Child and Adolescent Health in Northern Ontario

A Quantitative Profile for Public Health Planning

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ABSTRACT

Health in Northern Ontario is poorer than in the province of Ontario. Late childhood is the period in which adult habits and health behaviours are solidified, thus, health indicators are important to guide the development and implementation of disease prevention strategies. The Northern Ontario Child and Youth Health Report evaluated the health of children in Northern Ontario. The importance of public health planning is presented with the value of health status information for youth. The hospitalization rate for Northern Ontario youths was higher than for Ontario. In both areas, injuries and poisonings were the leading cause of hospitalization (7-13 year olds), however rates in the North were higher. Hospitalizations for injuries and poisonings were double the provincial rate in 14-19 year olds. The mortality rate for all youth was significantly higher. Health risk behaviour prevalence (e.g., alcohol consumption) was higher in the region. Current data emphasize the need for primordial and primary prevention in regional health planning and are also useful in secondary and tertiary prevention. Data for public health planning is critical to address population health needs and prevent chronic diseases.

MeSH terms: Social conditions; family health; public health; health status; mortality; morbidity

La traduction du résumé se trouve à la fin de l'article.

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The World Health Organization defines health as, "A state of complete physical, mental and social well-being, not merely the absence of disease."¹ Using these criteria, Northern Ontario suffers from poor health status when compared to Ontario.² As certain illnesses can be prevented through behaviour modification, such as not smoking and injury risk moderation,^{3,4} addressing these issues from a population health perspective is vital.

Public health planning is important to promote safety and well-being among children and youth through early intervention and strengthening communities. Thus, understanding risk factors and determinants of health is a necessary base from which to launch such initiatives. Also, health care must support and foster children and youth to ensure they maintain the right to develop to their greatest intellectual, physical, emotional and social well-being.

Therefore, to support this notion, health planning must use accurate and timely health information for effective coordination of health services most suitable for the population. Health information is vital for thorough evaluation of best practices and programs. Additionally, health status monitoring is required for appropriate resource allocation and to develop policies to respond to identified health needs. To demonstrate this, the results of a recent quantitative child and youth health status report⁵ and their application to public health practice are presented in terms of primordial (prevention of socio-economic and cultural patterns leading to disease), primary (activities preventing chronic diseases), secondary and tertiary prevention.

The Northern Ontario Child and Youth Health Report evaluated the health status of those age 7-19 in Northern Ontario. Data for the study were drawn from a number of sources including the Reportable Disease Information System (Public Health Branch: Ministry of Health and Long-Term Care, 1997-2001), Vital Statistics (1987-1999), Hospitalization records (1997-2001), Canadian Community Health Survey (Statistics Canada, Cycle 1.1), and Census (Statistics Canada, 2001). Age-specific and age-standardized rates (with confidence intervals) and weighted frequencies were reported. The geographical units of analysis were

Northern Ontario and the public health unit areas (Porcupine, Sudbury/Manitoulin, Muskoka/Parry Sound, North Bay, Algoma, Timiskaming, Thunder Bay, and Northwestern Ontario).

Results were outlined in detail in the Northern Ontario Child and Youth Health Report.⁵ The following represents a synopsis of the findings.

Social indicators

- There was a lower proportion of two-parent homes reporting mid-high income in Northern Ontario (85.9% vs. 83.0%).
- Northern Ontario had a higher proportion of those with insufficient money for food (Table I), with a very high level of food insecurity in North Bay (13.5%).

Health risk factors (Table I)

- More children in Northern Ontario were exposed to second-hand smoke at home and there was a lower proportion of female non-smokers as compared to the province.
- Alcohol consumption in underage youths is significantly higher and 3/5 (of current drinkers) reported binge drinking.
- Despite higher physical activity levels, Northern residents remained more obese.
- The teenage pregnancy rate was higher in Northern Ontario.

Morbidity and mortality (Table II, Figure 1)

- The hospitalization rate in 7-13 year olds in Northern Ontario surpassed that of the province (252 vs. 179/10,000). For 14-19 year olds, the rate in Northern Ontario was nearly double the provincial rate (381 vs. 603/10,000).
- The mortality rate in Northern Ontario (7-19 year olds) also surpassed the provincial rate and the proportion of deaths caused by injuries and poisonings was greater in Northern Ontario (3.0 vs. 4.8/10,000).

Injuries and poisonings

- The rate of hospitalization due to injuries and poisonings in 7-13 year olds was significantly higher in Northern Ontario (41 vs. 63/10,000) and certain areas of Northern Ontario had very high

TABLE I

Risk Factor Incidence Rates, Weighted Percentage and 95% Confidence Interval (12-19 Year Olds, 2000/01)

Variables	Ontario Weighted Percentage (95% Confidence Interval)	Northern Ontario
Alcohol Use: Binge drinking in those who consumed alcohol in the past year (12-18 year olds)	45.1 (42.1, 48.0)	59.2 (53.2, 65.3)*
Proportion of those who engage in regular physical activity (12-19 year olds)	64.6 (62.7, 66.4)	78.2 (74.5, 82.0)*
Obesity in males (12-19)	24.6 (22.0, 27.2)	28.4 (23.4, 33.4)
Obesity in females (12-19)	15.4 (13.5, 17.3)	21.2 (16.2, 26.2)*
Proportion of non-smokers, males (12-19)	83.7 (81.8, 85.6)	79.4 (74.4, 84.4)
Proportion of non-smokers, females (12-19)	82.9 (81.1, 84.8)	77.3 (72.2, 82.5)*
Households with children who are exposed to second-hand smoke at home	8.2 (7.6, 8.8)	10.4 (9.0, 11.8)*
Households with children that did not have enough food due to lack of money (Food insecurity)	7.7 (7.1, 8.4)	8.9 (7.5, 10.3)
Proportion of sexually active children who always use a condom (15-19)	54.6 (49.3, 59.8)	53.7 (42.8, 64.5)
Age-specific Rates per 10,000		
Youth pregnancy rate (10-14 year olds)	6.5	9.1
Youth pregnancy rate (15-19 year olds)	429.1	506.4
Incidence rate of sexually transmitted diseases† (10-19 year olds)	29.9	37.3

* Difference from province significant where Alpha level equals 0.05%.

† Includes chlamydia, gonorrhea, infectious syphilis, HIV/AIDS

TABLE II

Leading Causes of Hospitalization in Northern Ontario (1997-2001)

ICD-9 Chapter	Ages 7-13	Ages 14-19
Infectious and parasitic diseases	4%	2%
Neoplasms	2%	*
Endocrine, nutritional and metabolic diseases and immunity disorders	4%	2%
Diseases of blood and blood-forming organs	2%	*
Mental disorders	5%	14%§
Diseases of the nervous system and sense organs	5%	2%
Diseases of the circulatory system	*	*
Diseases of the respiratory system	20%‡	7%
Diseases of the digestive system	12%§	10%
Diseases of the genitourinary system	4%	4%
Complications of pregnancy, childbirth and the puerperium	*	27%†
Diseases of the skin and subcutaneous tissue	2%	*
Diseases of the musculoskeletal system and connective tissue	3%	3%
Congenital anomalies	2%	*
Certain conditions originating in the perinatal period	*	*
Symptoms, signs and ill-defined conditions	8%	5%
Injury and poisoning	22%†	17%‡
Other factors influencing health status	4%	2%
Age-specific rate per 10,000	251.7	603.0
N	10,862	23,368
Ontario age-specific rate per 10,000	178.7	380.8
N	97,955	173,091

* Cell suppressed due to small numbers

† Leading cause of hospitalization

‡ Second leading cause of hospitalization

§ Third leading cause of hospitalization

rates of injury (e.g., North Bay: 80/10,000).

- The injury hospitalization rate in Northern 14-19 year olds was twice the provincial rate (67 vs. 119/10,000) and the rate in Northwestern Ontario was two and a half times that of Ontario (168/10,000). Intentional injury (primarily suicide attempts) was the leading cause of hospitalization (both Ontario and Northern Ontario).
- The mortality rate (7-19 year olds) was 1.8/10,000 in Ontario and 3.1/10,000

in Northern Ontario, and selected areas had very high rates (e.g., Northwest: 7.5/10,000).

- Hospitalization and death from intentional self-injury were about three times more frequent in Northern Ontario and rates are increasing while provincial rates are dropping.

DISCUSSION

There is ample evidence of the poor health status in Northern Ontario as compared to

Figure 1. Leading causes of mortality among Northern Ontario children aged 7-19 and leading causes of injury/poisoning mortality, percent (1987-1999)

the province.² This study demonstrates that, unfortunately, this phenomenon is not limited to adults. Overall, the prevalence of risk factors is greater and morbidity and mortality show increased rates. There are also a number of disturbing trends among Northern children, such as higher rates of teenage pregnancy, suicide mortality, and morbidity. Thus, current data emphasize the need for both primordial and primary prevention in public health planning.

Primordial and primary prevention

Primary care strategies include those that improve service access, such as sexual health promotion, well-child care, and injury prevention education, and mental health. A well-established body of evidence exists documenting that weight reduction and physical activity are effective in chronic disease prevention. Many activities can also be low-cost and should be incorporated into prevention strategies.⁶⁻⁸ Therefore, increased rates of physical activity in Northern children are encouraging, but more than 20% remain sedentary. Given that nearly 30% of Northern youths are obese and that the adult population has a high prevalence of risk factors, the need exists to further promote exercise in residents' daily lives.

In addition, healthcare providers have two roles in addressing identified health concerns: 1) addressing the patient in the clinical setting, and 2) being an advocate

for social issues and healthcare priorities pertaining to children. Social policy advocacy can influence change and promote policy enforcement. Recent evidence suggests that strategies aimed at promoting healthy lifestyles in the clinical setting result in the desired change.^{9,10} Interventions could be included with routine immunization visits or incorporated into the annual health examinations with a primary healthcare provider.

Another area of primary prevention in need of attention is unintentional injury. As injury and poisoning accounts for a sizeable proportion of mortality and morbidity in Northern children, and rates exceed those of Ontario, there is an imminent need to enhance injury prevention efforts. The prevalence of suicide and mental health hospitalization in Northern Ontario requires attention. The high rate of mental health hospitalizations and intentional self-harm, combined with decreased self-esteem in grade 9,* emphasizes the need for mental health interventions focussing on school-aged individuals.†

Current data can be useful in providing information for resource allocation and monitoring of program efficacy, such as community food security initiatives. These

* Proportion of those with low self-esteem in grade 8 was 9% (CI 7%-11%). This proportion was 15% in grade 9 (12%-18%).

† Further details on unintentional injury, intentional injury and mental health will be forthcoming in a future article.

data can also provide a baseline from which to evaluate program efficacy and to monitor improvement over time. Also, new programs can be developed to address key issues of local concern, such as the high prevalence of food insecurity in the North Bay area. Conversely, data also reveal that a number of issues are common to all areas in the North. The markedly high rate of injuries and poisonings throughout Northern Ontario illustrate that this is an area needing continued vigilance.

The data also suggest that sexual health is an area requiring further attention as shown by the increased rates of STDs and teenage pregnancy. Additionally, although condom use in Northern Ontario did not differ significantly from provincial use, the fact that only half of teens reported consistent condom use is alarming. This underlines the need to enhance healthy sexuality programs province-wide.

Secondary prevention

This refers to identification of those who are in the initial stages of the disease process. Mental health and suicide prevention can play a crucial role in children with the first goal being to identify those at-risk, and the second being to minimize any future self-injuries. Early detection of suicide ideation or planning, and appropriate treatment for those who are at-risk for suicide are such examples.

Tertiary prevention

Tertiary prevention targets interventions that follow suicide attempts to reduce the likelihood of subsequent reoccurrences. Therapeutic treatment following attempted suicide to prevent further attempts or to reduce psychological, biological and social risk factors that put a person at risk for suicide behaviour are examples of tertiary prevention.

CONCLUSIONS

As lifelong habits related to health are often formed during childhood, and certain illnesses can be prevented through behaviour modification,^{3,4} public health planning is vital to addressing child health issues and implementing early intervention programs. Therefore, results from the quantitative health profile presented pro-

vide a significant contribution to child and youth health information. These results appear well suited to advancing public health planning including program development, monitoring and evaluation, resource allocation, health status monitoring, and policy development in Northern Ontario.

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RÉSUMÉ

L'état de santé est moins bon dans le Nord de l'Ontario que dans l'ensemble de la province. La deuxième enfance est la période durant laquelle se solidifient les habitudes et les comportements adultes liés à la santé, d'où l'importance des indicateurs de la santé pour orienter l'élaboration et la mise en œuvre de stratégies de prévention des maladies. Le *Rapport sur la santé des enfants et des adolescents du Nord-Ontario* souligne l'importance de la planification en santé publique et l'utilité des données sur l'état de santé des jeunes. Ce rapport indique que le taux d'hospitalisation des jeunes dans le Nord de l'Ontario est supérieur à celui de l'Ontario dans son ensemble. Dans les deux populations, les blessures et les empoisonnements sont les principales causes d'hospitalisation (chez les 7 à 13 ans), mais les taux dans le Nord sont plus élevés. Chez les 14 à 19 ans, le taux d'hospitalisation pour blessures et empoisonnements dans le Nord de l'Ontario est le double du taux provincial, et le taux de mortalité pour l'ensemble des jeunes est sensiblement plus élevé. La prévalence des comportements présentant un risque pour la santé (comme la consommation d'alcool) est également supérieure dans le Nord. Les données actuelles confirment la nécessité de la prévention primordiale et primaire dans la planification sanitaire régionale et peuvent aussi servir à la prévention secondaire et tertiaire. Il est essentiel de disposer de données de planification en santé publique pour répondre aux besoins de santé de la population et prévenir les maladies chroniques.

Letter to the Editor/Correspondance

Re: Conquering the Crippler: Canada and the eradication of polio (Insert). *Can J Public Health* 2005;96(2):I1-I24

The abovementioned insert provides a comprehensive overview of the efforts over the past 100 years to develop effective vaccines and expand immunization services, particularly the eradication of poliomyelitis. We can be proud of the valuable contribution made by Canada to this important global public health endeavour. This insert should be incorporated into the Canadian studies curriculum in secondary and post-secondary schools.

As mentioned in the insert, the Canadian Public Health Association, in collaboration with many Canadian and international organizations, agencies and corporations, has been an active partner in international efforts to control vaccine-preventable diseases and their consequences. In fact, CPHA's participation and leadership in strengthening national immunization programs in developing countries and countries in transition predates the Canadian International Immunization

Initiative (CIII), a fact omitted in the insert.

In 1986, CPHA was selected by the Canadian International Development Agency (CIDA) to manage and implement the first comprehensive Canadian-supported international immunization initiative to contribute to the goal of 90% immunization coverage in developing countries by the year 2000 and the eradication of polio. This initiative was called Canada's International Immunization Program (CIIP). Over the next 10 years, the CIIP supported 155 projects in 43 developing countries of the Commonwealth and *la Francophonie* to strengthen primary health care systems in support of achieving sustainable immunization coverage in some of the world's poorest countries. The projects were implemented through more than two dozen Canadian NGOs and universities, in partnership with their local partners. Through the two phases of CIIP, the Government of Canada invested \$73 million towards global immunization, with an additional \$23 million contributed by the partner Canadian NGOs. This sum does

not include the many millions of dollars of in-kind voluntary effort, time and resources contributed by countless individuals (CPHA members and other Canadians who acted as advisors, local health professionals, NGO volunteers and community members, local Ministry of Health staff).

At the completion of the CIIP Phase 2 in 1997, the project's final evaluation concluded that this unique Canadian initiative had contributed to an increase in immunization coverage rates (including OPV3) in most countries in which activities had been supported, even in the face of considerable political, economic, social and technical challenges in some countries. The project also helped develop public health leadership, strengthened the capacity of Ministries of Health and their local partners (NGOs, community-based organizations) to design, implement, manage and monitor national immunization programs and primary health care services, contributed to strengthening public awareness in developing countries about the importance of immunization for infants and for pregnant women, and supported and promoted the role of civil society to work in partnership with government in response

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