be the ability to find, understand, use, and communicate information for personal development and decision-making.¹¹³ Literacy involves skills in reading, writing, speech and basic mathematics.¹¹³

Low levels of literacy have been connected to problems such as poverty, unemployment, low-levels of employment, poor housing, inadequate nutrition, stress, crime, teen pregnancy, poor coping skills, problems in early childhood care, poor physical health, lower self rated health, greater use of health services, overall higher rates of morbidity and mortality, increased accidents and injuries, increased prevalence of diseases such as diabetes, cardiovascular disease, rheumatoid arthritis, violent death and mental illness.^{113,114} Low literacy is also related to unhealthy lifestyle choices.¹¹³ For example, people with low literacy are more likely to smoke, have poor nutrition, participate infrequently in physical activities and are less likely to use a seatbelt or helmet. Women who experience low literacy skills are less likely to breastfeed and are less likely to obtain pap smears.¹¹⁴ Higher literacy skills make it possible for people to have the knowledge and understanding required for education and employment and provides the foundation for making healthy life choices and having coping skills.¹¹³

In 2003, Health Canada reported that almost half of Canadians have problems reading and understanding written information they come across in everyday life.¹¹⁴ Results from the Adult Literacy and Life Skills (ALL) Survey found that 14.6% of adults aged 16 to 65 in Canada had Level 1 literacy, and 27.3% had Level 2 literacy, for a combined total of 41.9% of people experiencing low levels of literacy.¹¹⁵ In 2003, 14% of Saskatchewan adults aged 16 and over had Level 1 literacy and 27% had Level 2 literacy for a combined total of 41%.¹¹⁶

Post-Secondary Education

“Do we want higher education to promote excellence in a way that focuses resources on the few; or do we want it to be universal and offer everyone the opportunity to participate; or can we have both excellence and inclusion?”¹¹⁷

Post-secondary education can have many benefits. People who have graduated from university or college have been found to have higher employment rates, higher earnings, better access to further training, better health and less involvement in criminal activities.¹¹⁸ Extensive participation of people of all socio-economic backgrounds in post-secondary education can reduce economic disparities and promote social cohesion.¹¹⁸ Post-secondary education shapes our future: the knowledge and life skills of higher education are essential for both individual fulfilment and the economic success of nations.¹¹⁸

According to Statistics Canada, the majority of Canadians (87%) expect that their children will receive some kind of post-secondary education.¹¹⁹ However, these expectations differ across income categories. Eighty percent of parents from lower income households (less than \$30,000 per year) expected that their children would attend a post-secondary institution, while 95% of parents from higher income households (\$80,000 or more) expected that their children would go on to university or college.¹¹⁹ In Saskatchewan, the overall percentage of children whose parents hoped that they will attend post-secondary school was 79.8%; which is below the national average.¹¹⁹ Research has concluded that the higher the parental educational status, the higher the children's educational plans will be.^{118,120}

The overall state of Aboriginal people's education in Canada, especially at the post-secondary level, is poor.¹²¹ Although there has been an increase in enrolment of Aboriginal individuals in post-secondary programs, Aboriginal people are still under-represented in enrolment at Canadian colleges, universities and other post-secondary institutions.^{121,122} The 2001 census data revealed that only 39% of Aboriginal people had completed post-secondary education whereas the Canadian average is 56.3%.^{65,66} At the University of Saskatchewan, more than one-half of the Aboriginal students either leave school early or fail within two years.¹²³ In the past, government policies have used schooling to assimilate Aboriginal people into mainstream European-Canadian society.¹²¹ Many Aboriginal students still believe that assimilation is a prominent feature of post-secondary education. As such, there is a persistent over-arching distrust and hostility towards education in many Aboriginal communities.¹²¹

Researchers have investigated the impact family income may have on an individuals' choice of type of post-secondary education.¹²⁴ As university becomes more expensive, more individuals from lower income families will choose lower cost post-secondary options such as colleges, vocational or technical education.¹²⁵ A study conducted by the University of Alberta found that young people from lower income families have less access to the university system.¹²² As tuition costs have increased, access has decreased for these lower income individuals.¹²²

Review of Programs to Improve Population Education Levels

One literature review found that there are few published studies that measure the effectiveness of interventions that influence school completion and educational attainment. Given the complexity in measuring outcomes and interventions, high quality studies are rare.¹²⁶

Currently, Saskatchewan has two main programs whose focus is to provide high quality learning while recognizing social, economic and personal barriers to learning.⁹⁴ These initiatives are the Community Schools Program and School^{Plus}.⁹⁴

A. The Community Schools Program is a comprehensive approach that offers a range of supports that concentrates on the complex needs of vulnerable children and youth.⁹⁴ Community Schools receive an extra \$100,200 of targeted funding support per elementary school and \$120,000 for secondary schools.¹²⁷ Currently there are 21 community schools in Saskatoon.¹²⁷ In 2005, the findings from the Community School Data Project were released. The survey sampled 30 community schools in Saskatchewan. The researchers found that community school staff feel that they have created a climate in which families, caregivers and community members are welcome to take part in decisions regarding policy and practice.¹²⁸ However, this project also revealed that students in community schools were late for class and absent from school in relatively higher numbers compared to other schools and performed below the levels of other schools in the provincial Math Assessment Project.¹²⁸

B. School^{Plus} focuses on the school as the centre of its community and as the hub of services and supports for the neighbourhood it serves.¹²⁹ School^{Plus} encompasses the concept that the role of the school has changed and that schools today have two main functions: 1) to educate children and youth and 2) to support service delivery of appropriate social, health, recreation, culture, justice and other services for children and their families.¹²⁹ School^{Plus} operates in all schools across the province.¹²⁹ In 2002, School^{Plus} implementation cost \$33 per student for a total of almost \$6 million per year. Due to the fact that all schools participate in School^{Plus}, the funding for the program is now included in the basic rate for school divisions.¹²⁹ The problem in omitting line by line financial allocation for this program is that education professionals contend that the actual amount received is less than the amount intended for allocation. School^{Plus} has not been formally evaluated and, therefore, it is not known if the program has been successful.

Schools are often seen as vital contributors to efforts designed to reduce poverty and achievement gaps. Some researchers argue that it is unreasonable to expect schools to overcome, to any significant extent, the powerful social and economic forces that create and sustain inequality. Other researchers agree that the goal must be for schools to do much more than they have in the past to equalize opportunities for low income children.¹³⁰ Advocates of higher expectations for schools point out that school results vary enormously even in communities with similar SES, suggesting some schools are managing to produce much better outcomes.¹³⁰

Over the years, schools and school systems have adopted a variety of measures designed to address equity concerns. These measures fall into three general categories.¹³⁰ The first category includes in-school changes to programming or supports, such as feeding or clothing students, special programs, greater outreach to parents and whole-school reforms in teaching and learning.¹³⁰ The second category includes system measures designed to provide positive or negative incentives tied to performance.¹³⁰ The third category includes measures to extend

the scope of schooling into other areas, such as early childhood education, adult education and community economic development.¹³⁰ This general categorization understates the importance of local context, the nature of poverty and the different challenges it presents to schools vary from one community to another. These differences suggest that strategies and approaches by the schools need to be individualized.¹³⁰

There is very little evidence on the educational impact of youth poverty initiatives, such as feeding children in schools. It seems reasonable to think there would be positive effects from ensuring children eat properly.¹³⁰ The limitation of all these programs is that they do not directly address academic achievement so, while likely to be important, they have mostly unknown association with academic outcomes or other outcomes like health.¹³⁰

Early Childhood Development and Care

In Sweden, child care covers children of pre-school age and those attending school.¹³¹ Each municipality is responsible for providing child care to children ages 1 to 12 years of age. A placement is provided to the child within 3 to 4 months of application. Depending on the type of child care chosen by the parents, child care in Sweden can be free (in public preschools) or parents pay a fee for a private facility (approximately 17% of the total cost).¹³² Single parents in Sweden are paid a maintenance grant to ensure that their children enjoy the same standard of life as other children.¹³² Swedish laws ensure that quality care is provided to all children.¹³² Child care workers are trained and possess skills to be able to attend to the needs of the children, premises are suited for the children, children groups are mixed and of appropriate size, and children in need are provided space in child care centres.¹³² In 2003, universal child care was introduced for all four and five year olds with free schooling for 525 hours per year.¹³²

In comparison, Canada has adopted a Universal Child Care Benefit. This benefit is intended to help Canadians with child care needs by providing financial assistance. The benefit is \$100 a month or \$1,200 per year per child until the age of six and is a taxable benefit.¹³³

In Canada, Québec is the only province that provides universal child care. In 1997, this new child care policy was initiated by the government of Québec. Childcare services began offering child care spaces (both child care centres and home-based centres) at a subsidized parental contribution of just \$5 a day per child (now \$7 a day).¹³⁴⁻¹³⁶ Parents receiving social assistance pay only \$2 a day per child.¹³⁵ The government of Québec integrated this new policy with the province's universal Family Allowance program and includes a full-time publicly provided kindergarten in a school setting (in place of half day kindergarten) and a \$5 a day before and after school child care for preschool and grade school children.^{134,135} Québec's universal child care policy has three objectives: 1) fight poverty, 2) increase the participation of mothers in the labour market and 3) enhance child development and equality of opportunity for children.¹³⁷

In Saskatchewan, provincial subsidies are provided to low income families to help cover the cost of child care.¹³⁸ Monthly subsidies are paid directly to the child care facility to help reduce the fees charged to parents.¹³⁸ The additional cost of the child care that is not covered by the provincial subsidy is paid for by the parent.¹³⁸ Subsidy amounts are calculated by gross family income, family size, the age of the child, the location of the child care facility and the child care fee charged.¹³⁸ The maximum child care subsidies for child care centers and family child care

homes ranges from \$275 for school aged children to \$485 to \$570 for infants.¹³⁸ For 2005-06 the average monthly subsidy was \$283.49.¹³⁹ The Government of Saskatchewan reported that in 2002, the cost of full-time child care ranged from \$255 to \$680 per month in child care centres and \$230 to \$600 per month in home-based centres. The level of subsidy available to parents is determined by the age of the child, services provided and fundraising policies of the centers.¹⁴⁰ Families receiving income assistance may be eligible for child care subsidies that are sufficient to cover the entire fee.¹³⁸ However, if a child not in school attends a licensed child care facility for less than 36 hours of care per month, or less than 20 hours of care per month for a child in grade one or higher, they are not eligible for child care subsidies.¹³⁸ As a result of receiving subsidies, mother's are more likely to be employed, spend less of their income on child care and are less likely to be poor.¹⁰⁰ In 2006-2007 the Government of Saskatchewan invested a total of \$16.2 million in the Child Care Subsidy Program.¹⁴¹

In Saskatchewan, early childhood education and child care have become important priorities for policy makers. In the 2007/08 provincial budget, the early learning and childcare budget increased by 37% and included \$8.2 million in new initiatives for a total of \$41.3 million in funding.^{94,142} For 2007/08, the Saskatchewan Government planned to spend \$1.4 million to increase childcare spaces by 500 spaces, \$1.4 million to enhance supports to family child care homes, \$278,000 to provide additional training seats at SIAST to train child care workers and to continue to increase their wages (21% increase since 2005), \$730,000 to provide more funding to school divisions for 15 pre-kindergarten programs and provide supports to assist child care centers with capital costs.^{142,143}

For vulnerable families, the Government of Saskatchewan implemented the *KidsFirst* strategy in 2001. The vision of *KidsFirst* is to help children (prenatal to age five) living in vulnerable circumstances enjoy a good start in life and to be nurtured and supported by caring families and communities.¹⁰⁴ In terms of early child education and care, the *KidsFirst* program provides services to families during home-visiting that helps families to participate in programs directed at early childhood development and learning.¹⁰⁵ Additionally, *KidsFirst* provides transportation, child care, and programs that focus on skill development, education and literacy.¹⁰⁵ The *KidsFirst* program, however, is not available to the most vulnerable children in the most vulnerable families. The criteria states that only those parents and families of children under the age of five who live off reserve in targeted areas are assessed for program eligibility. Families are assessed in their homes to determine if they meet the programs eligibility criteria. The in-home assessment looks at family strengths. Only those who can best benefit from *KidsFirst* services are eligible for the program.¹⁰⁶ Saskatoon children and their families who live in the neighbourhoods of Pleasant Hill, Holiday Park, Meadowgreen, Riversdale, King George, and Confederation Suburban Centre are eligible for this program while children from other neighbourhoods with similar needs are not.^{144,145}

Total funding for *KidsFirst* for 2007-2008 is \$14.5 million.¹⁰⁴ Approximately \$13.6 million (or 94% of the budget) is transferred to accountable partners, Regional Health Authorities and school divisions to deliver *KidsFirst* programs.¹⁰⁴ This also includes \$680,000 provided to accountable partners outside of the targeted communities for co-ordination of existing services.¹⁰⁴ There is also \$333,000 provided to the Ministry of Learning to support the information system and research, evaluation and training activities.¹⁰⁴ The remaining \$531,000 goes to the Early Childhood Development Unit which is responsible for overseeing the *KidsFirst* program.¹⁰⁴

Evaluations of the *KidsFirst* program is in progress. Currently, the data available only includes baseline data of the families when they entered the *KidsFirst* program; follow-up data on outcomes does not appear to be available.

Student Retention

In 2006, one estimate suggests that there were 1,500 children under the age of 16 who were not attending school in Saskatoon. For all of Saskatchewan as many as 5,000 students were not attending school.¹⁴⁶ In comparison, the Ministry of Learning indicated 2% of children ages 7-15 are not attending school and Statistics Canada indicated that 10.7% of people aged 20 to 24 have not completed high school. These numbers suggest 690 children aged 7-19 are not in school in Saskatoon. To help determine the actual number of students who have left school, Saskatchewan has developed the Student Tracking Program.¹⁴⁷

The Student Tracking Program is intended to determine how many students are not in school and why these students are not attending so appropriate measures can be taken to ensure that more students stay in school.¹⁴⁷ This new system tracks students from kindergarten to grade 12.¹⁴⁸ The system is linked between the various school systems through the child's health card in order to monitor the attendance of children who move throughout the province. This new system can also be used to track children who have never been to school by comparing their health information to school records.¹⁴⁷

Literacy

Literacy for Life is a literacy initiative for Saskatoon's public schools.¹⁴² The goals of Literacy for Life are to improve students' reading skills and to have all children from kindergarten to grade 12 reading at or above grade level.¹⁴⁹ There are three main components to the program: Just Read, the Early Literacy Initiative and Read to Succeed.¹⁵⁰ Evaluations have been carried out on two of the three components (Just Read and the Early Literacy Initiative) of the Literacy for Life program. Both components have shown to significantly increase the amount that children are reading (a 42% increase), as well as increasing their reading and writing skills.¹⁵⁰

For adults, programs at the Saskatchewan Institute for Applied Science and Technology (SIAST) provide adults who have less than a Grade 6 reading level with an opportunity to improve their reading, writing, spelling and mathematics skills from the Literacy Centre.¹⁵¹ Individuals are able to begin at their own level and work at their own pace.¹⁵¹ SIAST's literacy program provides literacy learning linked with employment preparation.¹⁵¹ Other programs and associations include Adult Education and Employment, Learning Disabilities Association of Saskatchewan, READ Saskatoon, Saskatchewan Aboriginal Literacy Network and the Saskatchewan Literacy Network.¹⁵²

Post-Secondary Education

Sixty-three percent of Saskatchewan students graduate with some debt.¹⁵³ Students from Saskatchewan's universities are graduating with debt loads that are among the highest in Canada.¹⁵⁵ The average debt for those who graduate is \$21,549.¹⁵³ The largest portion of student financial assistance comes from repayable student loans.¹⁵⁶ Since 2000-01, the

Governments of Canada and Saskatchewan have provided financial assistance to eligible full-time post-secondary students in the form of Canada-Saskatchewan Integrated Student Loans.¹⁵³ The federal government contributes 60% of the assessed need of a student, up to a maximum of \$165 per week of study, and the province provides the remaining 40% up to a maximum of \$110 per week of study.¹⁵³

Saskatchewan undergraduate students paid an average of \$5,063 in the 2006/2007 year for tuition plus \$431 in additional compulsory fees for a total of \$5,494.¹⁵⁵ The average tuition for all other Canadian universities for the same year was \$4,347 plus \$619 average compulsory fees for a total of \$5,016.¹⁵⁷ On average, Saskatchewan university students pay \$478 dollars more per year in comparison to the rest of Canada.

Currently in Saskatchewan, the government provides post-secondary students with some options for post-secondary attainment and retention. The government recently provided students with a tuition freeze. Tuition did not increase for the 2005/2006 and the 2006/2007 school years.^{155,156} The government also provides bursaries and grants to assist students in reducing the debt accumulated from their student loans.¹⁵⁵

The University of Saskatchewan has a total budget of \$650 million, which is broken up into several areas of funding: ancillary service (i.e., for profit food services), research and an operating fund.¹⁵⁶ The operating fund includes teaching and education as well as being the component of the University's budget that the Province of Saskatchewan funds by way of the provincial government grant and student's fund in terms of tuition.¹⁵⁶ For 2007/08 the provincial government grant is \$208 million or approximately 60% of the operating budget.

This amount increased a total of 9.8% from the previous year (\$189 million).¹⁵⁶ Therefore, students will contribute a projected total of \$81 million or approximately 25% of the operating budget total.^{153,156} The remaining 15% is supplied by other governments (i.e., support for the Western College of Veterinary Medicine), income from investments and fees and other miscellaneous income.^{153,156}

Education Disparity Evidence Based Policy Options

Regional:

Evidence Based Policy Option #13 – Set a Measurable Goal to Reduce the Number of Children not Attending School

The evidence suggests we should set a goal to reduce the number of children not in school from 690 children under the age of 19 to no more than 100 children under the age of 19 by 2010.

Rationale:

The setting of a goal to reduce the number of children not in school is an important first step in reducing the number of children not enrolled or not attending school.

Given the important links between education and health status, efforts should be made to ensure children stay in school. To facilitate this, the Student Tracking Program should be used to determine which children are not attending school by cross-referencing their health information to school attendance records.

Evidence Based Policy Option #14 - Increase High School Graduation Rates

We should set a goal that 90% of Aboriginal children graduate from high school within 10 years (or by 2017) up from the current graduation rate of 48%.

This goal will be assisted by re-allocating health and social services to community schools.

Evidence Based Policy Option #15 - Increase Support for Community Schools

Provide health and social services in schools in low income neighbourhoods in order to prevent school drop-out, encourage academic achievement, increase graduation rates and improve overall health.

- We suggest a pilot project whereby the following support be provided to the 21 Community Schools in Saskatoon to assist children and their families:
 - a) The Saskatoon Health Region provide 10 full time nurses to focus on prevention and health promotion directly in Community Schools
 - b) The Saskatoon Health Region provide 10 full time mental health therapists to reduce emotional distress and substance use while assisting with personal problems
 - c) The Department of Paediatrics provide 2 full time paediatricians to assess and treat complex medical disorders
 - d) The Ministry of Social Services provide 4 full time social workers to assist with income insecurity, housing insecurity, food insecurity and child protection
 - e) The City of Saskatoon Police Services provide 2 full time police officers to build trust and assist with bullying prevention while promoting safety and security
 - f) The University of Saskatchewan create a series of fourth year intern classes in Community Schools for Kinesiology students to operate after school recreation programs and Education students to coordinate after school reading and writing programs.
 - g) The interventions should follow evidence based protocols in order to accomplish outcomes
 - h) innovative programs and services from the community should be encouraged and supported.

Rationale:

There are many reasons that children do not attend school. Some of these reasons are school-related, family-related, health related and some are personal. One literature review of school-based health centers found that children who access these centers were more likely to stay in school, have better attendance, progress in school and graduate. The literature review found that school based health centers were associated with higher health outcomes which, in turn, had a positive influence on student academic performance.¹¹² The provision of school health centers could assist in accomplishing the broad intervention components required to encourage school completion. School health centers could help create a caring and supportive environment by assisting students with personal problems. The removal of personal problems could provide children with additional opportunities for success in school work.¹¹¹ As well, when health

practitioners assist with personal problems of students instead of teachers, this allows teachers additional time to focus on educational objectives.

A recent World Health Organization report synthesized high quality systematic literature reviews to determine the overall effectiveness of health promotion in schools. Overall, the report suggests that mental health should be a key feature of any school health promotion initiative. Effective mental health promotion is likely to reduce substance use and improve other aspects of health related lifestyles that may be driven by emotional distress. The report also concluded that knowledge based programs alone are ineffective and need to include skills development. Programs should be multi-factorial and interactive and need activity in more than one domain. As well, changes need to be made to the school environment with the inclusion of family members, peers and the community at large.¹⁵⁷ A recent meta-analysis by the Saskatoon Health Region found that school-based programs are effective in preventing drug and alcohol use providing that the programs are comprehensive (anti-drug information combined with refusal skills, self-management skills and social skills training) whereas professionally led education programs are not effective.¹⁵⁸

The provision of health services to schools in low income neighbourhoods would make School^{Plus} a reality and help children stay in school, complete school, succeed in school, make healthy lifestyle choices and increase their physical and mental health status. If children attending school is a priority in society, we need to provide the human resources necessary to deal with school, family, personal and health related issues that are affecting school performance and attendance.

Provincial

Evidence Based Policy Option #16 – Universal Child Care for Low Income Parents

Child care should be provided to all low income parents at no direct cost in community schools in low income neighbourhoods.

The pre-school and pre-kindergarten programs should be expanded in community schools in low income neighbourhoods and be provided at no direct cost to low income parents.

Rationale:

In Sweden, the government initiated child care reform with a cap on the price of child care until three years old and the provision of early education child care for all children aged 4 to 5 at no cost (the equivalent of our pre-kindergarten programs). These changes made the average cost for full-time child care decrease from 6% to 2.5% of the average household income. The parental leave policy coupled with child care reform resulted in Sweden becoming the country with the lowest rate of low income, lone-parent families in the world (6.7% in comparison to Canada at 51.6%).

Investment in early childhood education and care has significant economic returns. In Canada, for every dollar invested in a high quality child care system there was slightly more than a \$2 return.

In Scotland, the removal of childcare barriers in low income neighbourhoods resulted in 2,600 out of 6,000 parents on social assistance to either enter into the workforce or enter into an education or skills training program. In other words, universal child care is seen as a move towards employment in Scotland for lone parents. Childcare placements are also seen as a goal for England to preventing families from moving out of work. In England, universal child care for ages 3 to 14 is seen as a means towards employment for single parents.

In Québec, universal child care has three objectives: to fight poverty, to increase the participation of mothers in the labour market and to enhance child development and equality of opportunities for children.

In order to ensure a quality learning environment, pre-school and pre-kindergarten programs should be staffed only by those with a Bachelors degree in Education. Staff at child care centers and day cares should have, at the very least, a certificate in early childhood education from a recognized institute. As well, a low child-to-adult ratio should be mandated; ideally a 1:3 ratio for children under two, 1:6 for children age two and three and 1:8 for preschool aged children and above. Finally, facilities and equipment should be stimulating. These characteristics will separate high quality ECEC aimed at early childhood development from “custodial” child care. The Government of Saskatchewan should not provide financial reimbursement to any center that does not meet the basic educational requirements that encourage and stimulate early childhood education. In Sweden, actual laws ensure that quality care is given to all children. In Sweden, child care workers must be trained and must possess skills to be able to meet the needs of the children, premises are suited to the children and children groups are of appropriate size.

Evidence Based Policy Option #17 – *KidsFirst* should include children that are most in need

The *KidsFirst* program should include children and families that are in most need.

Rationale:

Baseline data for the 2006 *KidsFirst* program revealed that upon entering the program 74% of families had adequate food security, 82% of families had suitable housing and 55% had adequate social support. This data indicates that parents and children accepted to *KidsFirst* programs are initially screened and are not examples of the most vulnerable families and therefore the program is specifically not targeting families and children in most need. One of two options needs to happen. Either the current resources from *KidsFirst* need to be transferred to children or families most in need or the resources for *KidsFirst* need to be doubled so that the children and families most in need can also receive services. As well, all children that need services should receive services – not just if they happen to live in a neighbourhood chosen in an arbitrary fashion. In Saskatoon, only a handful of neighbourhoods were chosen to receive *KidsFirst* services.

Evidence Based Policy Option #18 – Reserve Education Placements for Low Income Students

Learning institutions like SIAST should allocate 10% of their existing skills training vacancies to adults that have been on social assistance for more than one year to take the programs at no cost.

- In addition, free childcare (policy option #16) should be provided to those who choose to enter school in order to better their chances to re-enter the workforce in a skilled vocation.
- The skills training sessions should be adapted to include academic support and if required support from health services (i.e., mental health).

Rationale:

As part of the 20% solution to reduce poverty in Ireland, 20% of the placements in the new National College of Ireland were reserved for low income residents. Prior to this project, less than 1% of students in the deprived district went to college. Within ten years, this number had increased to 10%. Putting more money into actual skills training (instead of just job search strategies) was a key component in Ireland's ability to decrease unemployment from 11.3% to 4% and reduce long term employment from 7% to 1.2% in only three years.

Evidence Based Policy Option #19 – Redirect Funds from Ineffective to Effective Programs

Re-allocate funding from job search initiatives with limited success to adapted skills enhancement programs as part of a comprehensive return to work strategy.

Rationale:

As discussed previously, the Ministry of Social Services spends \$60 million out of \$64 million on wages for staff in its Building Economic Independence program. We recommend that as time progresses and retirements and resignations occur, that the Ministry re-allocate \$50 million for skills enhancement programs and \$10 million for increased teaching capacity at institutions like SIAST.

Section 3.1e explains in more detail how comprehensive return to work programs, including adapted skills training, are more likely to result in return to gainful employment.

Evidence Based Policy Option #20 – Affordable Tuition for University Students

Cap the student portion of university tuition fees while increasing the provincial portion in funding. The student portion for low income students should be waived altogether.

- In addition, in order to increase university graduation rates, tutors should be available for low income students at no cost to the students.

Rationale:

Currently, students pay 25% of the total operating cost of university to the University of Saskatchewan through tuition and student fees. Historically, students have only paid 15%.

Instead of capping the overall tuition and gradually reducing the quality of instruction, we encourage capping the current student tuitions but mandating 10% annual increases in provincial funding. For low income students, provincial government funding should account for 100% of the cost of tuition and fees for these students in order to break generational disparity in educational attainment. This provision would decrease the disparity in access to university for low income students like that found in the University of Alberta study. In order to increase university graduation rates, tutors will need to be available for low income students at no cost to the students.

Evidence Based Policy Option #21 – Change the Legal Drop Out Age

Increase the age that a youth can legally stop attending school from 16 years old to 18 years old unless a high school graduation has already been obtained.

Rationale:

This is the same law recently adopted in New Brunswick.

Evidence Based Policy Option #22 – Cap Annual Health Care Spending Increases

Cap the annual growth of the health care treatment sector at 5%, instead of 10%, in order to re-distribute financial resources to health enhancing activities like education.

Rationale:

In Saskatchewan between 1996 and 2006, annual health care treatment costs increased from \$1.6 billion to \$3.2 billion with little improvement in population health. In the past ten years, the Ministry of Health has expanded by an average of 10% per year while inflation was 2.6% per year. This is not only unsustainable, but resources that contribute to health now have limited funding because of the growth in the health care treatment sector.

By capping its health care treatment spending, Saskatchewan would be one of the first jurisdictions in the world to limit the double digit annual increase in their health care treatment budgets in favour of health enhancing activities like education. The benefits of education in terms of numerous societal outcomes (i.e., occupation, income, health status, behaviours), has been demonstrated at the beginning of this chapter. It is anticipated that increasing the budget of education will have more impact on population health status than will increasing health care treatment costs. The re-prioritization of resources from health care treatment to education would provide the necessary resources to create successful stay in school programs. An evaluation of school-based interventions found interventions can be successful in decreasing student drop out rates and increasing educational participation.¹⁵⁹ These interventions were successful because they provided enhanced academic support and guidance to help students attain a high school diploma and enter into post-secondary studies.¹⁵⁹

The capping of annual growth of the health care treatment sectors to 5%, instead of 10%, does not need to result in a reduction in population health or even individual health. Japan, for example, has the best health outcomes in the world despite having the lowest expenditures for

health care treatment. By limiting the growth of their health care treatment sector, the Japanese were able to free up resources for investment in intellectual development; which resulted in superior health outcomes (more discussion in section 3.1f).¹⁶⁰

Summary

One of the main evidence based policy options is to move health services to schools. In section 2.11, we learned that 82.0% of Saskatoon residents would support providing more health promotion programs. In section 2.8, it was discussed in the appendix that multiple health, social, educational and behavioural outcomes were associated with socioeconomic status in Saskatoon youth. Disparity by socioeconomic status was observed in health outcomes like depressed mood, suicide ideation and anxiety as well as in behaviours like smoking and alcohol and drug usage. In section 2.8, depressed mood was associated with other mental health variables, such as suicide ideation, anxiety, low self-esteem, feeling like an outsider at school, being bullied and alcohol use. All of these findings suggest the need for mental health services and health promotion in schools. The meta-analyses in section 2.1 and 2.2 suggest that socioeconomic status is strongly associated with both health outcomes (i.e., depression and anxiety) as well as behaviours (i.e., drug and alcohol use). As such, school based interventions for low income youth are strongly recommended.

Another policy option is to expand pre-kindergarten programs and move towards universal child care for low income parents. In section 2.11, 83.8% of the Saskatoon population supported increasing early intervention programs in general and 66.0% supported subsidized daycares and pre-schools.

A number of policy options center on education and skills programs for adults. In Saskatoon, 82.3% of the population support more subsidized trades training for adults and 76.7% support adult work literacy programs (section 2.11). Educational status is not only associated with health outcomes in adults, but is also associated with health outcomes in the children of parents as well. In section 2.8, we learned that youth were more likely to have depressed mood if their mother had low educational status.

The major point, however, is to consider capping the growth of the health care treatment sector in order to re-prioritize the resources towards health enhancing activities like education. In section 2.11, 41.3% (of those who had an opinion) supported transferring healthcare treatment resources to health creating services like education.

“A society that spends so much on health care that it cannot or will not spend adequately on other health enhancing activities may actually be reducing the health of its population”¹⁶⁰

3.1d.

Lemstra M and Sharpe W

Housing Disparity

Context

Main Points:

- a) There were 2,150 people on a waiting list for affordable housing units in Saskatoon in 2006
- b) There is an estimated overall deficit of 5,900 affordable housing units in Saskatoon
- c) There is an estimated 22,500 people (or 9,000 households) who are considered to be at risk of homelessness in Saskatoon
- d) There are approximately 6,400 homeless individuals in Saskatoon (see definition).

Housing security progresses from complete homelessness to shelters to subsidized housing to affordable housing to rental market to the overall goal of home ownership. Studies have found that housing insecurity is one of the pathways through which poverty has an impact on physical and mental health.

The Canada Mortgage and Housing Corporation (CMHC) was set up by the Canadian government in 1946 to address the post-war housing shortage and now offers mortgage loan insurance to eligible individuals and develops housing policy and programs.¹⁶¹ From 1973 to 1986, the Canadian federal government provided social housing through the CMHC.¹⁶¹ From 1986 to 1993, the federal government cut almost all of its funding to affordable housing programs and transferred the responsibility of affordable housing to the provinces and territories.¹⁶² Although the federal government maintains that the reduction in direct support for housing was accounted for in the Canada Health and Social Transfer, there is no evidence to support this claim.

Acceptable housing is defined by three criteria: adequacy, suitability and affordability.¹⁶³ A dwelling is said to be adequate if it does not need any major repairs. When the number of bedrooms per number of occupants of a household meets specific parameters then a dwelling is said to be suitable.¹⁶³ The Canadian standard for housing affordability is the expenditure of no more than 30% of before-tax income on shelter costs; including rent, utilities, property tax or condominium fees.¹⁶³ Youth, Aboriginal people and unemployed individuals or those who rely on income from the government are the most likely to spend more than 50% of their income on shelter costs and live in housing that is unsuitable or inadequate.¹⁶⁴

In Saskatoon, social housing and special needs housing are used to target housing to specific groups within the population, such as single mothers or the elderly. In 2006, Saskatoon had 8,075 social and special needs housing units.¹⁶⁵ The Saskatoon Housing Authority manages 2,510 units (31%), the Saskatoon Health Region manages 932 long-term care units (12%), LutherCare Communities manages 565 units (7%), Jubilee Residences Incorporated manages 437 units (5%), and SaskNative Rentals manages 372 rentals (5%) with a number of smaller

organizations making up the remainder.¹⁶⁵ Independent or enriched seniors units account for 3,395 of this housing stock, while there are 2,171 affordable rentals, 1,269 special care home units, 715 personal care home units, 220 emergency or transitional housing units, 189 long-term supportive housing units, 62 residential treatment facility units and 54 justice release units.¹⁶⁵ Private non-profit organizations own the highest percentage of projects (3,744 units or 46% of all projects), just ahead of public non-profit owners (3,458 units or 43%).¹⁶⁵ Cooperative and private for-profit owners own the smallest percentage of affordable housing stock in Saskatoon at 224 units (3%) and 649 units (8%) respectively.¹⁶⁵

In 2006, there were 2,049 affordable housing units in Saskatoon. Despite this, there were 2,150 people waiting for an affordable housing unit to become available in 2006.^{165,166} The highest demand for targeted affordable housing in Saskatoon is for low income families and Aboriginal persons although need from single men over 40 and single men recently released from correctional facilities is also in great demand.^{165,166} In fact, in 2006 there was over four times the number of units available for single women than there were for single men.¹⁶⁵ In total, there is an estimated overall deficit of 5,900 affordable housing units in Saskatoon.^{165,166} This represents a deficit of 1,050 units for Aboriginal persons, 1,350 units for families with incomes below \$30,000 and 3,500 units for single people requiring supportive and independent housing.¹⁶⁵⁻¹⁶⁷ This housing deficit means that low-income households must look to the private rental market for accommodation and pay current market prices.

In 2007, Saskatoon saw a decline of housing affordability because of the inflow of new residents and a shortage of new construction.¹⁶⁸ The number of new rental unit construction in Saskatoon from 2004 to 2007 totalled 396, with the majority of construction (190 units) taking place in 2004 (zero in 2005).^{167,168} From 2004 to August 8, 2007 there were 1,193 condominium conversions in Saskatoon; the majority of which (565 units) took place between January 1, 2007 to August 8, 2007.^{167,168} This has further impacted the ability to find affordable shelter.

The City of Saskatoon municipal government has responded to the competitive housing market.¹⁶⁷ On July 16, 2007 the Saskatoon City Council adopted the recommendations to add 500 affordable units to the housing stock each year by working with other governments, financial institutions, developers, investors and community groups. City administration is also examining other initiatives, such as the development of a Land Trust, designating surplus City land to affordable housing projects, inclusionary zoning, improving the speed of the approval process for affordable housing and a five-year tax abatement for affordable housing projects/units.¹⁶⁷ Saskatoon City Council has also adopted a recommended funding increase from 5% to 10% of total capital costs to affordable housing projects and an increase of the annual funding from \$500,000 to \$2,500,000 to the Affordable Housing Reserve.¹⁶⁷ The Affordable Housing Reserve was established in 1987 and provides a 5% (now 10%) municipal contribution to the provincial and federal housing projects (funded entirely from the city's land development program).^{167,168} The Affordable Housing Reserve has led to the development of 1,328 housing units.¹⁶⁹

The current level of funding strategies from the provincial and federal governments for housing is little more than "damage control for the government [because] it is enough money to subsidize a steady stream of press releases, but not enough to make a difference".¹⁷⁰ With few or no new rental housing available and with shelter allowances not keeping pace with average rental prices, pressure is put on low income households to find any available shelter. On August 29,

2007 the Government of Saskatchewan responded to the affordable housing situation faced by households receiving social assistance by increasing eligible households' monthly shelter allowance between \$5 and \$75 per month.¹⁷¹ This means that if a family with two parents and two children living in Saskatoon qualified for the highest amount possible under this new funding announcement, their monthly shelter allowance would now be \$490, while the average rent in Saskatoon is \$693 for a two bedroom unit. In other words, there is a shortfall of \$203 for a two-bedroom unit. Even at an additional \$75 per month, the new shelter allowance is not enough to help households in need find affordable shelter. These households will have to make up for housing costs somewhere else, like transferring money from their food budget.

Homelessness is not inevitable. Government budgetary cutbacks have contributed to the extent of homelessness and housing insecurity in Saskatchewan. For example, the Saskatchewan provincial government reduced the amount of money for housing programs and services for low-income households from \$20 million in 2006-2007 to \$15 million in 2007-2008, despite large decreases in housing affordability for home buyers and renters in 2007.¹⁷² Significant changes in provincial delivery of social assistance programs have facilitated an increased number of individuals that are at risk of or actually experiencing homelessness.¹⁷⁰ The major shift in the provincial delivery of social assistance programs occurred in 1995, when the federal government discontinued the Canada Assistance Plan (CAP), a social assistance transfer program.¹⁷⁰ The CAP had five clearly defined rights upon which low-income people were to receive government assistance: 1) the right to an adequate income, 2) the right to income assistance when in need, 3) the right to appeal welfare decisions, 4) the right to claim welfare whatever one's province of origin and 5) the right to welfare without forced participation in work or training programs.¹⁷⁰ Once the CAP was discontinued in favor of the Canada Health and Social Transfer, the provinces did not have to honor the five basic rights upon which low-income people could obtain social assistance.

The net effect of removing government accountability to the five basic rights for people receiving social assistance is evident in Saskatchewan's housing shelter allowance for households in need, which puts people at risk for homelessness, hunger, or illness because there is not enough money provided for a suitable place to live. Saskatoon average monthly rents in October 2007 were \$435 per month for a bachelor suite, \$564 for a one-bedroom unit, \$693 for a two-bedroom unit and \$732 for a three or more bedroom unit.²² The following table shows the maximum shelter allowance rates payable from the Ministry of Social Services:

The types of places that people with low income or who are receiving social assistance can afford to rent in the private rental market are typically on the lower end of the housing spectrum in terms of quality. These rentals are often older, obsolete and are nearing the end of their expected life-span. Currently there are no benchmarks in Saskatoon for determining the bare minimum of housing quality or standard. Since housing inspections are only done if requested by an occupant or property manager, the default status of a dwelling in the absence of an inspection is that it meets all health and safety regulations. It is not known how many un-inspected rental units occupied by low-income households and individuals receiving social assistance sufficiently meet health and safety standards. As such, Saskatoon landlords providing rental units for households receiving social assistance do not need to provide evidence that their rental units meet health and safety standards in order to receive payment from the provincial government.

The City of Saskatoon reports that there was a 12% increase in home inspections from 2004 to 2005, with a 2% increased failure rate.¹⁶⁵ It is not known if home inspections have increased

Table 1 Maximum Shelter Allowance Rate for Saskatoon¹⁷³

Room Only:	
Single person	\$150
Childless couple	\$300
Sharing:	
Single, employable person	\$185
Employable, childless couple	\$185
Single, employable person	\$230
Single, unemployable person	\$320
Childless couple	\$365
Families:	
1-2 children	\$415
3-4 children	\$475
5 or more children	\$525

Source: Saskatchewan Community Resources. Social assistance rates as of May 1, 2007. Saskatchewan: Saskatchewan Community Resources; 2007. Rates do not include Saskatchewan housing supplement that residents may be eligible for.

safety or simply assisted in even less availability of housing for low income households as household residents are required find new accommodations once a building has been deemed unfit for human occupation. In 2005, Pleasant Hill accounted for 12% of all failed inspections, Riversdale 5%, Meadowgreen 4%, Westmount 3% and Confederation Park 4%.¹⁶⁵ Low income adults and children are at risk of experiencing homelessness in a competitive rental market with high rents, few vacancies and zero available units in existing affordable housing programs.

The response to homelessness across all levels of government is typically expensive, temporary or tertiary programs, such as homeless shelters, emergency rooms and holding cells.¹⁷⁴ These responses are neither acceptable nor are they financially sustainable. While there has not been an official count on homelessness in Saskatoon, it is estimated that there are approximately 6,400 homeless individuals, comprised of people who live on the streets, use emergency shelters, or who live with friends and family.¹⁷⁵ In 2007, Saskatoon's hidden homeless population, or those people sleeping on couches or living with relatives, was estimated to be around 6,000 people, an increase of 3,800 people since 2006.¹⁷⁶ As such, the definition of homeless is not restricted to living on the street. In 2007, there were an estimated 22,500 people (or 9,000 households) who were considered to be at risk of homelessness in Saskatoon.¹⁷⁶ Individuals at-risk of becoming homeless are low-income Aboriginal persons (50%), new immigrants (20%), low-income families (11%), low-income seniors (11%), low-income singles (7%) and youth (1%).¹⁷⁵

The cost of homelessness to public services is expensive; homeless people frequently use hospital emergency rooms as their point of contact with the medical system. Lack of primary preventive care translates into a delay in the treatment of illness and health conditions become chronic, which then increases the overall cost of medical treatments. Research has found that

homeless individuals are four times more likely to require inpatient hospitalization or emergency psychiatric units than their housed counterparts.¹⁷⁷

There has not been an economic analysis of the burden of homelessness to the Saskatchewan government and its taxpayers. There are, however, two examples of economic analysis of the cost of homelessness to the government of British Columbia. The first example is from a report commissioned in 2001 by the government of British Columbia to determine the economic burden of homelessness on government services.¹⁷⁴ In British Columbia, the average cost of service provision in 1998-1999 in the areas of health care, criminal justice and social services to a homeless individual was \$24,017 compared to just \$18,239 for housed individuals that were formerly homeless, a difference of about \$6,000 per person.¹⁷⁴ The cost for service use for homeless individuals per person was \$4,714 for health care, \$11,410 for criminal justice and \$7,893 for social services.¹⁷⁴ In total, the average cost per person for all three services was \$24,017 from September 1, 1998 to August 31, 1999.¹⁷⁴ The service costs per person for housed individuals that were formerly homeless for healthcare was \$7,003, criminal justice was \$1,850 and for social services was \$9,386 for a total of \$18,239.¹⁷⁴ Ultimately the report from British Columbia showed that it cost the government much more to respond to chronic homelessness through emergency response systems such as incarceration, hospitalization and emergency shelters. In this study, permanent preventive approaches in housing would result in overall cost savings to the government of approximately \$6,000 per person. Perhaps more importantly, the provision of housing dramatically reduced the need to commit crimes in order to access correctional housing; as evidenced by the reduction in correctional costs from \$11,410 per homeless person to \$1,850 per housed person.

The second economic analysis is a recent study by the Centre for Applied Research in Mental Health and Addiction at Simon Fraser University, which estimated the cost of homelessness (and imminent risk of homelessness) to the BC government.¹⁷⁸ The definition of homelessness was expanded to include the at-risk population because point prevalence estimates of the homeless population typically underestimate the true homeless population. People who are homeless for only brief periods of time and people who are at-risk of becoming homeless are typically undercounted. Also excluded from point prevalence counts are those individuals who are homeless but are in correctional and detox facilities or who are hospitalized but have nowhere to go once discharged.

The report estimated that there are approximately 11,750 people who are completely homeless and 7,009 people who are at-risk of becoming homeless in BC. These 18,759 individuals consume more health, correctional and social services than their housed counterparts in BC.¹⁷⁸ If adequate housing and proper supports were put in place for the completely homeless population, the BC government would have to initially spend \$662.1 million annually. This initial investment however would result in a \$32.8 million overall savings to tax payers.¹⁷⁸ It was estimated that the 11,750 people who are completely homeless consume, on average, \$54,833 per year per person in health and correctional services. When housed and given the appropriate supports, persons who were formerly homeless only consume \$36,848 per year in health and correctional services.¹⁷⁸ Implementing a housing intervention for only the completely homeless population would save the BC government approximately \$17,985 annually per completely homeless person per year.

It would initially cost \$394.9 million annually for the BC government to adopt the appropriate housing and supports for the at-risk of homelessness population (in comparison to the

completely homeless population).¹⁷⁸ The cost to address the at-risk population would require an overall cost increase of \$10.6 million annually (or an increase of \$1,515 per year per at risk person).¹⁷⁸ The slight increase in overall costs can perhaps be justified by reducing the strain on health and correctional services and its workers.

For both the completely and at-risk of becoming homeless, the BC government spends \$50.6 million per year on housing and support services and \$1.0 billion per year for health and provincial correctional services, for a combined total of \$1.08 billion annually.¹⁷⁸ By putting in place the proper housing and supports for both populations, the BC government would save \$22.2 million annually.¹⁷⁸ If the BC government only focused on those that are completely homeless, the overall cost savings would be \$32.8 million per year.

The economic analysis from the Simon Fraser University study above was applied to Saskatoon's estimated homeless population to estimate the overall cost and savings to taxpayers. The definition of homelessness between the two jurisdictions is not identical.

Table 2 Annual Costs and Cost Savings Associated with Homelessness for Saskatoon¹⁷⁸	
Annual Costs/Cost Savings	Homeless (n = 6,400)*
Current Situation	
Capital Costs	\$0
Overall Housing & Support Costs	\$27.6 million
Health & Correctional Service Costs	\$350.9 million
Total Cost	\$378.5 million
Investment to Eliminate Homelessness	
New Capital Costs	\$16.6 million
Expanded Housing & Support Costs	\$108.2 million
Reduced Health & Correctional Service Costs	\$235.8 million
Total Cost	\$360.6 million
Overall Savings	(\$17.9 million)

Adapted From: Patterson M, Somers JM, McIntosh K, Shiell A, Frankish CJ. Housing and support for adults with severe addictions and/or mental illness in British Columbia. Burnaby, BC: Simon Fraser University; 2008 Feb.* The homeless population is based on an estimated number from Saskatoon based on service provider estimates of the hidden and chronically homeless populations.¹⁷⁸

In Boston, the Health Care for Homelessness Program followed 119 homeless people for 5 years. During that time, these 119 people were responsible for more than 18,000 hospital visits with an average cost of \$1,000 per visit.¹⁷⁹

Literature Review

How housing affects health

The World Health Organization commissioned a housing and health survey that took place from 2002 to 2003 in eight European cities.¹⁸⁰ The research found that regardless of individual or neighbourhood effects, housing conditions are directly related to health and quality of life.

The two major findings of the report are that: 1) inadequate housing is one of the mechanisms through which poverty affects the health of the population, especially for vulnerable and marginalized groups and 2) housing problems that impact health are linked to insufficient construction and maintenance.¹⁸⁰ The report maintains that action on housing and health can be organized to achieve two objectives: 1) “improvement of inadequate housing in general as a means to mitigate social and health inequities within a population” and 2) “improvement of specific key housing problems as a preventive strategy against housing-related health effects and injuries”.¹⁸⁰

Safety

The World Health Organization found that the conditions in a dwelling are strongly related to the risk of accidents and injuries.¹⁸⁰ Household accidents are more likely to happen to the young, the elderly, women and persons with disabilities. Household characteristics that increase the risk of accidents are crowded households, lack of a kitchen work space, bad lighting and noise.¹⁸⁰ Children under five years of age who are from families that have a low economic status and are clustered in specific geographic areas in a city, have a higher risk of death from fire.¹⁸¹

General Health

There are associations that exist between mould growth and dampness in a house with the of health residents: asthma (60% more likely), bronchitis (90% more likely), arthritis (30% more likely), anxiety or depression (60% more likely), migraines (70% more likely), colds (40% more likely) and diarrhoea (50% more likely).¹⁸⁰ Inadequate ventilation is also strongly associated with an increase of asthma (50% more likely) even when age, gender, socioeconomic status and smoking are statistically adjusted for.¹⁸⁰

Mental Health

Housing has an effect on the mental health of residents, especially depression.¹⁸⁰ Housing elements that increase the risk of depression from 40% to 60% include limited exposure to daylight, extensive exposure to dampness, sleep disturbances due to noise, poor view out of a window and the inability to be alone in a dwelling.¹⁸⁰ Inadequate housing is associated with a 60% increase in depression and a 60% increase in anxiety.¹⁸⁰ Poor housing leads to poor health and illness, anxiety and depression.¹⁸² As the number of adults and children living in poor housing conditions or who are at risk of becoming homeless grows, so will the eventual financial burden on the mental health care system.

Children's Health

Children who experience homelessness or dismal housing conditions are exposed to many different risk factors for illness and increased mortality risk.¹⁸³ One of the long-term consequences for children who live in crowded conditions is an increase in mortality by 42%.¹⁸⁴ Increased levels of epinephrine, norepinephrine and cortisol, which increase the risk of cardiovascular disease and decrease immune system functioning, was found more often in low-income children.¹⁸⁵ The chronic stress levels for low-income children result in part from crowded living conditions, household noise and poor housing quality.

Reviews of Programs to Improve Population Housing Levels

Programs that address housing as a determinant of health can be placed into those interventions that seek to prevent harm to an individual through intervention and those programs that mitigate harm or risk that has already occurred. It was found that the published housing interventions in both peer reviewed journal articles, as well as grey literature documents do not provide adequate quantitative analysis of intervention outcomes.^{186,187} Quite simply, the data is limited or is not reliable enough to assess the effectiveness of housing interventions because of, but not limited to, small study populations and lack of control for confounding variables, as well as the absence of comparative data.¹⁸⁶⁻¹⁸⁹

Evaluative data from Canada could not be found for housing programs that are designed to improve health, access to housing, or increase social stability. For example, there is no data on the Surplus Federal Real Property for Homelessness Initiative (SFRPHI), which makes available surplus federal properties (which are transferred for one dollar) to groups and organizations that prevent or reduce homelessness.¹⁹⁰ There does not appear to be any publicly available evaluative measures in place to quantify the effectiveness and value of the federal government housing initiatives.

Provincial housing programs also do not appear to have any formal evaluative component included in the program structure. Funding is provided to affordable housing programs for low- and moderate-income residents who are in need of the Saskatchewan Housing Corporation. Yet it does not appear that the provincial government housing programs or the Saskatchewan Housing Corporation have been evaluated for cost effectiveness or impact on health or quality of life.

The best example of a well designed and comprehensive housing initiative with an actual evaluation plan comes from Portland, Oregon. The program Home Again has nine action items: 1) move people into housing first, 2) stop discharging people into homelessness, 3) improve outreach to homeless people, 4) emphasize permanent solutions, 5) increase supply of permanent supportive housing, 6) create innovative new partnerships to end homelessness, 7) make the rent assistance system more effective, 8) increase economic opportunity for homeless people and 9) implement new data collection technology throughout the homeless system.¹⁹¹

Within three years, Portland has far exceeded its ten year goals. Home Again started in December of 2004. By December of 2005, 1,286 chronically homeless individuals and 1,681 homeless families with children were housed. Of the chronically homeless people that were placed in housing, 80% were still in housing after one year.¹⁹² In other words, homeless residents in Portland are getting off the streets and are beginning their way back towards integration into the community. In 2007 alone, 229 jail discharges that were on their way to homelessness were transitioned into permanent and supportive housing. A fund of \$360,000 was created to assist formerly homeless individuals to access social services and/or disability. As well, 550 volunteers were recruited to assist 800 homeless people to help them connect with services (health, dental, legal, etc.) and to provide mentoring.¹⁹² Rent assistance was also provided to 842 households to prevent them from becoming homeless due to rent increases. After temporary rent assistance, 92% remained housed in their current residence. Finally, job training and placement resulted in 488 formerly homeless individuals receiving an employment income. The new data tracking system allows decision makers and the public at large to evaluate the success of Home Again and its goals to eliminate homelessness in ten years.¹⁹²

Housing Disparity Evidence Based Policy Options

Evidence Based Policy Option #23 – Set Measurable Goals to Create More Access to Affordable Housing

The evidence suggests we should set a goal to reduce the number of people on the waiting list for affordable housing from 2,150 to zero in four years (2011).

Rationale:

In 2006, there were 2,150 individuals and families on a waiting list for an affordable housing unit.¹⁶⁵ In total there is an estimated overall deficit of 5,900 affordable housing units in Saskatoon and an estimated 9,000 people who are considered to be at risk of homelessness.¹⁶⁵

The phenomenal success from Portland, Oregon demonstrates the importance of a well designed, comprehensive housing initiative with an actual evaluation plan. In Portland, 1,286 homeless individuals and 1,681 families were provided with secure housing within the first year of their program.

Regional:

Evidence Based Policy Option #24 – Expand Affordable Housing Projects

The City of Saskatoon should continue to examine the benefits of development of a Land Trust, designating surplus city land to affordable housing projects, inclusionary zoning, improving the speed of approval process for affordable housing and a five year tax abatement for affordable housing projects/units.¹⁶⁵⁻¹⁶⁷

Rationale:

The City of Saskatoon has demonstrated a commitment to the issue of affordable housing by adopting recommendations to increase affordable housing units to the market by 500 units each year, increasing capital funding from 5% to 10%, and by increasing the annual funding to the Affordable Housing Reserve from \$500,000 to \$2,500,000.

Evidence Based Policy Option #25 – Reserve 10% of New Developments for Affordable Housing

Any developer that purchases land from the City of Saskatoon should set aside at least 10% of the new development for affordable housing.

Rationale:

In Ireland, 20% of all new homes were set aside for affordable housing as a key component of their anti-poverty strategy.

In England, the goal to increase the supply of social housing by 50% resulted in 75,000 new affordable housing units within three years and a reduction of homelessness of 27% within the first year of implementation.

Provincial:

The need for affordable housing from Saskatoon residents exceeds the City of Saskatoon's capacity to solve this problem alone.

Evidence Based Policy Option #26 – Expand Not-for-Profit Housing Authorities

The provincial government should consider purchasing 20 abandoned or neglected multifamily and apartment buildings in the heart of Saskatoon's low income neighbourhoods, renovate them and transfer the title to not-for-profit housing authorities with the eventual goal of transferring title to home ownership.

The provincial government should consider adopting this policy for at least four years to address chronic housing shortages.

Rationale:

In order to alleviate poverty in one of Dublin's worst neighbourhoods, the government purchased 520 hectares of riverside land in order to develop homes and businesses. The provincial government should consider purchasing 20 abandoned multifamily buildings and apartment buildings in the heart of Saskatoon's low income neighbourhoods, renovate them and transfer the title to not-for-profit housing authorities. The purchase and renovation of these buildings, particularly abandoned apartment buildings, could revitalize the neighbourhood, as well as increase available housing. The estimated total project cost to purchase and renovate the 20 multi-family buildings is approximately \$22 million, or \$1.1 million per building.¹⁹³ This estimate is based on the One Arrow First Nation's housing project of the purchase and refurbishment of an apartment building in Pleasant Hill.¹⁹³ The refurbishment of the buildings should take approximately one year to complete. The renovation of 20 multi-family buildings will provide permanent stable housing to approximately 120 single couples, 160 families and 20 single individuals.^{165,193}

Based on data from British Columbia, homelessness in Saskatoon costs taxpayers an estimated \$378.5 million per year. Of this \$378.5 million, \$350.9 million per year was spent responding to homelessness through health and correctional services. Also, an estimated \$27.6 million per year was spent on other housing and support costs, such as emergency or transitional shelters. It was estimated that implementing housing and related services would reduce the costs to health and correctional services from \$350.9 million per year to \$235.8 million per year, for a savings of \$115.1 million per year in health and correctional services. It was estimated that by implementing housing interventions for Saskatoon's homeless population, overall cost savings of \$17.9 million each year could be realized.¹⁹⁴

The United Kingdom realizes that all of the determinants of health are inter-related. As such, the United Kingdom has recognized the importance of safe and affordable homes as key initiatives to reduce child poverty and encourage labour market participation.¹² The theory is that once housing insecurity is removed, residents will be able to focus on return to work initiatives.

Evidence Based Policy Option #27 – Support for Home Ownership

The provincial government should consider investing in a Saskatoon-based home ownership pilot project to convert 31 multi-unit provincially owned affordable rental units to home ownership. A long-term rent-to-own program should be considered to increase the number of households in stable, safe, affordable housing.

Rationale:

Currently the only home ownership program offered by the province is not flexible or comprehensive enough to provide an adequate level of opportunity for home ownership to people who require stable, affordable housing. Increasing the opportunities for home ownership for low income households will reduce the cost to government social programs. Eviction, for example, is found to have an economic burden to government services and also to society.¹⁹⁵ The average cost of eviction to a household is \$2,334, which is due to moving and transportation costs.¹⁹⁵ Social disruption from evictions has been found to lead to homelessness or to an unstable housing environment, loss of employment and an increased uptake of social services.¹⁹⁵

Policy option number 26 and 27 can be connected to an incentive program. For example, for those who have been on social assistance for an extended period of time (i.e., two years), the acceptance of government sponsored skills training followed by successful return to work could result in transferring rental title to home ownership.

¹NOTE: this recommendation was originally promised in the 2005/2006 Government of Saskatchewan Community Resources and Employment Annual Report but was not delivered.¹⁹⁶

Evidence Based Policy Option #28 – Create a Youth Homelessness Prevention Strategy

Develop and implement a permanent and comprehensive youth homelessness prevention strategy to eradicate youth homelessness in Saskatoon.

- **In addition to the need for overall services coordination, the province of Saskatchewan should consider converting and targeting 125 affordable housing units to supportive housing for at risk and homeless youth.**

Rationale:

It is estimated that 1% of Saskatoon youth are at risk of homelessness.¹⁷⁵ Healthy, stable homes are protective for youth and allow them to make a successful transition into adulthood.¹⁹⁷ Unstable living arrangements compromise the ability of youth at risk to engage in healthy lifestyles, remain in school and find employment.¹⁹⁸

The best available research data is from British Columbia. Data from British Columbia shows that most youth that are either forced to move out or run away from home are 14 years old.¹⁹⁷ Homeless youth experience a variety of living situations that include the street, hotels, abandoned buildings, tents, cars, shelters and living on couches.¹⁹⁷ Homeless youth in British Columbia were found to access food banks, shelters, youth clinics and safe houses.¹⁹⁷ Although youth homelessness is currently not viewed as a health problem, homeless youth suffer from different health-related issues as a result of inadequate access to sanitary facilities and unsuitable sleeping arrangements, increased risk of physical and sexual violence, as well as infectious

diseases such as HIV and Hepatitis C.¹⁹⁷⁻¹⁹⁹ Government responses to these issues are normally expensive, reactionary and temporary solutions that require the involvement of the health, criminal justice, and social service systems.¹⁷⁴ The recommended way to permanently alleviate and address youth homelessness in Saskatoon is to develop and implement a permanent and comprehensive youth homelessness prevention strategy. Safe Moves, an 18-month pilot program in England to prevent youth homelessness, had program elements of providing family supports, life skills training and peer mentoring.²⁰⁰ The cost per client ranged from £500 and £1,400 but prevented a cost of £3,850.²⁰⁰ In addition to the recommendation for overall services coordination, it is recommended that the province of Saskatchewan convert and target 125 affordable housing units to supportive housing for at risk and homeless youth.

Evidence Based Policy Option #29 – Develop a Long-term, Consolidated, Comprehensive, Interagency Social Housing System for Hard to House Individuals

Develop a long term, consolidated, comprehensive, interagency social housing system in Saskatoon and Saskatchewan for hard to house individuals; including those living with mental health problems and addictions.

Rationale:

There needs to be development of a long-term, coordinated, inter-agency social housing system so that all Saskatchewan residents have an equal opportunity to obtain and keep adequate housing. For example, social housing often has barriers for individuals who are ‘hard to house’, such as those who are living with a mental illness or addiction. Barriers fall into one of three categories: systemic level barriers such as a limited supply of social housing or lengthy wait times, community or organizational obstacles like application procedures or discrimination and personal issues such as mental health issues or addictions.²⁰¹ Overcoming these barriers requires greater choice in housing, multiple access points and coordination of services, a relaxation of tenancy requirements, a rapid application process, and sufficient funding for groups or agencies that provide housing to the homeless.²⁰² When supportive housing was integrated with health services in San Francisco, emergency room usage dropped by 58%, the number of hospital inpatient days fell by 57% and there was a near elimination of 24-hour residential mental health care services.²⁰²

Five programs required for integrated housing policy are: 1) an increase in the supply of housing to bring overall rents down, 2) an increase in the amount of rent supplements that reflect current market prices, 3) supportive housing that links housing to services for those individuals who have special needs, 4) housing rehabilitation programs for ageing houses and 5) emergency relief programs for homeless individuals to obtain stable housing.¹⁷⁰ The first four programs are long-term in nature and seek to eradicate housing inequity. The last strategy, which focuses on homeless individuals, is a short-term strategy that would require less funding over time as the first four programs become successful.

The United States Interagency Council on Homelessness reported that 10% of the chronic homeless account for 50% of the resources to manage homelessness. In response, the city of Portland has adopted a “Housing First” principle meaning the most destitute individuals in a community receive housing first – and not last - as is common practice. In return, the city of Portland not only had great success in reducing chronic homeless numbers, but the overall cost

of government services also declined.¹⁷⁹

Evidence Based Policy Option #30 – Build Community Acceptance for Affordable Housing

Develop a communication strategy to overcome the stigma of affordable housing in order to gain community acceptance.

Rationale:

The nature of community opposition to affordable housing programs can be placed into one of four categories: 1) community awareness of housing projects and information exchange, 2) concerns about new residents that in turn affects perceptions of safety, 3) misunderstanding of the impact affordable housing and homeless shelters have on property values and 4) general concerns about the impact on the community and neighbourhood in general.²⁰³ People are limited in their housing choice by exclusionary housing policies that promote the residential segregation of the poor, disabled or injured, the mentally ill and/or those living with addictions, or minorities into specific geographical clusters within regions. Overcoming the stigma of affordable housing and gaining community acceptance of affordable housing programs can be achieved through communication, effective use of media opportunities, establishment of relationships with local politicians, good planning, understanding what the community's process is for new projects and persistence.

Evidence Based Policy Option #31 – Increase Monthly Shelter Allowance

The Saskatchewan government should consider increasing monthly shelter allowances for all households receiving income assistance to match the 2008 average monthly rental rate and also include the total monthly cost for utilities.²³

In addition, shelter allowance rates should be reviewed bi-annually and compared to current average monthly rates and brought up to market standards when necessary.

Rationale:

Adjusting shelter rates will allow households greater flexibility in housing choice. Table 3 outlines the current shelter rates and the recommended shelter rates based on the CMHC's fall report on average monthly rents in Saskatoon.²³

Federal:

Table 3 Current Shelter Rates and Recommended Shelter Rates

	Current Shelter Rate ¹⁷³	Recommended Shelter Rate, without utilities included ²³
Single Person, Employable		
Bachelor suite, single room	\$150	\$435
One-bedroom unit, not sharing	-	\$564
One-bedroom unit, sharing	\$185	\$282
Two-bedroom unit, sharing	-	\$347
Three-bedroom unit, sharing	-	\$244
Childless Couple		
One-bedroom unit	\$300	\$564
Two-bedroom unit	-	\$693
Single Parent with one child	-	
Two-bedroom unit	\$415	\$693
Single Parent with more than one child		
Two-bedroom unit	\$415	\$693
Three-bedroom unit	\$415	\$732
Families with 1 - 2 children		
Two-bedroom unit	\$415	\$693
Three-bedroom unit	\$415	\$732
Families with 3-4 children		
Three-bedroom unit	\$475	\$732
Four-bedroom unit	\$475	\$832
Families with 5 or more children		
Four-bedroom unit	\$525	\$833
Five-bedroom unit	\$525	\$932

Evidence Based Policy Option #32 – Renewed Federal Responsibility for Social Housing

The federal government needs to restore funding for social housing to the levels established prior to 1986.

Summary

A number of policy options are given to reduce housing disparity in Saskatoon. In section 2.11, 74.9% of residents of Saskatoon supported more subsidized quality housing for parents with children while 66.8% of Saskatoon residents supported more subsidized housing for adults without children.

“I need not say anything more than if the issue of housing is not addressed, then it is unlikely that any provincial mental health reform will have an impact on the problem (of escalating mental health illness in society)”

- The Kirby Senate Report²⁰⁴

3.1e.

Lemstra M and Bennett N

Employment Disparity

Fifty years ago, the United Nations' Universal Declaration of Human Rights (Article 25) stated:

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including... the right to security in the event of unemployment... or other loss of livelihood in circumstances beyond control.²⁰⁵

Main Points

- a) In June 2007, the national unemployment rate was 6.1% while Saskatchewan was at 4.4%.²⁰⁶
- b) The unemployment rate for Saskatchewan for the population aged 15 years or older was 3.5% for non-Aboriginal people and 17.6% for Aboriginal people.²⁰⁷
- c) According to the 2001 Census, the average income in Saskatoon was \$28,045 while it was \$14,513 for Aboriginal people.²⁰⁸

Literature Review

How Occupational Status Effects Health

Research on the social determinants of health has shown the importance of unemployment, job insecurity and employment conditions in the aetiology of chronic disease.²⁰⁹⁻²²⁰ The correlation between employment and health has been consistently demonstrated in studies that use health measures ranging from self perceived health to reported symptoms or impairments to rates of serious disease, hospitalization and even death.²²¹⁻²³⁰ The strength of the association between employment and health compares with that of other socio-demographic factors like education.^{223,230,231}

The social causation hypothesis suggests that employment improves the health of men and women.²³⁰ Full-time employment predicts slower declines in self-report health and in physical functioning for both men and women.²³⁰ People who work for pay report better physical well-being than others.^{223,231} Employment increases status, power and economic independence, as well as providing non-economic rewards such as social support and recognition from others.^{221,232-236}

Social causation proponents argue for economic well-being as a primary link to improved health.^{232,237} Employment increases household income and decreases economic hardship, both of which improve physical well-being.²³⁸ Poverty and economic hardships erode health. The stress of trying to pay bills and feed and clothe a family on an inadequate household income generates psychophysiological distress, malaise and susceptibility to disease.^{239,240}

Typically, employment is the main source of income and route to improved well-being. Stable employment can contribute to the health and well-being of individuals, their families, communities and the overall economy.²⁴¹ Full-time employment predicts significantly slower declines in perceived health and physical functioning in comparison to non-employment.²³⁰ Over a one year period, working-age men and women with full-time jobs showed no significant decline in perceived health or physical functioning.²³⁰ The beneficial effects of full-time employment on change in health applies to women as much as to men.²³⁰ The effects hold equally for Caucasian and non-Caucasian women, and equally for married and unmarried women. Pay is the most obvious benefit common to all forms of employment.

Adjustment for economic well-being accounts for only a small part of employment's total effect on changes in health.²³⁰ The rates of change in health vary across categories of non-employment. Being in school full-time appears to have the same health benefits as being employed full-time, despite being unpaid. People in other legitimate or voluntary forms of non-employment do not fare as well. For men, the effect of retirement seems to be as bad as, or even worse than, the effect of unemployment.²³⁰ For women, homemaking undermines health as much as being fired, laid off or being unable to find a job.²³⁰ Specific types of non-employment may be unhealthy. In particular, those who were laid off or fired, or who cannot find work, have a low sense of control, low levels of social support and suffer distress as a consequence.²³¹ Failure to get or keep a job may result in demoralization and neglect and thus may lead to poor health. More generally, involuntary non-employment diminishes health, whereas voluntary non-employment may not be as bad. Involuntary non-employment includes being unable to work because of an illness or disability, as well as being laid off, fired or unable to find work.²³⁰ Voluntary non-employment includes being in school, retired or homemaking.

As women began entering the labour force in large numbers after World War II, some researchers speculated that it would expose them to the stress and hazards of work and thus worsen women's health.²⁴² A sole focus on occupational risks ignores the alternatives to employment. Obviously it is better to be employed in a safe workplace than in a risky one. Studies indicate a much greater risk to women's health from homemaking than from the average full-time job.²³⁰ Most cross-sectional research confirms that employed women are physically healthier than non-employed women.^{228,232,243-246} The same is true for men.^{223,231}

Studies have found large differences in the risk of illness according to occupational social class, with men and women in the least favourable employment conditions nearly four times more likely to become ill than those in the most favourable jobs. Employment status is also related to recovery.²⁴⁷ Having secure employment in favourable working conditions greatly reduces the risk of people developing illness.²⁴⁷ Precarious employment is a source of stress due to a lack of income and meaningful work, uncertain prospects for the future and its potential to undermine social support networks.²⁴⁸ Job security is considered important for the well-being of workers and their families.²⁴⁹ Stable employment has both financial and non-financial advantages, including participation in social life, self-esteem and personal development. For both men and women, low perceived employment security has been shown to be associated with poor self rated health and high levels of psychological distress, with additional associations to chronic disease in women.²⁵⁰

Poor social and economic circumstances effect health throughout life. People with low occupational status have twice the risk of serious illness and premature death as those near the

top.²⁵¹ The social gradient in health runs right across the workplace, so that even middle-class office workers have more disease and earlier death than higher ranking workers.²⁵¹

Societies that enable all citizens to play a full and useful role in the social, economic and cultural life of their society will be healthier than those where people face insecurity, exclusion and deprivation.²⁵¹ Social and psychological circumstances can cause long-term stress. Continuing anxiety, insecurity, low self-esteem, social isolation and lack of control over work and home life have powerful effects on health.²⁵¹

In general, having a job is better for health than not having a job. That said, the social organization of work, management styles and social relationships in the workplace all impact health.²⁵¹ Evidence shows that stress at work plays an important role in contributing to the large social status differences in health, sickness absence and premature death. Several European workplace studies have shown that health suffers when people have little opportunity to use their skills and low decision-making authority. Having little control over one's work is associated with an increased risk of low back pain, sickness absence and cardiovascular disease.²⁵²

Aboriginal Population and Unemployment

In 2001, the unemployment rate for Aboriginal people in Saskatchewan was 23% in comparison to 17.6% in 2007.²⁵³ The unemployment rate for non-Aboriginal people in Saskatchewan was 4.8% in 2001 and 4.4% in 2007. Unemployment rates in the Aboriginal population are lowering and from a statistical point of view, it appears that most of the reductions observed in the overall unemployment rate in Saskatchewan are mostly a result of Aboriginal people entering the workforce.

Without closing employment gaps, Aboriginal people will continue to be denied the benefits of provincial economic growth and prosperity.²⁵⁴ The Saskatchewan Public Service Commission notes that for March 2007 only 8.3% of permanent, full-time jobs were filled by Aboriginal people. This represents a significant under-representation of our Aboriginal population which account for 15% of our overall population.²⁵⁵ Aboriginal people are also significantly under-represented in management, supervisory, professional and semi-professional positions (7%).²⁵⁵ For example, only 2.5% of the entire workforce of the Saskatoon Health Region is of Aboriginal ancestry. In 2005, more Aboriginal people left permanent, full-time civil service jobs than entered them (114 separations in comparison to 101 new hires).²⁵⁶

Review of Programs to Improve Population Employment Levels

A. Provincial

In 2005, the Department of Community Resources (now the Ministry of Social Services) realigned resources to provide employment services to more clients in an attempt to assist transition to independence.¹⁹⁶ New applicants who are job-ready receive information on local job opportunities or services; such as help in preparing for interviews. Several new flat rate allowances were introduced to support job search activity. These included a pre-employment allowance to assist with job search costs, such as travel and a job start allowance enabling clients starting employment to purchase items required for the job.¹⁹⁶

From 2005 to 2006, the Building Economic Independence program assisted in reducing the amount of social assistance cases from 28,288 to 27,298. Most of the people that transitioned

back to work had a disability (672 out of 990 or 68%) as the program provides employment supports for people with intellectual and physical disabilities to help them find and keep jobs.¹⁹⁶ The Ministry works with employers, families and communities to support people with disabilities so that they can gain greater independence through employment.¹⁹⁶ As of May 2006, the number of people participating in employment programs was 1,989; of which 1,572 had a disability.¹⁹⁶ In other words, the employment programs provide more support to those with physical and intellectual disabilities than to those without more visible disabilities and as a result, the program has observed much greater success transitioning those with disabilities back to work than those without observable disabilities (i.e., depression, addictions).

Provincial employment programs and services include programs such as Work Placement, Community Works and Work-Based Training. Work Placement programs subsidize private employers to provide work experience.²⁵⁷ Community Works operates similarly, but places clients with community-based organizations (CBOs), municipal and/or local government, Indian Bands, Tribal Councils and Métis Nations. Work-based Training programs are delivered as part of the Job Start/Future Skills program, which provides unemployed people with work experience placements that include skill development leading to permanent employment, as well as recognition that the trainee has attained specific skills.²⁵⁷ There are other employment programs such as the Self-Employment Program where clients receive assistance to become self-employed. The program includes business plan development and mentoring by people experienced in local business development.²⁵⁷

Provincial services that provide bridging to employment include a range of career and employment programs, services, and supports that are available from alternate delivery partners/providers to assist individuals to become job ready.²⁵⁷ Canada-Saskatchewan Career and Employment Services (CSCES) provides access to career and employment services at 20 locations across the province. As well, staff contact employers and agencies to identify job opportunities for clients and work with training institutions, community-based organisations, municipalities and the private sector to prepare clients for employment.²⁵⁷

B. Federal

Human Resources and Social Development Canada (HRSDC), through its Aboriginal Affairs Directorate (AAD), is responsible for the policy and program design of Aboriginal labour market programming. AAD, with the assistance of Service Canada, is responsible for the administration and management of service delivery for the Government of Canada's two major Aboriginal labour market programs: the Aboriginal Human Resources Development Strategy (AHRDS) and the Aboriginal Skills and Employment Partnership program (ASEP).²⁵⁸

The AHRDS is a \$1.6 billion initiative launched in 1999 that was subsequently renewed at the same level of funding until March 31, 2009. AHRDS includes 80 First Nation, Inuit and Métis Agreement Holders (AHRDAs) and some 220 sub-agreement holders across the ten provinces and three territories.²⁵⁸ The AHRDS is a community-based strategy designed to help Aboriginal people prepare for, obtain and maintain employment. Under this strategy, Aboriginal organizations design and deliver employment programs and services best suited to meet the unique needs of their communities.²⁵⁸ AHRD programs in Saskatoon include the Gabriel Dumont Institute Training & Employment (GDI) and the Saskatchewan Indian Training Assessment Group Inc.²⁵⁸

ASEP is an \$85 million multi-year, opportunity-driven initiative launched in 2003 to provide Aboriginal people with sustainable jobs and careers in major economic development ventures underway across Canada in the mining, oil, gas, construction, forestry and hydroelectric industry.²⁵⁸ As of February 2007, nine ASEP projects have received multi-year funding ranging from \$2.8 million to \$22 million. These projects will result in over 5,000 Aboriginal people being trained for over 3,000 long-term, sustainable jobs. There are no ASEP projects underway in Saskatchewan.²⁵⁸

In 1984, the Canadian Jobs Strategy (CJS) was introduced to provide active support to those individuals who were becoming dependent on social assistance. By focussing on equity groups (i.e., women, Aboriginal people, persons with disabilities and visible minorities), the CJS was designed to address the needs of a large portion of the social assistance caseload through training and work experience initiatives.²⁵⁹

The Canada Saskatchewan Job Creation Program and the Saskatchewan JOBS Program were joint federal provincial initiatives for the creation of short-term jobs for individuals who had exhausted their Employment Insurance benefits or had been in receipt of social assistance for at least three months.²⁵⁹ The programs provided subsidies to host employers equivalent to minimum wage and the employer portion of benefits in exchange for hiring worker participants into incremental employment positions.

Established in 1984, the New Careers Corporation (NCC) Work Experience and Training Program provided on-the-job training in Saskatchewan to enhance long-term employment prospects of social assistance recipients by providing participants with work experience and training in the construction field. In addition, the NCC offered trainees career and personal counselling, financial allowances during instructional terms and job search assistance.²⁵⁹

Review of Programs to Improve Population Employment Levels

The benefits of job search assistance programs in reducing participant reliance on social assistance or unemployment insurance are usually short lived.²⁵⁹

As mentioned previously, the Building Economic Independence program offered by the Ministry of Social Services mostly provides information to applicants who are job-ready on local job opportunities or services, with additional help in preparing for interviews. Currently, the Ministry spends \$60 million out of \$64 million on wages for its own staff to run the program. Although the program has been successful in transitioning people with disabilities back to work (672 out of 1,572 or 43%); it has not been successful for those without a visible disability (318 out of 28,288 or 1%).

The evaluation of the Saskatchewan JOBS Program (short-term jobs with subsidies to host employers equivalent to minimum wage) found that a considerably high proportion of participants did not even complete the program (54%).²⁵⁹ Only 20% of the jobs created through wage subsidies continued after program completion.²⁵⁹

Studies on pre-employment training programs working in isolation indicated only moderate effectiveness in integrating social assistance recipients back into the workforce. Less than one-third of the participants actually found jobs following the training.²⁵⁹ In addition, pre-employment training programs have met with only marginal success with respect to reducing social assistance payments made to participants. From a budgetary perspective, these programs

were found to be a cost-ineffective means of integrating social assistance recipients into the labour market.²⁵⁹

Pre-employment skills programs (without adaptation) or job search services working in isolation tend to be effective for job-ready applicants without special needs.²⁵⁹ When clients have physical and mental disabilities, or face any type of violence, alcohol related, drug related, family centered or behavioural problems, then a coordinated combination of adapted skills training, on the job experience and life skills training are also required.²⁵⁹ Evaluations in both Canada and the United States have found that this type of training and support have positive implications for increasing employability and reducing reliance on income support.²⁵⁹ The life skills component, however, appears to be more effective for women than men.²⁵⁹

Reviews of the Edmonton Goodwill Rehabilitation Service in Alberta and the New Careers Corporations in Saskatchewan suggest more positive employment outcomes as a result of comprehensive programs.²⁵⁹ The Edmonton study reports that 80% of trainees were employed in jobs for which they were trained. Similarly, the evaluation of the New Careers Corporation indicated that 68% of former clients were employed at program completion. As mentioned previously, these programs included skills training, individual career and personal counselling, financial allowances during instructional terms, job search assistance and on the job experience. Evaluations of similar programs in Alberta, Québec and Ontario suggest that these programs have successfully integrated social assistance recipients into the workforce. For example, the Training on the Job Program in Alberta and the PSMT in Québec were found to have a significant impact on reducing the proportion of clients in receipt of social assistance.²⁵⁹

Studies suggest that clients of on-the-job training programs delivered through private contracted agencies fare better than those of programs delivered through the public sector.²⁵⁹ Studies also found that training programs that are more vocationally oriented are more likely to improve the employability of social assistance recipients than is academic upgrading based on a classroom format.²⁵⁹ Programs appear to yield the best results with respect to helping clients find work when programs focus on the individual needs of clients.²⁵⁹ It is interesting to note that the two types of programs which have met with the least success in improving employability (pre-employment training without adaptation and job search assistance working in isolation) are both aimed at improving generic job skills and job search strategies yet both are also the most common programs offered regardless of jurisdiction.²⁵⁹

Work earning supplements are income supplements that are provided to social assistance recipients who earn wages from employment. Based on short term evaluations of the Self Sufficiency Project (SSP) in British Columbia and New Brunswick in Canada and the Minnesota Family Investment Program in the United States, the earning supplement programs achieved the objective of financial self-sufficiency and reduced poverty levels.³⁹ Since that time the SSP has been completed and evaluated. Findings from the evaluation report showed that SSP recipients had increased earnings of \$2,405 per year compared to control group members.⁴⁰ The increased earnings helped reduce poverty amongst SSP recipients and increased employment. The net cost to government of the program was \$110 per year per SSP recipient.⁴⁰ The SSP and three additional earning supplement programs in the United States were evaluated in a second paper.⁴¹ The main findings were that recipients of earning supplements are more likely to work, earn more and have more income than control group members.⁴¹ Overall, work earning supplements (and the removal of work earning clawbacks) show substantial promise in reducing low income levels.

One of the most well known employment initiatives was conducted in the United States based in reform to social assistance. On August 22 1996, President Clinton signed the “Personal Responsibility and Work Opportunity Reconciliation Act.” This bipartisan welfare reform plan used a carrot and stick approach to making welfare a transition to work. Under the new law, welfare recipients must work after two years on social assistance. After five years of social assistance, recipients would become ineligible for cash assistance. The new law also provided various opportunities and incentives. For example, an extra 3.5 billion was allocated towards child care funding in order to help more mothers move into employment. As well, personal employment plans were initiated at the state level to identify education, training and job placement services needed to promote entry into the workforce. The law also included the most significant crackdown on child support enforcement measures with tough new penalties for delinquency.²⁶⁰

The goal of the program was to remove people from welfare and return them to work. The first goal had substantial success. There were 1.6 million fewer people on welfare in 2000 in comparison to 1996; a reduction of approximately one third of all cases. The second goal of return to work had elements of success. Fifty percent of those who left welfare returned to work, 20 percent did not return to work and did not receive welfare and 30 percent returned to welfare.^{261,262} Of the 50% who returned to work, 8% had jobs that paid wages that moved the former recipient above the poverty line.²⁶²

The new law was less impressive, however, when other outcomes were reviewed. Of the former welfare recipients, 33.4% had to cut or skip meals because there was not enough food and 38.7% were unable to pay their mortgage or rent.²⁶² In the first year of the new law, 675,000 people lost their health insurance as a result of transitioning from welfare (which has Medicaid) to work (where low income earners often do not have health insurance through their employer). Only 25% of those who left welfare to get a job had employment based health insurance.²⁶³ Of the 675,000 people who lost their health insurance in the first year of the law, 400,000 were children.^{263,264} As well, the number of children living in extreme poverty (defined as living below one half of the poverty line) grew by 400,000 from 1995 to 1997 despite a rapidly expanding American economy. Census data reveals that low income single mothers saw their incomes increase by 13.7% from 1993 to 1995 prior to new legislation, but their incomes reduced by 6.7% from 1995 to 1997 post legislation.²⁶⁵

As mentioned, a large number of people were removed from welfare during the initial years of the new legislation. The Council of Economic Advisors reviewed the impact of the economy in comparison to the impact of the new legislation towards reducing caseloads. Prior to legislation, from 1993 to 1996, the expanded American economy was responsible for reducing welfare caseloads by 26-36%. After legislation, from 1996 to 1998, the new legislation was responsible for 35% of the decline in recipients.²⁶⁵ The data suggests that the expansion of the economy should be the first course of action in attempting to reduce welfare caseloads.

Employment Disparity Evidence Based Policy Options

Regional:

Evidence Based Policy Option #33 – Setting Measurable Goals: More Employment for Aboriginal People

Aboriginal representation in the workforce should increase to 15% of full time civil service jobs, 15% of management positions and 15% of professional workplaces within 10 years; or by 2017.

- To achieve this goal, the Saskatoon Health Region and the University of Saskatchewan should initiate a proactive Aboriginal Youth recruitment strategy that includes in-house, on the job training and education in order to systematically reduce employment inequity in the professional workforce. Applicants would work half time as an assistant in training and go to University half time, but would receive full time reimbursement (i.e., as a nursing assistant). The cost for the University training would be paid for by the employer. Each applicant should be assigned a mentor/tutor to assist with clinical and academic training; to be provided by the employer. If required, personal counselling should be provided. In other words, the recommendation is to build the professional workforce instead of waiting for job-ready applicants.
- Similar programs for other government agencies like the Ministry of Social Services (i.e., social workers), the Saskatoon Public School Board and the Greater Saskatoon Catholic School Board (i.e., teachers), the University of Saskatchewan (i.e., professors) and the City of Saskatoon (i.e., engineers) should also be considered.

Rationale:

Aboriginal people represent 15% of the Saskatoon population, yet Aboriginal people only represent 8% of full-time civil service jobs, 7% of management positions and only 2.5% in professional workplaces like the Saskatoon Health Region. We should set a goal of increasing Aboriginal representation to 15% of full time service jobs, 15% of management positions and 15% of professional workplaces within 10 years; or by 2017. The alleviation of this disparity will take more than representative workforce employment equity initiatives.

The concept of pro-actively building a professional work force, instead of waiting for applicants to apply, is modelled after the military. As one can imagine, it is challenging to recruit fully trained physicians into the Armed Forces. As such, the Canadian Forces Medical Services (CFMS) provides training, an annual salary while in training and reimbursement of tuition fees in return for four years of service following graduation.²⁶⁶ In response to this new initiative, the CFMS has had a 300% increase in medical officers in comparison to five years ago. Retention at the mandatory employment of four years is 67%.²⁶⁶ If the military can successfully recruit and retain physicians during a war in Afghanistan, than regional and provincial governments can build a professional Aboriginal workforce.

This comprehensive strategy is similar to Ireland's plan to provide education, then skills training and then targeted employment to marginalized groups (20% of all jobs in marginalized neighbourhoods were reserved for local residents). The goal in Ireland in 1997 was to decrease unemployment from 11.3% to 6% and long term unemployment from 7% to 3.5%. By 2000, unemployment was at 4% while long term unemployment dropped to 1.2%.

Provincial:

Evidence Based Policy Option #34 – Increase Minimum Wage

The minimum wage should be increased to \$10 per hour in order to encourage employment, make work more attractive than employment assistance and lower the amount of children living in poverty.

Rationale:

A major reason why Canada has so many working poor is because almost one in five workers earn less than \$10 an hour.²⁶⁷ Saskatchewan's minimum wage increased from \$5.90 in 1968 to \$9.47 per hour in 1976. From 1976 to 1989, the minimum wage declined to a low of \$6.37 per hour.²⁶⁷ By 2007, the minimum wage reached \$7.55 per hour.²⁶⁷ The 2006 low income cut-off (LICO) was \$18,260 per year for a single individual in a city the size of Saskatoon. The 2006 LICO can be expressed as an hourly wage requirement of \$8.95; which is only enough to each LICO.²⁶⁸

The proposed change in the minimum wage is consistent with England's position on how to promote employment and reduce poverty. In fact, England felt minimum wage was such a high priority that it legislated a national minimum wage. As a result, England had the combination of the highest employment rate and the lowest unemployment rate of all G8 countries for the first time in 50 years. The national minimum wage was also credited with removing 800,000 children from impoverishment in eight years (1997 to 2005). In Québec, the increase in minimum wage was designed to make work more attractive than employment assistance in order to enable workers to progressively overcome poverty.

While a minimum wage increased to the LICO would help reduce poverty, it cannot be expected to eliminate poverty alone. Minimum wage policy is but one tool in a toolbox of policy options which, taken as a whole, can go a long way to addressing Saskatchewan's persistent poverty problem.²⁶⁷

Evidence Based Policy Option #35 – More Control for Aboriginal People over Employment and Academic Programs

More control for Aboriginal people over their own employment and academic programs.

Rationale:

There are many barriers that prevent Aboriginal people from fully participating in the labour market. These issues include low levels of education, training, the difficulty of achieving work and family balance, childcare needs, lack of knowledge of existing and future employment opportunities, recruitment issues, the need for workplace supports, inflated job qualifications, union and collective agreement issues and even racism.²⁶⁹

Whenever Aboriginal people are given control over their own programs and institutions, they have achieved higher rates of enrolment, graduation and employment.¹²¹ There should be more partnerships between Aboriginal and non-Aboriginal institutions that allow Aboriginal

communities to draw on the expertise of existing institutions while providing culturally relevant educational and employment opportunities for Aboriginal students. In the eight programs operated under the First Nations Partnership Program (FNPP), student retention and program completion was twice the national average for Aboriginal post-secondary education.²⁶⁸

If Aboriginal control over their own employment and academic programs is not possible for whatever reason, at the very least Aboriginal people should have more influence on how government programs are run for Aboriginal people.

Evidence Based Policy Option #36 – Support Aboriginal Owned Businesses

Support the creation of Aboriginal owned businesses by signing preferred supplier contracts.

Rationale:

One potential way to provide good employment opportunities for Aboriginal people is to support the creation of Aboriginal-owned business ventures. Cameco is leading the way in creating opportunities for Aboriginal owned businesses to provide services to Cameco's operations.²⁶⁵ Their Northern Preferred Supplier program seeks to replace southern service providers with either partially northerner-owned joint ventures or entirely northerner-owned businesses.²⁶⁵ Cameco now has 18 suppliers under this program, including such businesses as Athabasca Catering and Northern Resource Trucking.

Various government groups (i.e., Saskatoon Health Region, City of Saskatoon) should follow the lead of Cameco and sign more service or supply agreements with Aboriginal owned business ventures. Businesses owned by Aboriginal people seem to be very successful at recruiting Aboriginal workers to their work force.

Evidence Based Policy Option #37 – Comprehensive Return to Work Programs

Return to work programs should include a comprehensive combination of adapted skills training, job search, job placement, on the job experience and life skills training in order to increase chances of transitional return to work. Health services should augment the return to work process when required.

Rationale:

Pre-employment skills programs or job search services working in isolation tend to be effective only for job-ready participants without special needs without adaptation. These programs currently form the basis of Building Economic Independence programs - except when clients have physical and mental disabilities. However, when clients face any type of violence, alcohol related, drug related, family centered or behavioural problems, a comprehensive combination of adapted skills training, job search, job placement, on the job experience and life skills training should be offered in order to increase chances of transitional return to work. When required, these programs should be augmented with health services (i.e., addiction services or mental health services).

These types of comprehensive programs were found to be successful in Alberta, Saskatchewan, Québec and Ontario. In Alberta, 80% of trainees were employed and in Saskatchewan, 68% of clients were employed at program completion.

Evidence Based Policy Option #38 – Social Assistance as a Transition to Work

Use Social Assistance as a transition to work when possible with enhanced benefits that are time sensitive (i.e., 5 years) to ensure that they achieve their intended results.

Rationale:

The introduction discusses the positive impact of work on health status. As such, return to work is in itself a determinant of health that should be sought after when applicable.

In the United States, a new law was introduced to mandate work after two years and terminate benefits after five years if return to work was not obtained. The results were mixed. About 50% returned to work but only 8% had a job that made enough money to live above the poverty level, along with other less than impressive outcomes.

A number of enhanced benefits for adults on social assistance were introduced throughout this document for education, skills training and employment. In order to promote return to work, the enhanced benefits should be time limited. The enhanced benefits should be provided for a maximal term of five years. If return to work is not obtained after five years of enhanced benefits, the social assistance recipient would revert to their original benefits currently existing in 2008. Those with a medically certified disability would be exempt. As well, no reductions to enhanced benefits should occur to children as they can not be held responsible for their living conditions.

Summary

A major policy option is to increase labour force participation of Aboriginal residents. In our survey of Saskatoon residents, 67.5% supported employment equity programs (section 2.11). Another recommendation was to increase the minimum wage of which 71.3% of the population supported. Other recommendations included work earning supplements (84.1% support) and more subsidized trades training (82.3% support).

“Employment increases status, power, and economic independence, as well as ... social support and recognition from others”²²¹

3.1f.

Lemstra M

Disparity in Access to Health Services

Disparity in access to essential services by social stratification is not a new concept. An example is the sinking of the steamship Titanic whereby 100% of the first class children were saved in comparison to 34.2% of third class children.^{270,271} Additionally, 97.2% of first class women were saved in comparison to 46.1% of third class women. It is interesting to note that 97.2% of first class women were saved in comparison to 34.2% of third class children.^{270,271} Lord Meresay's report to the British Parliament includes the following explanation:

"It has been suggested before the Enquiry that the third-class passengers had been unfairly treated; that their access to the boat deck had been impeded; and that when at last they reached that deck the first and second-class passengers were given precedence in getting places in the boats. There appears to have been no truth in these suggestions. It is no doubt true that the proportion of third-class passengers saved falls far short of the proportion of the first and second class, but this is accounted for by the greater reluctance of the third-class passengers to leave the ship or by their unwillingness to part with their baggage".²⁷¹

Although unwillingness of third class passengers to leave a sinking ship is a possible explanation, it is more likely that differential access to the boat deck (location) and life boats (services) are better explanations for differential survival patterns on the Titanic.

In order to prevent disparity in health status by socioeconomic status, initiatives in Saskatchewan were adopted by the Canadian government in 1957 with the Hospital Insurance and Diagnostic Services Act and in 1966 with the Medical Care Act. The Canada Health Act was introduced on April 1, 1984 with five governing principles: public administration, comprehensiveness, universality, portability and accessibility. The fifth criterion, accessibility, mandates that insured persons must have reasonable and uniform access to insured health services, free of financial or other barriers.²⁷²

Differential access to prevention and treatment services by income status is believed to be more pervasive in the United States.²⁷³ Problems in accessing care, however, are not restricted to the United States alone. In a population based survey of 8,688 Americans and Canadians, disparities in access to health care on the basis of income and cultural status were found for both countries; they were just more common in the United States.²⁷³ Universal coverage for payment of services was found to reduce, but not eliminate, disparities in access to health care in Canada.²⁷³

A 2006 report from the Saskatoon Health Region found vast disparity in health status by neighbourhood income.³⁶ The greatest health disparities were observed in the incidence of reportable communicable diseases (chlamydia, gonorrhoea and hepatitis C), public health indicators (teen births and infant mortality), mental health (suicide attempts and mental health disorders) and primary care (diabetes, COPD, CHD). There were also large differences in child immunization coverage rates. The objective of the current section was to review if there was

differential geographical access to prevention and treatment services bases on neighbourhood socioeconomic status.³⁶

Locations and services were determined by interviews with directors and managers of the Saskatoon Health Region. Written information was collected on physical location of facilities but also location of outreach services as of August 2006. All workforce information was collected based on full time equivalents (FTE). As well, the registry for all relevant professional associations and the directory of the phone book were reviewed to determine location of private practice practitioners and services.

Table 1 Physical Location of Services and Outreach Services by Neighbourhood Income		
	Six Low Income N = 18,228	Rest of N = 184,284
1. Public Health Services		
FTE physical location	0	134.5
FTE/ 10,000 population	0	7.3
2. Primary Care		
FTE Family Physicians	11	239
FTE /10,000 population	6	13
3. Mental Health Services		
FTE Community Services	19	87.5
FTE/10,000 population	10.4	4.7

Editor's Note: Public Health Services has re-allocated 9.3 full time equivalent staff to Saskatoon's low income neighbourhoods since the publication of the initial Health Disparity by Neighbourhood Income 2006 report.

As can be seen in Table 1, Saskatoon's six low income neighbourhoods do not have a proportionate level of services based on population size; let alone accounting for disease incidence. As of August 2006, all 134.5 public health staff were physically located outside of Saskatoon's six low income neighbourhoods, with only modest outreach services (1.9 FTE). Adjusting for population size, the six low income neighbourhoods had less than half as many primary care family physicians. Mental health community services had more services in the low income neighbourhoods although almost all of these services were for a tertiary detoxification center, not for primary or secondary mental health prevention services.

Saskatoon's six low income neighbourhoods represent 9.0% of the Saskatoon population. From an absolute perspective, Saskatoon's six low income neighbourhoods contribute a disproportionate incidence of diseases and disorders. For example, a review of reportable communicable diseases and public health indicators from 2001 to 2003 suggest that the six low income neighbourhoods contribute 24.6% of chlamydia, 36.7% of gonorrhea, 42.3% of hepatitis C, 28.3% of teen pregnancy and 27.0% of infant mortality.³⁶ The vast differences in absolute counts by population size translate into even more significant relative differences in health status. Comparing the six low income neighbourhoods to the rest of Saskatoon, chlamydia incidence was 242% higher, gonorrhoea incidence was 491% higher, hepatitis C incidence was 658% higher, incidence of teen births was 318% higher and the incidence of infant mortality was 171%

higher (Table 2).³⁶ This presents a challenge to the Saskatoon Health Region as some of the health outcomes are disproportionate to the national average. For example, the incidence of chlamydia and gonorrhea in Saskatoon are double the national average.²⁷⁴

Table 2 Communicable Disease and Health Indicators for 2001-2003 Combined by Neighbourhood Income

	Six Low Income Neighbourhoods N = 18,228	Rest of Saskatoon N = 184,284	Ratio Low to Rest
Communicable Diseases* 2001, 2002, 2003 combined			
Chlamydia	3121.6	912.2	3.42 (3.24-3.61)
Gonorrhea	724.2	122.6	5.91 (4.77-7.32)
Hepatitis C	1228.9	162.2	7.58 (6.38-9.01)
Health Indicators** 2001, 2002, 2003 combined			
Teen Births	87.1	20.8	4.18 (3.61-4.84)
Infant Mortality	10.4	3.8	2.71 (1.30-5.65)

*per 100,000 population

**per 1000 population

Planning service allocation is difficult - especially when dealing with complex health disorders that have a broad range of determinants. That said, location of services remains a factor that is under the complete control of decision makers. The accessibility principle within the Canada Health Act mandates that insured persons have “reasonable access to insured health care services on uniform terms and conditions, unprecluded, unimpeded, either directly or indirectly, by charges or other means”.²⁷² It is unclear if the spirit of this principle is to simply provide reasonable and uniform access to insured health services (as per the first part of the quotation) or to ensure services are provided without impediment (i.e., location) to those that are disadvantaged (as per the second part of the quotation). As such, the question remains: should a health region with significant health disparity allocate limited resources equally in a population health approach or should a health region have targeted intervention strategies that are easy to access for those most in need?

Three conditions must be present to justify a population health approach. First, the risk of disease must increase gradually with increasing levels of exposure. This condition is met as the incidence of reportable communicable disease and health indicators increases as poverty levels increase. Second, moderate levels of exposure must be wide-spread in the population. According to the 2001 census, 17% of Saskatoon households meet the definition of poverty. This condition is also met. However, the disease (or risk factor) must also have a high prevalence rate. As such, a population-based approach to preventing reportable communicable diseases or public health indicators might not be warranted due to low disease incidence and prevalence. Population-based approaches would perhaps be more suited for more common disorders like obesity and smoking prevention or a prevention service like child immunizations. If a targeted intervention approach is chosen, in comparison to a population based approach, the rates of

communicable disease incidence suggest that approximately 35% of all chlamydia, gonorrhea and hepatitis C public health services should be re-allocated to Saskatoon's six low income neighbourhoods.

Health disparities persist among lower SES groups despite their overall use of health services. Because they are more often and more severely sick or injured, people in the lowest income groups use approximately twice as much health care services as those in the highest income groups. On the basis of an estimation of health care resources used by Canadian households, approximately 20% of total health care spending may be attributed to income disparity alone.²⁷⁵ By this estimate, Saskatchewan could save approximately \$640 million per year in health care treatment costs if there was more equity in population income levels.

In section 2.10, we learned that low income residents in Saskatoon use more health care treatment services than other residents. Overall, this results in an extra \$179 million in healthcare costs in Saskatchewan alone.

The availability of fully insured Medicare services (and no-cost additional services for status Indians and others eligible for full subsidy) has not eliminated major health disparities. Large increases in health care spending - up 55% between 1997 and 2003 - have not been able to reduce health disparities. This reaffirms how important it is to evaluate not only accessibility but also the effectiveness of health services for those in poorest health.²⁷⁵

In the past fifty years, all developed societies have expanded their health care treatment systems and (with the exception of the United States) have introduced systems of financing designed to make health care accessible to the entire population regardless of ability to pay.²⁷⁶ Yet the longitudinal data presented previously in other chapters shows no evidence that the introduction of universal health care has reduced the mortality gradient observed in lower socioeconomic groups in comparison to higher socioeconomic groups. Whatever underlies the gradient does not seem to be very sensitive to the provision of health care.²⁷⁶

Since 1960, Japanese life expectancy and infant mortality rates have improved from substantially below most European countries to markedly above.²⁷⁷ The extraordinary increase in Japanese health outcomes does not appear to follow from more medical care.²⁷⁸ All first world countries were greatly expanding their health care treatment systems over this time period but Japan was not in the forefront.²⁷⁶ In 1995, the United States spent 14.5% of its gross domestic product on medical care. In comparison, Japan spent 7%. The argument would have to be pretty sophisticated to explain how Japan spends less than half on health care treatment in comparison to the United States, but has significantly higher health outcomes.²⁷⁹ One possible explanation is that the Japanese recognized that substantial expansion of health care draws important resources away from other sectors that have greater impact on health. By limiting the growth of their health care treatment sector, the Japanese were able to free up resources for investment in physical environments and intellectual development.²⁷⁶ This investment led to a rapid growth in prosperity which contributed to a remarkable improvement in health outcomes.²⁷⁶

Wealth alone, however, does not predict health. Among rich countries, gross domestic product per person does not correlate with life expectancy. The United States is the richest country in the world yet life expectancy in the year 2000 was 73.9 for men and 79.5 for women. In Japan, life expectancy was 77.5 for men and 84.7 for women in the same year.²⁷⁹ In the United States, for example, the lower 20% of the population receive 5.2% of all income. In Japan, the figure

is double at 10.6%.²⁸⁰ Having become a rich country is surely helpful to Japan but, as we have seen, the way the wealth is distributed may be more important. It reflects a commitment to relative fairness and equality.²⁷⁹

If you are in lower socioeconomic status, your health suffers. If, in addition, you live in a more deprived area, your health suffers even more. It is somewhat artificial to try to separate places from people, since part of what makes up a place is the people who live there.²⁷⁹ The link with the social gradient is that people are no more randomly assigned to neighbourhoods than they are to levels of social status.²⁷⁹ If transportation, medical care, education, recreation, quality housing and a safe neighbourhood in which to raise children all depend on individual income, then individual income will be an important measure of capability to participate in society.²⁷⁹ If, on the other hand, these essential variables were all provided by the community, individual income would matter less.²⁷⁹

So, what do we do? If all things are equal, better access to health care is associated with reduced disparities, but all things are not equal.²⁷⁵ The report *Reducing Health Disparities – Role of the Health Sector: Discussion Paper* provides examples of how health care in Canada can effect health disparities below:²⁷⁵

1. Lower SES groups use some health care services less; even where programs are universal and have no direct cost to users.
2. Lower SES groups have more complex needs and are less likely to have a continuous source of care and providers familiar with their needs.
3. Some services are partly or entirely uninsured in Canada. Among the most notable are prescription drugs. While most provinces provide some coverage for those on social assistance, many people do not fill prescriptions because they cannot afford them.
4. Higher SES groups are more likely to make use of preventative services.
5. In general, higher SES groups are more likely to receive optimal care, thereby widening disparities. High SES groups are more likely to be referred to specialists.
6. An episode-oriented medical and hospital system that focuses on discrete events and crises is often unable to address the more complex and continuous needs of at-risk populations. Primary health care innovations and reforms to increase comprehensiveness and accessibility have great potential to benefit lower SES groups.²⁷⁵

Thus, there is a need and an opportunity for the health sector to play an important role in any health disparity reduction strategy. The health sector is a key determinant of population health. If health care and public health programs and services do not include a focus on the needs of disadvantaged individuals, populations and communities, then there is a risk of increasing rather than reducing health disparities.²⁷⁵

Evidence Based Policy Options for Health Services

The report *Reducing Health Disparities – Role of the Health Sector: Discussion Paper* prepared by the Health Disparities Task Group of the Federal/Provincial/Territorial Advisory Committee on Population Health and Health Security recommends four key policy directions (policy options #39-#42) for the health sector:²⁷⁵

Evidence Based Policy Option #39 – Health Disparity Reduction: A Health Sector Priority

Make health disparities reduction a health sector priority in the Saskatoon Health Region.

Rationale:

Leadership on disparities reduction within the health sector is needed to facilitate the roles of the health sector and to support growing awareness and policy action in other sectors to achieve health gains.

Evidence Based Policy Option #40 – Integrated Planning for Disparities Reduction

Integrate disparities reduction into all health programs and services in the Saskatoon Health Region.

Rationale:

The health system is a determinant of health. If health care and public health programs and services do not include a focus on the needs of disadvantaged individuals, population and communities, there is a risk of increasing rather than decreasing health disparities.

Evidence Based Policy Option #41 – Intersectoral Action

Engage other sectors in health disparities reduction other than health care treatment

Rationale:

We need to engage citizens in order to foster public awareness in order to gain public support to reduce health disparities. Specifically, we need to develop communications and education strategies to increase public awareness of the determinants of health.

Once public awareness and support have been built, intervention should include the public sector, the private sector and not-for-profit organizations in order to be successful.

Evidence Based Policy Option #42 – Knowledge Infrastructure

Strengthen knowledge development and exchange activities on the topic of health disparity

Rationale:

Comprehensive health disparity reduction plans originating in other countries all started with a commitment to document the extent of disparity, followed by the development of evidence based policy options and concluded with an evaluation plan.

Although we need to advance our understanding of the causal mechanisms of health disparity, we need much more work in Canada on evaluations of the effectiveness of interventions; including cost effectiveness.

Evidence Based Policy Option #43 – More Health Resources in Low Income Neighbourhoods

The number of health resources in Saskatoon's low income neighbourhoods should be proportionate to the size of the population and its disproportionate number of health disorders.

- We suggest that property tax abatements be created for more physicians and nurses to work in low income neighbourhoods. We suggest the City of Saskatoon reduce or eliminate property taxes for primary care clinics in low income neighbourhoods in order to attract primary care physicians and nurses.

Rationale:

These recommendations will address the issue of accessibility to ensure services are offered without impediment to those who are disadvantaged.

A property tax reduction or elimination policy would be consistent with actions taken by the Netherlands. The Netherlands, however, recognized that access to good health care is not enough.

Evidence Based Policy Option #44 – Integrated Health Services in Low Income Neighbourhoods

The Saskatoon Health Region should offer integrated and comprehensive services in Saskatoon's low income neighbourhoods including public health, mental health, addictions and primary care services.

A component of this option was presented in policy option #15 – integrated and comprehensive services in community schools.

Health disparities in Canada persist among lower socioeconomic residents despite higher overall use of health services. Large increases in overall health care spending have been unable to reduce health disparities. As such, services need to be accessible but effective as well.

Rationale:

In the Netherlands, it was recognized that persons from lower SES require a different approach to care in order to achieve similar health outcomes.

Summary

In section 2.3, it was revealed that there was significant health disparity by neighbourhood income in Saskatoon. In this section, it was shown that these low income neighbourhoods have less physical access to health care services. It seems reasonable that low income people should have the same access to health services as other residents in Saskatoon, but it also seems prudent that health services be offered in a different way that is more continuous and comprehensive. In order to be truly effective, modified health services should be seen as an adjunct to social intervention in order to reduce health disparity.

“At quite an early stage in any analysis it becomes apparent that many of the conventional explanations of the determinants of health – of why some people are healthy and others not – are at best seriously incomplete if not simply wrong”¹⁶⁰

3.1g.

Lemstra M and Scott C

Disparity between Cultural Groups

The arrival of European settlers to what is now North America has not been a successful venture for the original occupants. The arrival of infectious diseases quickly reduced the native Aboriginal population from about 20 million to 1 million.²⁸¹

The following is a brief discussion of the history of colonization of Aboriginal people in Saskatchewan and Canada. Why is this important? Throughout this document there is evidence that Aboriginal people are more likely to experience social disparity (lower income levels, lower education, higher unemployment) and this results in greater health disparity in essentially all health outcomes and indicators. This leads to an impression (by some) that Aboriginal cultural status is in some way associated with different social and health outcomes. This section intends to provide a brief discussion on how government policies led to social disparity in our Aboriginal population in the past – and how these policies (past and present) continue to impact Aboriginal people today.

The Royal Proclamation of 1763 states:

And whereas it is just and reasonable, and essential to Our Interest and the Security of Our Colonies, that the several Nations or Tribes of Indians, with who We are connected, and who live under Our Protection, would not be molested or disturbed in the Possession of such Parts of Our Dominions and Territories as, not having been ceded to, or purchased by Us, are reserved to them, or any of them as their Hunting Grounds.²⁸²

The British North American Act of 1867 (now known as the Constitution Act), states in section 91(24) that the federal government has exclusive legislative authority for “Indians, and Lands reserved for Indians.”²⁸² It was pursuant to this responsibility that the federal government passed the first comprehensive Indian Act in 1876, consolidating pre-Confederation legislation.²⁸²

In the book, *Saskatchewan: A New History*, Waiser describes the impact of settlement in Saskatchewan.^{*283} In the mid 1800s, there was a rush of settlers to Saskatchewan. There was now an urgency to extinguish all Aboriginal title in the new province in order to remove any obstacles to future development. As such, the federal government signed Treaties 2 (1871), 4 (1874), 5 (1875), 6 (1876), 8 (1899) and 10 (1906). The treaties were not merely land transfer agreements but were meant to provide meaningful and ongoing assistance, especially in times of sickness and famine.²⁸³

Regrettably, the actual wording of the written treaties was not consistent with the verbal negotiations. For example, James McKenna, of Indian Affairs, told the Dene that the government expected them to pursue their subsistence activities and that there would be no interference with their lifestyle. McKenna also indicated that education, health care and relief would be provided

by the government – there was no need to amend the wording of the treaty.²⁸³ This discrepancy between the official treaty terms and McKenna's promises raises questions about the integrity of the overall process.²⁸³

Equally regrettable was the fact that actual land transfers for the treaties often did not end up in the hands of the intended recipients. For example, 498 awards of the 541 claims for Treaty 10 were scooped up by speculators acting on behalf of lawyers, bankers and businessmen.^{283,284} Land speculators hired people to impersonate individuals named on land certificates to appear at the Dominion Lands office to apply for land.^{283,285}

Settlers desired reserve land in prime agricultural districts and urged the federal government to relocate or reduce the size of the reserves. In contravention of the Indian Act and the signed treaties, the federal government gave itself the power in 1911 to take reserve land without consent.^{283,286} Land surrenders in Saskatchewan during this period were justified on the grounds that the reserves were too large and the federal government had a moral duty to correct the disparity.²⁸³ Cowessess Indian reserve was reduced by 40 percent in 1907, Muscowpetung was reduced by 50 percent in 1909, Ocean Man was reduced by 100%, Pheasant's Rump was reduced by 100% and Kahewishtakaw was reduced by 70% in 1907.²⁸³ Many of the buyers of the surrendered Indian land were speculators who purchased the land by private tender and then resold it for a quick profit.^{283,286}

The Dene, Cree, Saulteaux, and Assiniboine bands had formally negotiated treaties with the Canadian government for the surrender of vast sections of land in the southern half of the future province of Saskatchewan in exchange for federal assistance to help make the transition to agriculture. Attempts to convert Indians from hunters to farmers met with limited success for a number of reasons. First, Indian reserves that were formally relocated from southern Saskatchewan to northern Saskatchewan were practically useless for farming in the early 1900's.^{283,286} Second, agricultural aid promised in the treaties (tools, animals and seeds) was slow to arrive and inadequate.²⁸³ Perhaps most importantly, however, was the fact that Indian agents regulated off-reserve sales of agricultural produce and often denied permits in order to prevent competition with white settlers. Settlers could be fined for buying from Indian farmers without a permit.²⁸³ This form of government in the free market interference effectively killed Indian farming initiatives and led to the mistaken conclusion that they were never meant to be farmers.^{283,287}

Large-scale commercial fishery also invaded the northern lakes and netted millions of pounds of fish for Canadian and American markets. These activities hurt the Aboriginal people of the region by placing a severe strain on traditional game and fish resources. According to the Department of Indian Affairs report for 1908, Aboriginal fishing capacity declined by half in 1908 alone.^{283,288}

The disappearance of the once-great buffalo herds and fishing reserves combined with the failure of their first crops, precipitated widespread deprivation and out-right starvation. This hunger crisis was soon followed by the arrival of infectious diseases and other illnesses. The weakened state of many bands, not to mention their deprived living conditions, proved to be an ideal breeding ground for measles, scarlet fever, smallpox, whooping cough, diphtheria and tuberculosis.²⁸³ The increase in disease incidence led Indian Affairs officials to believe that Indians were a disease-ridden people.²⁸³ No-one believed that their deprivation had anything to do with Indian Affairs policies; choosing instead to attribute the poverty, sickness, and death of Aboriginal people to the inherent weakness of the race.^{283,289}

Duncan Campbell Scott, the deputy superintendent general of Indian Affairs decided that there was little in Indian culture worth saving and that Aboriginal people needed to be civilized and assimilated. Education would be the key to this transformation. During the western treaty negotiations in the 1870s, government representatives had promised that schools would be established on reserves “whenever the Indians shall desire it”^{283,290} But when it came time to provide on-reserve education, Ottawa decided to create off-reserve residential schools instead.²⁸³

Prime Minister John A. MacDonald told the House of Commons: “we must by slow degrees educate generation after generation until the nature of the animal is changed by the nature of its surroundings.”^{283,291} A national goal, he informed Parliament, was to assimilate the Indian people in all respects with the inhabitants of the Dominion.”^{292,293} The goal was to “kill the Indian and save the man.”²⁹²

In the book, *A National Crime*, Milloy eloquently describes Residential Schools.²⁹² There was agreement that children had to be taken away from their parents at the earliest possible age and kept until “their characters had been sufficiently formed as to ensure as much as possible against their returning to the uncivilized mode of life.”²⁹² To achieve this transformation, the Department of Indian Affairs considered it necessary not only to remove children from parents and their community and place them in the guardianship of the Department, but also to maintain that separation for as long as possible and as distant as possible from their family.²⁹² E. Dewdney, the Superintendent General of Indian Affairs, threatened to authorize the employment of Police to keep family away from the boarding schools.²⁹² “I want to get rid of the Indian problem,” Duncan Campbell Scott declared before a Parliamentary committee in 1920.²⁹² “Our objective is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic, and there is no Indian question, and no Indian Department.”²⁹² An amendment to the Indian Act in 1920 made it mandatory for every Indian child between the ages of seven and fifteen to attend boarding school.²⁹² J.A. Macrae of the Department of Indian Affairs concluded that “it is unlikely that any Tribe would give trouble of a serious nature to the Government whose members had their children completely under Government control.”²⁹²

The weight of school under-funding had driven the schools into deplorable condition. Badly built and ill-maintained, they were both the cause and the context of a dreadful crisis in sanitation and health. Throughout the industrial school era, children in the schools had been dying in unbelievable numbers. According to the deputy superintendent of Indian Affairs, Duncan Campbell Scott, “fifty per cent of the children who passed through the schools did not live to benefit from the education which they had received therein.”^{281,292} The condition of the schools, and the subsequent health of the children resulted in the Chief Medical Health Officer of the Indian Affairs Department, Dr. P.H. Bryce, to call the schools a “national crime” in 1922.²⁹⁴ Dr. Bryce charged that the trail of disease and death had gone on almost unchecked by any serious efforts on the part of the Department of Indian Affairs.”²⁹⁴ The Honorable S.H. Blake characterized the situation in the schools for the Minister of Indian Affairs, Frank Oliver, in the bluntest fashion: “the appalling number of deaths among the younger children appeals loudly to the guardians of our Indians. In doing nothing to obviate the preventable causes of death, brings the Department within unpleasant nearness to the charge of manslaughter.”²⁹⁴ In order to save expense, the children were buried two per grave.²⁹²

The children in residential schools were overworked, underfed, badly clothed, housed in unsanitary quarters, beaten with whips, rod and fists and chained and shackled.²⁹² School

records in Qu'Appelle revealed that the children were spending little time in the classroom. In a forty-two-day stretch, the children had been in class only nine days.²⁹² The schools were being turned into a "workhouse."²⁹²

For the children that survived, the most demoralizing factor was the physical and sexual abuse at the schools. In 1990, the Special Advisor to the Minister of National Health and Welfare on Child Sexual Abuse had revealed that 100% of children at some schools were sexually abused.^{292,295} A 1989 report found that eight out of ten girls under the age of eight were victims of sexual abuse and fifty percent of the boys of the same age had been sexually molested.²⁹² The survivors of the Indian residential school system have continued to have their lives shaped by the experiences in these schools. Persons who attended these schools continue to struggle with their identity after years of being taught to hate themselves and their culture. The residential school system led to a disruption in the transference of parenting skills from one generation to the next. Without these skills, many survivors had difficulties in raising their own children. In residential schools they learned that adults often exert power and control through abuse. The lessons in childhood were often repeated in adulthood with the result that many survivors of the residential school system often inflicted abuse on their own children. These children in turn use the same tools on their own children.²⁹²

Recently, the Federal government has apologized for its actions in residential schools with the following statement:

The Government of Canada acknowledges the role played in the development and administration of these schools. Particularly to those individuals who experienced the tragedy of physical and sexual abuse at residential schools, and who have carried this burden believing that in some way they must be responsible, we wish to emphasize that what you experienced was not your fault and should never have happened. To those of you who suffered this tragedy at residential school, we are deeply sorry.²⁹²

In 1982, Aboriginal and treaty rights were embodied in the written constitution for the first time in Canadian history. Two sections of the Constitution Act, 1982 relate directly to Aboriginal peoples – sections 25 and 35.

Section 25, in the Canadian Charter of Rights and Freedoms Part 1 of the Constitution Act, 1982, states:²⁸²

The guarantee in this Charter of certain rights and freedoms shall not be construed so as to abrogate or derogate from any Aboriginal, treaty or other rights or freedoms that pertain to the Aboriginal peoples of Canada, including:

- a) any right or freedoms that have been recognized by the Royal Proclamation of October 7, 1763; and
- b) any rights or freedoms that now exist by the way of land claims agreements or may be so acquired.²⁸²

Section 35 of the Constitution Act, 1982, states:²⁸²

The existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are hereby recognized and affirmed.²⁸²

For a hundred years, Aboriginal people had reduced or no rights and the objective of public policy was to end Aboriginal status. Recent changes in attitude are part of a widespread trend to seek ways to recognize and accommodate, rather than suppress, cultural differences.²⁸²

Editorial note:*

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Cultural Disparity Evidence Based Policy Options

Provincial:

Evidence Based Policy Option #45 – Aboriginal Self Determination

Aboriginal people in Saskatchewan should be afforded more control over health, social, education and justice policies and funding that disproportionately effect Aboriginal people.

Rationale:

A considerable body of knowledge now exists that describes comparative participation rates for Aboriginal people in many different types of programs. These studies consistently show that, relative to the non-Aboriginal population, Aboriginal people are over-represented in adult correctional programs, hospitals, mental health care facilities, alcohol and drug abuse treatment programs, programs for young offenders, family service programs, income security programs, social housing programs, programs for the unemployed, programs for neglected and abused children, and family violence programs.²⁸² These studies tend to conclude that social problems are the result of unemployment, poverty and lack of economic life within Canadian society.²⁸²

The federal Royal Commission on Aboriginal Peoples stated:

Self-government is the way forward and the main source of hope for Aboriginal people. It is the key to renewing the vigour of communities and societies, a prerequisite for ending the cycle of poverty and despair, and a means of enhancing both the self-respect of Aboriginal people and mutual respect between Aboriginal and non-Aboriginal people. In short, it is the potential turning point of modern Aboriginal history.²⁸²

Social programs that have been imposed on Aboriginal people by the governments of the dominant society have mostly failed Aboriginal people. Programs designed and run by Aboriginal people for Aboriginal people, on the other hand, have generally proven to be more effective and no more costly.²⁸²

In the book, *Aboriginal self-government in Canada. Current trends and issues*, Hylton and Fontaine suggest that Aboriginal programs are more successful than corresponding non-Aboriginal programs in:

- Incorporating principles, beliefs, and traditions that are a part of Aboriginal culture
- Attracting and retaining Aboriginal staff
- Involving the Aboriginal community in the design and delivery of the programs
- Fostering greater acceptance by individual clients and Aboriginal communities
- Creating economic benefits for Aboriginal communities
- Extending services that were previously unavailable through non-Aboriginal programs
- Drawing attention to social issues in aboriginal communities, and generating interest in, involvement with, and support for social programs in aboriginal communities
- Providing levels of service that equal levels of service available to non-Aboriginal communities
- Providing services at a cost that is no more, and is sometimes less, than the cost of corresponding non-Aboriginal programs.²⁸²

A concrete expression of the need for mutual respect between Aboriginal and non-Aboriginal groups is seen in the *Statements of Treaty Issues: Treaties as a Bridge to the Future*, published by the Office of the Treaty Commissioner for Saskatchewan.²⁸² Saskatchewan First Nations and representatives of the Government of Canada met at a treaty table with the province of Saskatchewan.²⁸² The parties agreed to adopt the principles of mutual recognition, mutual respect, reciprocity, and mutual responsibility articulated in the commission's report. The progress made in finding common ground provided a basis for restructuring relations to implement treaty-based self-government among Saskatchewan First Nations:²⁸²

We emphasize the idea of public attitudes because respect involves more than a change of heart within individuals. It requires us to examine our public institutions, their make-up, practices and symbols, to ensure that they embody the basic consideration and esteem that are owed to Aboriginal and non-Aboriginal languages and cultures alike.²⁸²

Let's provide some objective data on the benefits of self determination. In British Columbia, research was undertaken to try to explain why the rates of suicide in First Nations youth were so high. In British Columbia, the rate of suicide in First Nations youth ages 15-24 was 108.4 per 100,000 from 1987-92; in comparison to 24.0 per 100,000 for non-First Nations youth.²⁹⁶ Researchers from the University of British Columbia determined that the rates varied widely by level of self determination within each Reserve Community. When a Reserve Community had some level of self government, the youth suicide rate was only 18.2 per 100,000.²⁹⁶ When a Reserve Community had some level of control over self government, land claims, education and health services, the youth suicide rate was 0 per 100,000 population; an incredible finding.²⁹⁶ The authors suggest that young adulthood is a difficult transitional period for First Nations youth associated with self destructive thoughts when there is no control, and no hope for control, over their own communities.²⁹⁶

In summary, First Nations in Saskatchewan need more influence and control over health, social, education and justice policies and funding for programs that disproportionately effect First Nations people.

**Evidence Based Policy Option #46 – Ensure Federal Responsibility for
“Registered Indians”**

Federal:

The federal government must assume its full constitutional responsibility for all “Registered Indians” under section 91(24) of the Constitution Act, 1867. Jurisdiction and responsibility must go together.

Rationale:

There are 119,979 Registered Indians (does not include non-Registered Indians) living in Saskatchewan. This includes 58,418 on reserve, 59,730 off reserve and 1,831 on crown land.²⁹⁷

The health and social challenges are staggering, as well as the financial costs. For example, 53.5% of all First Nations in Saskatchewan are on social assistance.²⁹⁸ Although some on reserve health care costs are paid for by the federal government, hospital services, physician services and social services are paid for by the provincial government.²⁸²

Under the Constitution Act, 1867, section 91(24), jurisdiction over “Indians” is assigned exclusively to the federal government. The federal government has advocated that section 91(24) of the Constitution Act, 1867 allows it to exercise jurisdiction over Registered Indians but does not require the federal government to take responsibility for them. The relationship between federal jurisdiction over Registered Indians, and aspects of provincial jurisdiction such as health, education and social services, lies at the root of the confusion over responsibility in urban and off-reserve areas and services provided to on-reserve residents when they are off-reserve. We must advocate that jurisdiction and responsibility go together. The federal government has both jurisdiction and responsibility in relation to Registered Indians. The federal government has used divided jurisdiction to limit their own legal responsibility for Registered Indians. The federal government has shown a corresponding reluctance to provide support to Registered Indians no longer living on-reserve. For example, the federal government recently ceased to provide full reimbursement to provinces for social assistance delivered to Registered Indians after they leave a reserve. The federal government took the position that funding services for people living off-reserve was a matter of policy and not a treaty right.²⁹⁹

The resulting jurisdictional impasse has led to confusion among urban Registered Indians about responsibility for health and social services and to their distrust and disillusionment with both levels of government.

Aboriginal organizations have called for the expansion of federal responsibility for Aboriginal people living both on and off-reserve. Aboriginal people fear that the federal government will attempt to avoid its fiduciary duty and cut costs by transferring responsibility to provincial governments. In its efforts to manage its fiscal position, the federal government has limited the growth of expenditures related to a number of existing programs for Registered Indians by capping them. It has also cut funding for some programs and has generally been reluctant to implement new programs. This has resulted in pressure on the provinces to assume responsibility for essential programs.²⁹⁹

As a result of the confusion surrounding jurisdiction, policies have evolved ad hoc, with a great deal of variation between provinces. Most provinces have been reluctant to begin providing services directed specifically to urban Registered Indians, given their views on the federal government's responsibilities.²⁹⁹

Examples of Precedence:

- a) Since the 1960s, the Department of Indian Affairs and Northern Development (DIAND) had been funding social services provided to off-reserve Registered Indians. In 1991, it announced that it would no longer pay the full cost of social assistance for off-reserve Registered Indians. The funding arrangement would be replaced by the 50 percent reimbursement available under the Canada Assistance Plan. When full reimbursement ceased, the province transferred funding responsibility to municipalities. Municipalities then announced they would stop providing services. For a short time, off-reserve Registered Indians were denied social assistance. DIAND relented, indicating that it would temporarily reimburse Registered Indians for assistance provided to off-reserve people who had been refused provincial and municipal assistance. In 1992, Manitoba announced that it would provide full reimbursement for off-reserve status Indians as an interim measure until another arrangement could be worked out among the federal government, the province and First Nations. No discussions have taken place and the issue remains unresolved.
- b) *Wuskwi Siphik Cree Nation versus Canada and the Minister of National Health and Welfare*. Court file number T-383-98 in the Federal Court of Canada, Winnipeg, Manitoba, January 21, 1999. The action arose out of the federal government's decision to share jurisdiction and responsibility for Native health care with the Province of Manitoba. The Cree Nation claimed that the federal government's delegation of responsibility for Native health care violated its treaty and constitutional rights and resulted in deficiencies in health care. It sought declaratory and mandatory relief in order to obtain adequate and continuous health care. The federal government argued that the Federal Court had no jurisdiction because health care was a provincial matter, and mandamus was a remedy to be applied only to federal boards, commissions and tribunals.

Decision:

The motion from the federal government was dismissed. The Federal Court had jurisdiction to hear the action. There was ample case law and statutory support for applying the remedy of mandamus to the federal government. Pursuant to the Constitution Act of 1867, the Minister and the federal government were legally responsible for health care relating to First Nations.

Statutes, Regulations and Rules cited in the decision: Constitution Act, 1867, ss. 91(24), 92, 92(7); Constitution Act, 1982, s. 35(1); Federal Court Act, ss. 17, 18, 19, 44, 50.1(1); Federal Courts Jurisdiction Act, R.S.M. 1987, c. 270, s. 1; Federal Court Rules, Rules 364(2), 364(2)(e).

In summary, we encourage the following actions from the federal government of Canada to help alleviate the suffering within First Nations in Saskatchewan.

- Stop the unilateral off-loading by the federal government for the legal and financial responsibility for Registered Indians. This has cost Saskatchewan taxpayers approximately one billion dollars annually in health and social services costs alone. Policies have evolved ad hoc without any written agreement whatsoever as to why the province of Saskatchewan should pay for the legal obligations of the federal government.

-
- The government of Saskatchewan should insist that the federal government assume its full constitutional responsibility for all First Nations people under section 91(24) of the Constitution Act, 1867. The government of Canada signed treaties 2,4,5,6,8 and 10 with First Nations groups in Saskatchewan and should be expected to live up to its legal obligations. We must request that the government of Canada reimburse the province of Saskatchewan for the provision of hospital care, physician care and social services to Registered Indians whether they are on reserve or off reserve. The new money should be used within a comprehensive First Nations led poverty reduction strategy to stabilize income levels, ensure adequate housing, encourage education and stimulate employment for First Nations people.

Summary

The key recommendation is for Aboriginal self determination in areas like health, social and educational services. Regrettably, only 53.6% of Saskatoon residents believe Aboriginal people should have more control over Aboriginal social programs (Section 2.11). As stated previously by the Royal Commission on Aboriginal Peoples, self government is the way forward and is the main source of hope for Aboriginal people. In order to do this, we need to educate the general public about the historical injustices imposed on Aboriginal people in Saskatchewan and the benefits of self determination.

“It has been said that the measure of any society is what it does for its least fortunate group”²⁸

3.2.

Health or Social Disparity Progress to Date in Saskatoon

Initial Progress in Saskatoon towards Health Disparity Intervention

Upon publication of the initial Health Disparity by Neighbourhood Income study (section 2.3), Mark Lemstra, Gary Beaudin and Cory Neudorf of the Saskatoon Health Region initiated over 200 community consultations with 60 government and non-government organizations. The purpose of the community consultations was to transfer knowledge of the results of this initial study and build consensus on health disparity intervention.

As a result of the initial health disparity by neighbourhood income report and the community consultations, the Saskatoon Health Region (SHR) initiated some policy changes:

- a) SHR transferred approximately one million dollars of health resources to Saskatoon's six low income neighbourhoods with a primary focus on six elementary schools within those neighbourhoods (Building Health Equity),
- b) SHR incorporated "Partnering to Improve Aboriginal Health" as one of its five strategic directions to accomplish within the next three years,
- c) an Elders Advisory Council was created to consult with the Senior Leadership Team and Population Health Research of SHR, and
- d) a Memorandum of Understanding was signed between Population Health Research of SHR and STC to formally study health disparities and Aboriginal health in true partnership.

Agencies other than SHR also transferred resources to Saskatoon's low income neighbourhoods as a result of the health disparity study:

- a) The University of Saskatchewan Department of Paediatrics initiated two Paediatric clinics at St Mary's community school and W.P. Bate community school,
- b) The United Way allocated \$50,000 for inner-city after school programs. The Saskatoon Health Region added \$30,000 to the after school program,
- c) The Catholic and Public School Boards granted access to their schools for school health services and school health research,
- d) The seven Chiefs of the Saskatoon Tribal Council published a declaration acknowledging health disparity in Saskatoon and the willingness to partner on research and intervention,
- e) The Saskatoon Tribal Council and the Saskatoon Health Region obtained \$300,000 for a child immunization clinic for the low income neighbourhoods,
- f) The Saskatoon Tribal Council and the Saskatoon Health Region obtained \$785,00 for an HIV and STI prevention clinic for the low income neighbourhoods,
- g) The Government of Saskatchewan allocated \$40 million dollars for low income subsidized housing,
- h) The City of Saskatoon doubled its annual financial allocation for affordable housing.

Since the initial publication of the Health Disparity by Neighbourhood Income study, numerous other interventions have been announced. For example, the Government of Saskatchewan recently announced a new school for St. Mary Community School which will include a new day care and wellness center. The total project will include \$8.3 million dollars from the provincial government with matching funds from the Greater Saskatoon Catholic School Board. The City of Saskatoon will contribute \$500,000 to a new community center within the school.

3.3.

Summary

This report is a broad study about socioeconomic status and health status. The main research questions in Section 2 are:

1. Is socioeconomic status associated with poor health status in Saskatoon residents?

Socioeconomic status is strongly associated with health status in Saskatoon residents. Of all socioeconomic indicators, the variable of income status appears to have the strongest impact on health outcomes and behaviours. Income was associated with almost every health outcome and behaviour under review in this report and, aside from age, was often the indicator with the strongest association with poor health status. The good news is that income status is modifiable through re-distribution of income with taxes and transfers.

2. Is Aboriginal cultural status independently associated with poor health status after controlling for other covariates, namely socioeconomic status?

After univariate or unadjusted analysis, Aboriginal cultural status was associated with every poor health outcome under review in this report. In fact, at baseline analysis, Aboriginal cultural status often had the strongest association with poor health outcomes and risk behaviours. The results changed after statistically controlling for other variables like socioeconomic status. After multivariate adjustment, the association between Aboriginal cultural status and poor health outcome or risk behaviour was more limited and in most cases was statistically non-significant. As such, targeted policies to improve the social conditions of Aboriginal people, and generic policies focusing on the social inequalities that lead to risk behaviour and poor health outcomes, should result in a substantial reduction in health disparity in Saskatoon between Aboriginal and Caucasian populations.

In his Pulitzer Prize winning book, Jared Diamond discusses that the biological explanation for inequalities between cultural groups is wrong but, unfortunately, we are not told what the correct explanation is.²⁸¹ Regrettably, economic and political interests have always affected both the explanation of health disparities and responses to them.³⁰⁰

A major finding of this report is that Aboriginal cultural status has a limited and often statistically non-significant association with lower health status after controlling for socioeconomic status and other covariates. There is a need to transfer the results of this research to the Saskatoon community for two main reasons:

- A. It prevents the negative stereotype and shame felt by Aboriginal people who are told that the cause of their health disparity is a result of their cultural status and
- B. It allows policy makers and the public at large to acknowledge that health disparity reduction is possible because the determinants of health (i.e., income, education) are modifiable (in comparison to Aboriginal cultural status).

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3. Are stakeholders within the City of Saskatoon willing to support policies and interventions to reduce health and social disparity?

A majority of Saskatoon residents believed that even small differences in health status between income groups is unacceptable (most prefer 0%) and also believed that something can be done to address health disparity by income status (83.2%).

Section 3 was a comprehensive review of 10,076 abstracts and articles on how to reduce health and social disparity in a population. Evidence based policy options were discussed on how to reduce disparity in income, education, housing, employment and access to health care.

The evidence-based policy options were then linked to levels of public support.

3.4.

Summary of Evidence Based Policy Options

A. Overall:

Evidence Based Policy Option #1 – Develop a Multi-Year, Targeted Plan to Reduce Poverty

Develop an effective plan to reduce poverty and health inequality for Saskatoon and Saskatchewan that includes a multi-year approach with concrete measurable targets, broad support and an evaluation plan.

B. Income Disparity:

Evidence Based Policy Option #2 – Set Measurable Goals to Reduce Poverty

The following goals should be considered for the City of Saskatoon:

- Reduce Low Income Cut-Off (LICO) households from 17.1% to 10% in five years
- Reduce the number of children living below LICO from 20.1% to 2% in five years

Evidence Based Policy Option #3 – Ensure no Child Lives in Poverty

Parents with children who are on social assistance should have their shelter allowances and their adult allowances (i.e., food, clothing) doubled in order to raise children to the LICO.

Evidence Based Policy Option #4 – Create a Child Poverty Protection Plan

Establish a Child Poverty Protection Plan to fund the reduction of poverty in children in Saskatchewan.

Evidence Based Policy Option #5 – New Legislation to Eliminate Child Poverty

Establish a legislative requirement in Saskatchewan to eliminate child poverty.

Evidence Based Policy Option #6 – Remove Work Earning Clawbacks

Work earning supplements should be coupled with the removal of work earning clawbacks to transition return to work and promote voluntary withdrawal from social assistance.

Evidence Based Policy Option #7 – Index Social Assistance Rates to Inflation

Social assistance rates should be increased as recommended in policy option #3 and then index future rates to inflation.

Evidence Based Policy Option #8 – Change Lower Limit Tax Exemptions

Change the lower limit tax exemption for low income workers and offset the revenue loss by removing the lower limit tax exemption for higher income earners.

Evidence Based Policy Option #9 – Review Program Effectiveness of Social Services

The Ministry of Social Services should consider reviewing the effectiveness of its programs in order to accomplish its long term objectives.

Evidence Based Policy Option #10 – Increase Public Understanding of Social Determinants of Health

Enhance the understanding of the general public about the determinants of health and the economic costs of not proactively addressing poverty.

Evidence Based Policy Option #11 – Increase Support for Parents on Leave

Increase the Employment Insurance rate for new parents on parental leave from 55% to 80% of employment income prior to leave.

Evidence Based Policy Option #12 – Create a Single Resource for Those Unable to Work

Consolidate income assistance and disability providers into one resource with identical and equitable assistance rates for those unable to work.

C. Education Disparity:

Evidence Based Policy Option #13 – Set a Measurable Goal to Reduce the Number of Children Not Attending School

We should set a goal to reduce the number of children not in school from 690 children under the age of 19 to no more than 100 children under the age of 19 by 2010.

Evidence Based Policy Option #14 – Increase High School Graduation Rates

We should set a goal that 90% of Aboriginal children graduate from high school within 10 years (or by 2017) up from the current graduation rate of 48%.

Evidence Based Policy Option #15 – Increase Support for Community Schools

Provide health and social services to schools in low income neighbourhoods in order to prevent school drop-out, encourage academic achievement, increase graduation rates and improve health.

Evidence Based Policy Option #16 – Universal Child Care for Low Income Parents

Child care should be provided to all low income parents at no direct cost in community schools in low income neighbourhoods.

The pre-school and pre-kindergarten programs should be expanded in community schools in low income neighbourhoods and be provided at no direct cost to low income parents.

Evidence Based Policy Option #17 – KidsFirst should include children most in need

The *KidsFirst* program should include children and families that are in most need.

Evidence Based Policy Option #18 – Reserve Education Placements for Low Income Students

Learning institutions like SIAST should allocate 10% of their existing skills training vacancies to adults who have been on social assistance for more than one year to take the program at no cost.

In addition, free child care (policy option #16) should be provided to those who choose to enter school in order to better their chances to re-enter the workforce in a skilled vocation.

The skills training sessions should be adapted to include academic support and if required support from health services (i.e., mental health).

Evidence Based Policy Option #19 – Redirect Funds from Ineffective to Effective Programs

Re-allocate funding from job search initiatives with limited success to adapted skills enhancement programs as part of a comprehensive return to work strategy.

Evidence Based Policy Options #20 – Affordable Tuition for University Students

Cap the student portion of university tuition fees while increasing the provincial portion in funding. The student portion for low income students should be waived altogether.

Evidence Based Policy Option #21 – Change the Legal Drop Out Age

Increase the age that a youth can legally stop attending school from 16 years old to 18 years old; unless high school graduation has already been obtained.

Evidence Based Policy Option #22 – Cap Annual Health Care Spending Increases

Cap the annual growth of the health care treatment sector at 5%, instead of 10%, in order to re-distribute financial resources to health enhancing activities like education.

D. Housing Disparity:

Evidence Based Policy Option #23 – Set Measurable Goals to Create More Access to Affordable Housing

Reduce the number of people on the waiting list for affordable housing from 2,150 to zero in four years (2011).

Evidence Based Policy Option #24 – Expand Affordable Housing Projects

The City of Saskatoon should continue to examine the benefits of development of a Land Trust, designating surplus city land to affordable housing projects, inclusionary zoning, improving the speed of approval process for affordable housing and a five year tax abatement for affordable housing projects/units.

Evidence Based Policy Option #25 – Reserve 10% of New Development for Affordable Housing

Any developer that purchases land from the City of Saskatoon should set aside 10% of the new development for affordable housing.

Evidence Based Policy Option #26 – Expand Not-for-Profit Housing Authorities

The provincial government should consider purchasing 20 abandoned or neglected multifamily and apartment buildings in the heart of Saskatoon's six low income neighbourhoods, renovate them and transfer the title to not-for-profit housing authorities with the eventual goal of transferring title to home ownership.

The provincial government should consider adopting this policy for at least four years to address chronic housing shortages.

Evidence Based Policy Option #27 – Support for Home Ownership

The provincial government should consider investing in a Saskatoon-based home ownership pilot program to convert 31 multi-units provincially owned affordable rental units to home ownership. A long-term rent-to-own program should be considered to increase the number of households in stable, safe, affordable housing.

Evidence Based Policy Option #28 – Create a Youth Homelessness Prevention Strategy

Develop and implement a permanent and comprehensive youth homelessness prevention strategy to eradicate youth homelessness in Saskatoon.

In addition to the need for overall service coordination, the province of Saskatchewan should consider converting and targeting 125 affordable housing units to supportive housing for at risk and homeless youth.

Evidence Based Policy Option #29 – Develop a Long-term, Consolidated, Comprehensive, Interagency Social Housing System for Hard to House Individuals

Develop a long term, consolidated, comprehensive, interagency social housing system in Saskatoon and Saskatchewan for hard to house individuals; including those living with mental health problems and addictions.

Evidence Based Policy Option #30 – Build Community Acceptance for Affordable Housing

Develop a communication strategy to overcome the stigma of affordable housing in order to gain community acceptance.

Evidence Based Policy Option #31 – Increase Monthly Shelter Allowances

The Saskatchewan government should consider increasing monthly shelter allowances for all households receiving income assistance to match the 2008 average monthly rental rate and also include the total monthly cost for utilities.

In addition, shelter allowance rates should be reviewed bi-annually and compared to current average monthly shelter rates and brought up to market standards when necessary.

Evidence Based Policy Option #32 – Renewed Federal Responsibility for Social Housing

The federal government needs to restore funding for social housing to the levels established prior to 1986.

E. Employment Disparity:

Evidence Based Policy Option #33 – Setting Measurable Goals: More Work for Aboriginal People

Aboriginal representation in the workforce should increase to 15% of full time service jobs, 15% of management positions and 15% of professional workplaces within 10 years; or by 2017.

Evidence Based Policy Option #34 – Increase Minimum Wage

The minimum wage should be increased to \$10 per hour in order to encourage employment, make work more attractive than employment assistance, and lower the amount of children living in poverty.

Evidence Based Policy Option #35 – More Control for Aboriginal People over Employment and Academic Programs

More control for Aboriginal people over their own employment and academic programs.

Evidence Based Policy Option #36 – Support Aboriginal Owned Businesses

Support the creation of Aboriginal owned businesses by signing preferred supplier contracts.

Evidence Based Policy Option #37 – Comprehensive Return to Work Programs

Return to work programs should include a comprehensive combination of adapted skills training, job search, job placement, on the job experience and life skills training in order to increase chances of transitional return to work. Health services should augment the return to work process when required.

Evidence Based Policy Option #38 – Social Assistance as a Transition to Work

Use Social Assistance as a Transition to Work when possible with enhanced benefits that are time sensitive (i.e., five years) to ensure that they achieve their intended results.

F. Disparity in Health Services:

Evidence Based Policy Option #39 – Health Disparity Reduction: A Health Sector Priority

Make health disparity reduction a health sector priority in the Saskatoon Health Region.

Evidence Based Policy Option #40 – Integrated Planning for Disparities Reduction

Integrate disparity reduction into all health programs and services in the Saskatoon Health Region.

Evidence Based Policy Option #41 – Intersectoral Action

Engage other sectors (i.e., education, social services) in health disparities reduction other than health care treatment.

Evidence Based Policy Option #42 – Knowledge Infrastructure

Strengthen knowledge development and exchange activities on the topic of health disparity.

Evidence Based Policy Option #43 – More Health Resources in Low Income Neighbourhoods

The number of health resources in Saskatoon's low income neighbourhoods should be proportionate to the size of the population; and its disproportionate number of health disorders.

Evidence Based Policy Option #44 – Integrated Health Services in Low Income Neighbourhoods

The Saskatoon Health Region should offer integrated and comprehensive services in Saskatoon's low income neighbourhoods including public health, mental health, addictions and primary care services.

G. Disparity within Cultural Groups**Evidence Based Policy Option #45 – Aboriginal Self Determination**

Aboriginal people in Saskatchewan should be afforded more control over health, social, education and justice policies and funding that disproportionately affect Aboriginal people.

Evidence Based Policy Option #46 – Ensure Federal Responsibility for “Registered Indians”

The federal government must assume its full constitutional responsibility for all “Registered Indians” under Section 91(24) of the Constitution Act, 1867. Jurisdiction and responsibility must go together.

How the evidence based policy options work together:

The evidence based policy options should be viewed in combination instead of in isolation. Some policy options are to address immediate needs, while others are long term strategies that address macro level social structures. For example, short term income and housing stability measures are intended to provide the necessary support and stability to allow educational and employment initiatives to have a realistic chance of success.

Let's use the example of a lone parent with two children who has been on social assistance for five years. There is a very limited chance the parent will return to the workforce soon and a possibility that the parent might never return to the workforce. Why is this so?

As stated previously, a lone parent with two children receives \$725 per month from provincial Social Services for shelter, food, clothing, transportation and so on. The average cost of a two bedroom apartment in Saskatoon is \$694 and the average cost for a parent and two children to eat nutritious food is \$448 per month. This leaves a monthly net deficit of \$417 prior to the payment of other necessities like clothing, medicine, transportation and so on.

This family is facing big problems. The first priority should be to stabilize the security of the family and address the hierarchy of needs. The doubling of the shelter allowances and the adult allowances (policy option #3), and access to low income subsidized housing (policy option #24) will allow this family to have a secure place to live with provisions for nutritious food.

Once adequate income support has been initiated, and basic needs like housing and food insecurity have been addressed, a parent is now able to focus on long term strategies to alleviate chronic poverty.

A comprehensive series of policies need to work in combination to assist this family. First, the early childhood education programs are now provided at no cost so the parent can now attend school (policy option # 16). Second, the parent attends a skills enhancement course at SIAST at no cost (policy option # 18); of which SIAST receives funding from the Ministry of Social Services (policy option # 19). Third, upon completion of the adapted skills training, the parent receives a comprehensive series of job search, job placement, on the job experience and life skills training (policy option #37). Fourth, while working part time and re-integrating back into the workforce, the parent is not subjected to work earning clawbacks (policy option #6). Fifth, while being transitioned into full- time yet relatively lower income work, the parent has an incentive to work by receiving temporary tax incentives (policy option #8) and a higher minimum wage (policy option # 34). Finally, once the parent is fully transitioned into the workforce with a skilled and higher income occupation, the parent is rewarded with the title of their affordable housing apartment which has been converted into home ownership (policy option #26).

Meanwhile, in recognition of the multiple challenges trying to work out of poverty, health services are provided more locally in a comprehensive and integrated fashion to augment or support the social interventions (policy options #43,44).

How does society benefit? First, society avoids the much higher cost associated with expensive emergency shelters and hospital emergency rooms. Second, taxpayers avoid other expensive costs of Medicare that are associated with increased healthcare utilization rates of low income residents. Third, a parent with a high probability of using social services for an extended period of time has been transitioned back into the workforce. Fourth, the parent is filling a void in the

skilled labour market and is now a higher income taxpayer. Most importantly, however, the parent and the two children will not have to face excessive and avoidable health problems. The cycle of poverty has been broken and the children of the previously unemployed parent are now more likely to be productive members of society as well.

Instead of stating what amount of aid someone will receive, we should instead determine what someone needs in assistance and then raise the required amount. The problem is not public opposition to greater aid, but rather a lack of leadership to ask the public for greater efforts. (Jeffrey Sachs, The End to Poverty)³⁰¹

3.5.

Limitations

There are several limitations within this report that must be discussed.

First, the research papers in Section 2 are cross sectional and not prospective. Findings must be seen as associations at a single point in time in comparison to causation through longitudinal follow-up. Given that exposure and outcome are assessed at the same point in time in cross sectional surveys, we can not distinguish whether the exposure preceded the outcome or whether the outcome preceded the exposure.

Second, two studies have low participation rates. This is a general complication found in population based research where residents are free to participate (or not) instead of recruiting volunteers for protocols like randomized trials. This introduces a potential selection bias. As well, some studies had large refusal rates to disclose personal income; a theme consistent with other research findings. This introduces a potential for information bias and adds a concern to the analysis as income is one of the major variables under review. In response, information on neighbourhood income was also collected.

Third, one of the main priorities of the report was to determine if Aboriginal cultural status is associated with poor health outcome after controlling for other variables. The results of the studies do demonstrate that Aboriginal cultural status has a more limited association with poor health outcome after controlling for other variables. That said, Aboriginal cultural status often retains a clinical association with poor health outcome after multivariate adjustment; even though the association may not be statistically significant.

Fourth, Aboriginal cultural status is currently associated with lower educational status, lower occupational status and lower income in Canada. The association between socioeconomic status and poor health remains intact but Aboriginal cultural status can act as a confounder between the true association of socioeconomic status and poor health outcome.

Fifth, a number of our research papers use the Canadian Community Health Survey (CCHS) as its source of data. Regrettably, the CCHS does not ask some important questions or does not ask some questions consistently between the various cycles. As such, important information on determinants of health like housing conditions, stress moderators (coping resources, mastery and social support) and experience of discrimination are not included as potential risk indicators within our analysis.

Sixth, although income often had the strongest association with health outcome and risk behaviour, we must remember that there are many determinants of health.

In response to the above limitations, a number of well designed prospective, longitudinal research studies are currently underway in Saskatoon.

3.6.

National and International Context

As stated previously, Canada does not have a national plan to reduce health disparities. However, the first ever *Report on the State of Public Health in Canada* (2008) had a strong emphasis on health inequalities and the determinants of health.³⁰² In this report, Canada's Chief Medical Health Officer argues that a society is only as healthy as the least healthy among us. Dr. Butler-Jones suggests that health inequalities are actually fundamental social inequalities that can be overcome through public policy, collective action and individual action. According to this report, the actions we need to prioritize to reduce health inequalities include:³⁰²

- a) Social Investments. In particular, investments in families with children living in poverty and in early development programs.
- b) Community Capacity. Direct involvement of communities in solutions, defined stakeholder roles and increased measuring of outcomes.
- c) Inter-Sectoral Action. Integrated, coherent policies and actions within and outside the formal healthcare treatment sector.
- d) Knowledge Infrastructure. Better understanding of the pathways through which socioeconomic factors interact to create health inequalities, how best practices from other jurisdictions can be adopted to a Canadian context and more advanced measurement of outcomes of the interventions undertaken.
- e) Leadership.³⁰²

Almost at the same time as the release of the Report in the State of Public Health in Canada (2008), the World Health Organization released its report on the *Commission on Social Determinants of Health* (2008).³⁰³ The Chair of the WHO Commission, Michael Marmot, presents substantial evidence that our health is worse the lower our socioeconomic position is, but argues that it does not have to be this way. Marmot suggests that when systematic differences are unavoidable by reasonable action, it is simply unfair to avoid intervention. Marmot argues that the unequal distribution of resources is not a natural phenomenon, but rather a toxic combination of poor social policies, unfair economic arrangements and bad politics.³⁰³

The WHO Commission concludes that the knowledge exists to make a substantial difference to people's lives. The Commission has three overarching recommendations on how to improve health equity:³⁰³

- A) Improve daily living conditions. The Commission recommends to improve the conditions in which people are born, grow, live, work and age. Specifically, the Commission recommends major emphasis on early childhood development.
- B) Tackle the inequitable distribution of power, money and resources.
- C) Measure and understand the problems and assess the impact of action.³⁰³

We believe that our report *Health Disparity in Saskatoon: Analysis to Intervention* has similar findings and recommendations to the Report on the State of Public Health in Canada (2008) and the WHO Commission on the Social Determinants of Health (2008). Whether in comparison to national or international reports, there is enough evidence to support health disparity intervention in the City of Saskatoon and the province of Saskatchewan.

It is our hope that our report provides the basis for decision makers, policy analysts and the public at large to decide what type of society we wish to become. We can then decide which specific policy options to adopt in Saskatoon and Saskatchewan in order to move us towards that goal. All we require is a shared vision, common purpose, community support and strong leadership to make it happen.

“When systematic differences are unavoidable by reasonable action, it is simply unfair to avoid intervention” (Marmot).³⁰³

3.7.

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