



Physical and Mental Health

This chapter provides gender-based analyses of Manitoba women's health status for physical and mental health indicators. The evidence demonstrates how women's living and working conditions (Chapter Two), as well as personal habits (Chapter Three) affect both their physical and mental health. Note that information about STIs and HIV/AIDS are included in Chapter Four.

This chapter includes information about:

1. Self-Rated Health
2. Cardiovascular Disease
3. Diabetes
4. Cancer
5. Arthritis
6. Self-rated Depression and Treatment for Depression
7. Injuries, Suicide and Self-inflicted Injuries





Self-Rated Health

Introduction

A substantial body of international research has found self-rated health to be significantly and independently associated with specific health problems, use of health services, changes in functional status, recovery from episodes of ill health and mortality [1]. Self-Rated health has been routinely measured in Canada in both the National Population Health Survey (1994/95 to 1998/99) and the Canadian Community Health Survey (2000-01 and 2003). It is also one of the core comparable health indicators agreed to by political leaders for annual reporting to Canadians [2].

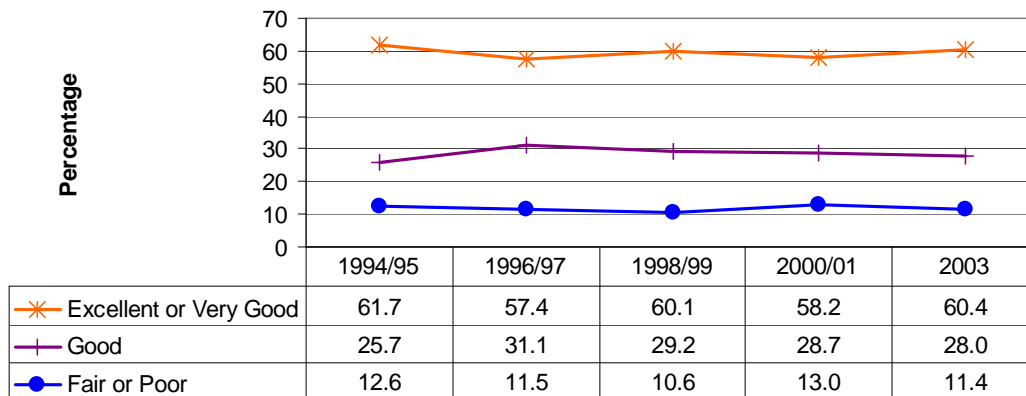
Self-Rated Health in Manitoba Women

In 2003, 61.1% of Manitoba males and 60.4% of Manitoba females (aged 12 years and older) reported themselves to be in “excellent” or “very good” health, while 10.8% of males and 11.4% of females reported that their health was only “fair” or “poor” [3]. The percentage of the population reporting “excellent” or “very good” health has declined over time, both in Manitoba and in Canada as a whole (See Figures 1 and 2).

Self Rated Health (or self-perceived health) is how individuals describe their own health. In Canada, Self-Rated Health is measured using the following five point scale: excellent, very good, good, fair and poor.

Self-rated health can reflect aspects of health not captured in other measures, such as incipient disease, disease severity, aspects of positive health status, physiological and psychological reserves and social and mental function [3].

Figure 1
Self-rated Health Manitoba Females 12 Years and Older
1994/95 to 2003



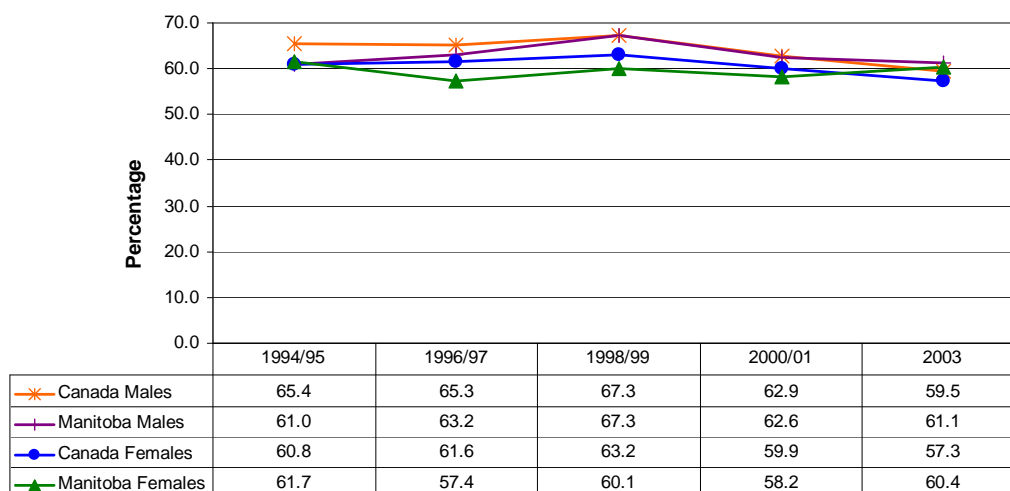
Source: Statistics Canada, CANSIM Table 105-0222





Age is an important factor in self-rated health; the proportion of women and men rating their health as “excellent” or “very good” decreases with age. As Chapter Seven demonstrates, women’s Health Adjusted Life Expectancy (HALE) declines with age, since women live longer, but have more chronic diseases and loss of mobility as they age. However, the proportion of Canadians reporting “excellent” or very good” health has declined since 1994 among both women and men in every age group. Statistics Canada has determined that this decrease is not entirely attributable to the aging of the Canadian population [4].

Figure 2
"Excellent" or "Very Good" Self-rated Health - Canada & Manitoba
1994/95 to 2003



Source: Statistics Canada, CANSIM Table 105-0222

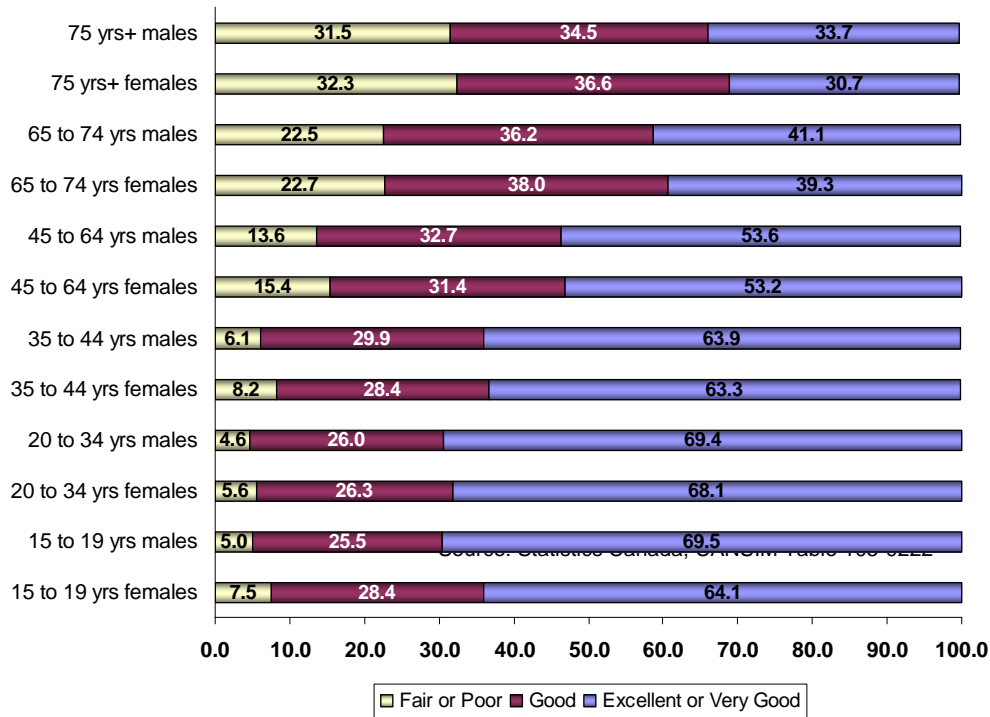
In every age group, women are more likely than men to report that their health is “fair” or “poor” and less likely to report that their health is “excellent” or “very good”. Age and sex specific rates are shown in Figures 3 below. Because of small sample sizes in Manitoba, data for all Canadians are presented in these figures.

Canadian men and women both report high levels of “excellent” or “very good” health. For all three categories (Excellent/Very Good, Good, and Fair/Poor), the largest gender gap appears among those 15 to 19 years of age. For both Excellent/Very Good health and Good health, these differences are smallest among young adults and the gap increases again with age. For those reporting Fair or Poor health, sex differences are smallest among those 64 years and older.





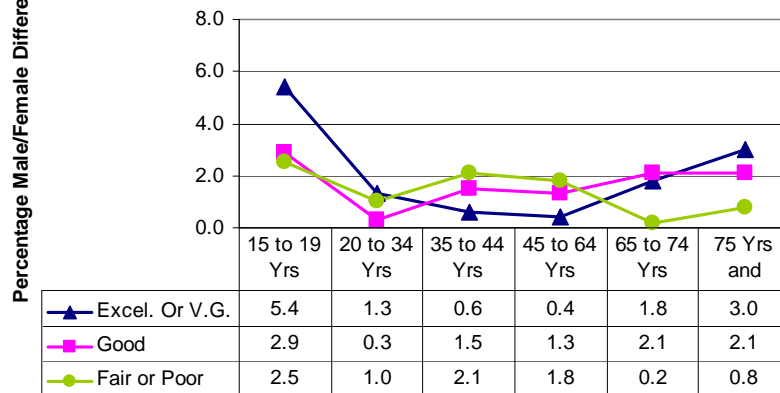
Figure 3
Self-Rated Health by Age & Sex Canada 2003



Source: Statistics Canada, CANSIM Table 105-0222

During the ten year period from 1994 to 2003, fewer Canadians reported being in excellent health and more reported being in poor health. During this time, some factors thought to influence self-perceptions of health, such as obesity [4] and income inequality [5], have worsened, though others have improved. Notably, self-reported rates of tobacco smoking have decreased, while self-reported rates of physical activity have increased. All of these factors, taken together, suggest that Canadian women’s declining self-rated health reflects a decrease in actual health status, rather than a decrease in perceived health status [5].

Figure 4
Self-Rated Health - Gender Gap by Age
Canada 2003



Source: Statistics Canada, CANSIM Table 105-0222





As noted in the indicator on Time Stress (see Unpaid Work, Chapter Two) women are more likely to report being stressed for time with less time for personal pursuits and leisure. Prairie mothers juggling their roles as parents and employed persons, whether single or partnered, were most severely time stressed [6]. Good health requires sufficient sleep and adequate free time and personal care buffer stress. The long term trend toward the erosion of free time particularly affects working mothers [7]. Furthermore, inequity in unpaid work is a better predictor of depression for women than is the absolute time women spend on unpaid work.

Summary and Implications

Self-rated health provides policy makers, and those wishing to influence public policy with a reliable, sex and age specific measure of the general health of a population. It is particularly useful in measuring changes over time, and inequities between and among sub-populations.

Most Manitoba women report being in good to excellent health, which is good news. As we have seen, however, there are compelling reasons to continue to look at self-rated health in the context of time stress, unpaid work, income, HALE and living with disease.

Collection of data on Manitoba women's self-rated health should continue and should be analyzed in the context of other information about the circumstances of women's lives.

References

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Cardiovascular Diseases

“Higher rates of heart diseases among young and middle-aged men have created the false conception among women and health care practitioners that heart disease is primarily a middle-aged male disease.” [1]

Introduction

Cardiovascular disease (CVD) is the leading cause of death for Canadian men and women. CVD is also the leading cause of hospital admissions among men, and among women is second only to hospitalizations for pregnancy and childbirth [2]. Similarly, CVD has contributed to more deaths among Manitobans than any other cause and is responsible for a slightly greater proportion of deaths among women (37.5%) than among men (35.5%) [3].

According to the Heart and Stroke Foundation, for the first time in 30 years, the total number of deaths from cardiovascular disease, for all ages, is virtually the same for Canadian women and men [4]. Yet the serious impact of CVD on women’s health often goes unrecognized. More often, it is seen as a disease of middle-aged men. CVD tends to develop approximately 10 years later in women than in men [2]. This is consistent with published research comparing rates of CVD treatment among Manitobans by sex [3]. The delayed onset of CVD in women may be due to protective effects conferred by normal levels of estrogen, prior to the onset of menopause [1, 5]. Although CVD is more common among men at young ages, after child-bearing age the difference between the sexes lessens. The greater likelihood of CVD in old age for women combined with women’s

What are cardiovascular diseases?

Cardiovascular diseases (CVD) include several diseases that affect the heart or blood vessels. The most common types of CVDs include ischemic heart disease, acute myocardial infarction (AMI) or heart attack, cerebrovascular diseases, which include stroke, and congestive heart failure.

Ischemic heart disease (IHD) is any condition in which heart muscle is damaged or works inefficiently because of an absence or relative deficiency of its blood supply. IHD is most often caused by atherosclerosis, a build up of cholesterol plaque on artery walls. IHD is the underlying disorder for sudden episodes such as heart attack and sudden death as well as the chronic condition of angina pectoris. IHD is also called coronary heart disease (CHD).

Acute myocardial infarction (AMI) is a severe and sudden manifestation of ischemic heart disease. A blockage in an artery obstructs blood flow to a section of heart muscle resulting in ‘death’ of heart tissue.

Cerebrovascular disease includes disrupted blood flow and all diseases of blood vessels of the brain.

Stroke is a condition that results in a disruption of blood flow to a region of the brain causing irreversible “death” of brain tissue.

Congestive heart failure is an inability of the heart to deliver blood at a rate required by metabolizing tissues at rest or during light exercise.

Hypertension, or high blood pressure, is generally defined as diastolic (when the heart is dilating) blood pressure equal to or greater than 90 millimeters of mercury (mm Hg) or systolic (when the heart is contracting) blood pressure equal to or greater than 140 mm Hg. Hypertension is the number one risk factor for stroke and a major risk factor for heart disease [6].





longer life expectancy results in a relatively high number of women affected by CVD. Thus, CVD poses a serious threat to the health of women, and one that is not often recognized.

CVD is likely to remain a serious health concern for women in the years to come. As the population continues to age, women's tendency to live longer than men and the greater likelihood of developing CVD in older age is expected to result in more women affected by CVD than men within the next two decades [7]. Also, although rates of mortality, especially for ischemic heart disease, have been steadily declining for men over the last decades, these rates have been more stable for women [8]. Though the reasons for this are not yet well understood, systemic and social factors are increasingly recognized as important contributors to women's distinct CVD profile [1]. While many gaps in knowledge persist concerning women's experience of CVD, as well as appropriate treatments for women, what we do know about key areas of risk for women provides a basis for action in policy and program development.

CVD Prevalence and Incidence in Manitoba

It is estimated that 42% of Canadians with hypertension [5] and approximately 50% of women with ischemic heart disease [9] are undiagnosed. The following data about the prevalence and incidence of major cardiovascular diseases in Manitoba, drawn from the provincial health administrative data, are therefore conservative, including only those who have received health services¹ for these conditions. The rates do not indicate the true prevalence of disease, that is, the proportion of the population that has a disease, nor the incidence of disease, defined as the number of new cases of a disease in the population identified within a given time period. However, the data have the advantages of representing confirmed cases and avoiding reliance on self-reported diagnoses, upon which population health surveys commonly rely. As well, treatment prevalence rates are based upon the entire population of residents in the province of Manitoba, rather than smaller samples that could introduce sampling error [3].

Hypertension

Hypertension, or high blood pressure, is very common among Manitobans. Provincial data for 2001-2004 showed that one in four adults aged 25 and older had been treated for hypertension. The prevalence (age standardized rate) of hypertension was 25.9% for Manitoba women, slightly but significantly higher than among men (25.9% versus 24.0%, $p < 0.001$) (Figure 1). This is equivalent to an annual average of 35,985 women affected by hypertension—which is considerably higher than the 28,142 men affected.

¹ Treatment prevalence values for residents of remote northern areas served by nursing stations may be under-estimates of actual values, where physician claims were not associated with all health care contacts.



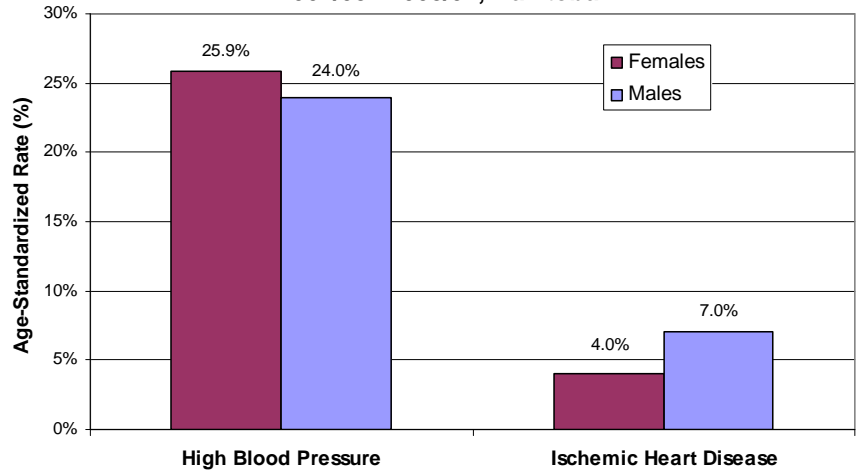


The prevalence of hypertension was low among young adults (e.g. less than 5% among women under age 30) but rose rapidly with increasing age. By age 50, more than one in four women had received treatment for hypertension and by age 80, the majority of women (70%) had received treatment. The difference in rates of hypertension between women and men also increased with age (Figure 2). By age 85, the rate of hypertension was 15% higher among women than men.

Since hypertension is often asymptomatic, many individuals are unaware of their hypertension and will therefore not be represented in these statistics. Thus there is an important connection between physician visit rates and the diagnosis of hypertension. Hypertension is more likely to be undiagnosed in those who use physician care less often than those who see physicians more often, and women's greater use of physician care may be a factor in their higher rates of diagnosed hypertension. Among all Manitobans, females were more likely to have seen a physician, outside of hospital, at least once per year (86% of females and 79% of males) and this difference was statistically significant. Women also saw physicians more often than males in every age group except those aged 75 to 85 years [3].

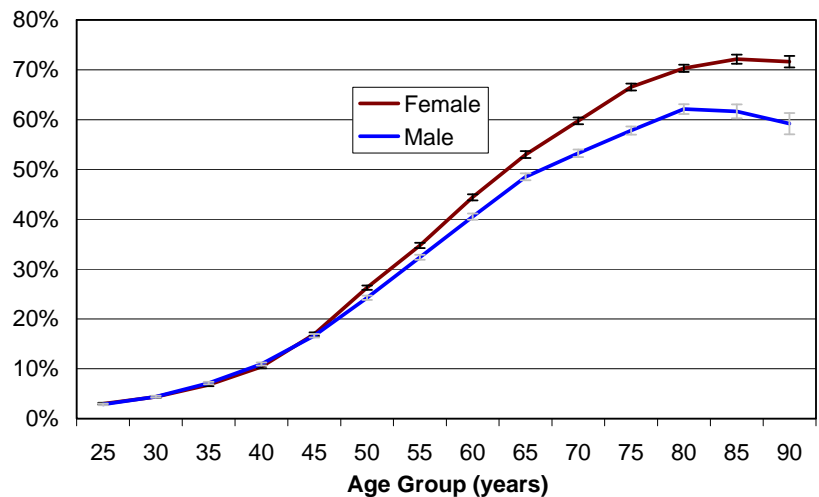
Regional comparisons of hypertension treatment rates indicated that women in northern and rural settings have relatively high risks for cardiovascular disease. Significantly higher (age standardized) rates of hypertension were found among women than among men in most regions. Rates were higher for

Figure 1
Age Standardized Treatment Prevalence for High Blood Pressure, 2001/02 - 2003/04 & Ischemic Heart Disease, 2002/03 - 2003/04, Manitoba



Source: Fransoo et al., 2005. Manitoba Centre for Health Policy, 2005 [3]

Figure 2: Hypertension Treatment Prevalence by Age and Sex, Manitoba, 2001/02 – 2003/04
Crude percent of residents treated for high blood pressure age 25+



Source: Fransoo et al., Manitoba Centre for Health Policy, 2005 [3].



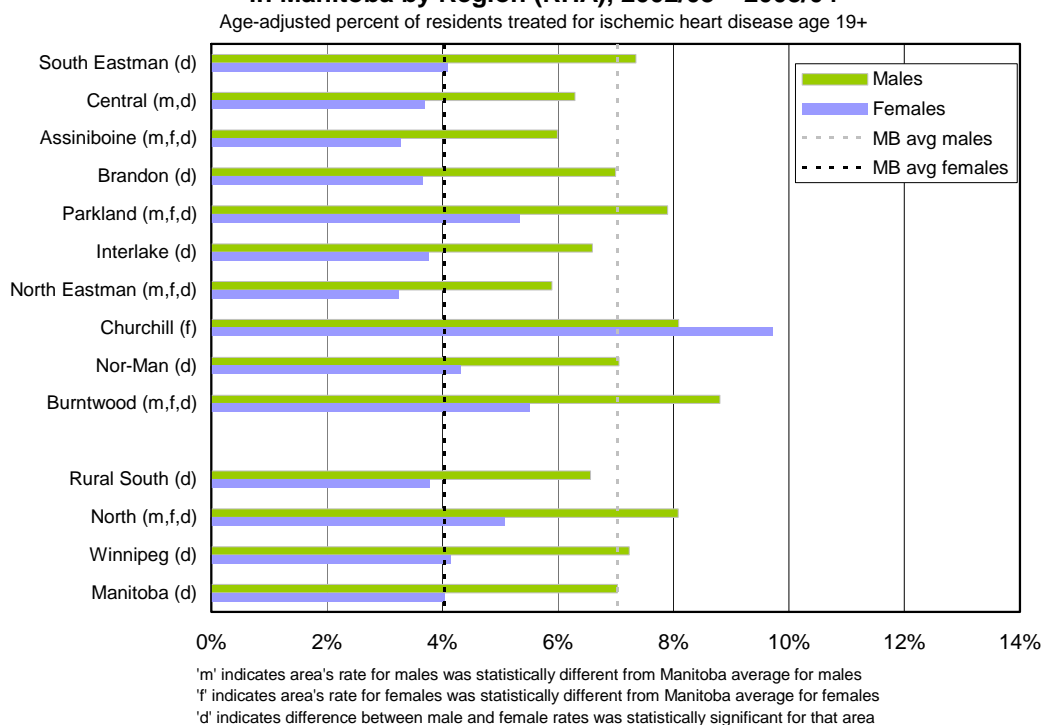


women living within the boundaries of the North and Rural South Regional Health Authorities (RHA), but not in the Winnipeg RHA. Over 30% of women living in the North regions were treated for hypertension, a significantly higher rate of treatment than for Manitoba women overall. Among individual RHAs, women in the Interlake and Burntwood RHAs had significantly higher rates of hypertension (28% and 34% respectively) than average for all women in the province. Only women living in the Central region had significantly lower rates of treatment for hypertension (24%) compared to Manitoba women overall.

Ischemic Heart Disease

Ischemic heart disease (IHD) is much more common among men than women in Manitoba (Figure 1). The (age adjusted) prevalence of IHD² for 2002-2004 was 7% for men compared to 4% for women aged 19 and older, which represents 26,094 men and 19,939 women living with IHD in the province. The prevalence rose steadily with increasing age; one in ten women aged 65 years and one in four women aged 80 years were treated for ischemic heart disease (versus 1/6 and 1/3 for men, respectively). Women (and men) residing in Northern Manitoba were more likely to have received treatment for IHD than the Manitoba

Figure 3: Ischemic Heart Disease Treatment Prevalence in Manitoba by Region (RHA), 2002/03 – 2003/04



Source: Fransoo et al., 2005. Manitoba Centre for Health Policy, 2005 [3]

² This is the treatment prevalence of IHD in residents age 19+ defined by a combination of data on physician visits, hospitalizations, and prescription drugs, from 2002/03 to 2003/04 fiscal years (one or more hospitalizations with any diagnosis code from 410 through 414 in any diagnosis field, OR, two or more physician claims with one of these diagnoses, OR, one physician claim with one such diagnosis AND two or more prescriptions for IHD drugs) [3].





general population. Treatment rates by region (Figure 3) varied considerably and indicated high rates of IHD among women in the Churchill, Burntwood and Parkland regions, and low rates among women in the North Eastman and Assiniboine regions compared to Manitoba women overall. Women living in the Churchill region were 2.5 times more likely to have received treatment for IHD than Manitoba women (9.7% versus 4%).

Acute Myocardial Infarction (AMI)

Manitoba men (age 40+) are much more likely than women to suffer an AMI³, leading to either hospitalization or death. The annual (age adjusted) incidence of hospitalization or death for men was over double the rate for women (7.1 versus 3.1 per 1,000) and represented 1,517 and 943 AMIs per year among men and women respectively (Figure 4). Men’s greater risks were observed in all age categories. Regional comparisons among women again found greater risks in the North. Women living in the North regions had significantly higher rates of AMI than Manitoba women overall.

Among individual RHAs, women in the Burntwood, Brandon and Interlake regions were more likely to suffer an AMI compared to all women in the province. Significantly lower rates were recorded for women in South Eastman and Central regions [3].

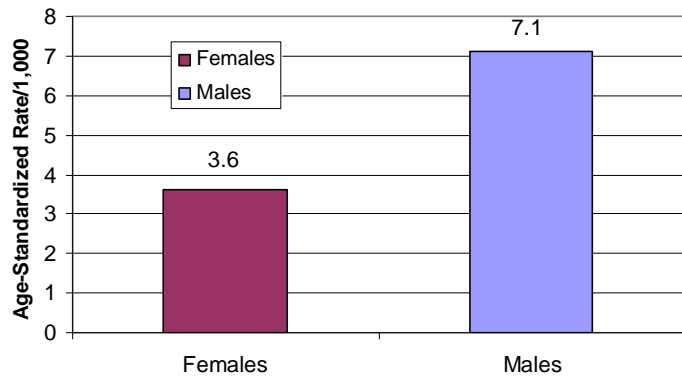
Prevalence of CVD among First Nations Women

Based on the results of health surveys⁴, hypertension appears to be more prevalent among First Nations women than other Canadian women (23.2% versus 17.4%) (Figure 5). Comparisons by age indicate that First Nations women have a younger age of onset for hypertension. While similar rates of hypertension were found among women over age 60, in younger age categories, First Nations women had a higher prevalence of hypertension. Heart disease has also been found to be more prevalent among First Nations women than other women in Canada (8% compared with 5.1%) [10].

³ Defined as the annual rate of hospitalization or death due to acute myocardial infarction in residents age 40 and older, over the five-year period 1999/2000 to 2003/04. Vital Statistics files provided information on deaths; hospitalized patients were counted if they stayed three or more days, as those hospitalized for less than three days have been found to be less likely to represent true cases of heart attack. Rates were age adjusted to remove the influence that differences in age structure between populations would have on rates of heart attack [3].

⁴ The prevalence rates reported by the First Nations Regional Longitudinal Health Survey and the Canadian Community Health Survey are based on self-reported diagnoses of heart disease and hypertension. These rates are not comparable to the treatment prevalence rates reported earlier, which were reported by the Manitoba Centre for Health Policy based on Manitoba Health’s administrative data.

Figure 4: Age Standardized Incidence of Hospitalization or Death from Heart Attack, Manitoba 1999/2000 to 2003/04



Source: Fransoo et al., Manitoba Centre for Health Policy, 2005



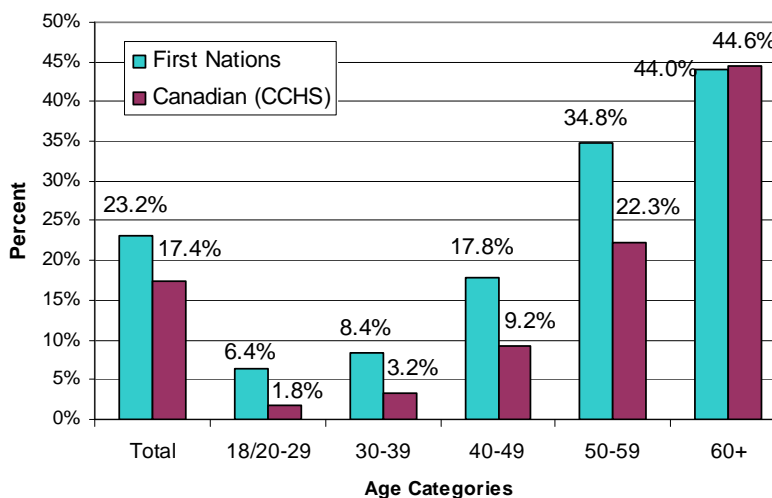


A report on the health of Manitoba First Nations people found interesting disparities in the prevalence of hypertension by residence, though this research did not provide an analysis of sex-specific data. Comparing First Nations and other Manitobans, the study found similar rates of hypertension overall (22.1% versus 20.2%) and in southern RHAs, including Winnipeg, but significantly higher rates for First Nations in northern regions. Further, among First Nations, the on reserve population had a significantly higher rate of hypertension compared to the off reserve population (23.5% versus 19.9%) [11].

First Nations peoples' higher risk for CVD has been attributed in part to their higher exposure to such major risk factors as diabetes, obesity and smoking [12], as well as less fruit and vegetable consumption [7], a challenge tied to food security issues which disproportionately affect First Nations populations. The higher burden of diabetes among First Nations women compared to both men and non-First Nations women [13] (see Diabetes) contributes to a higher prevalence of hypertension in this sub-population. National First Nations survey results found that diabetes sharply increased the risk of CVD; survey respondents with a diabetes diagnosis had 4 to 5 times the rates hypertension and heart disease compared to those not affected by diabetes (42% versus 10% and 14.9% versus 3.3% respectively) [10].

Women belonging to certain ethnic groups also have higher risks for CVD, whether through the influence of a genetic predisposition or through cultural influences on lifestyle risk factors. Research has shown that individuals with South Asian and Eastern European ethnicity are particularly vulnerable to heart disease, and that those with Chinese ethnicity have a higher risk of stroke [7]. Among Canadian women, South Asian immigrant women have the highest rates of IHD. Studies from the United States have also demonstrated that Black women have high rates of CVD relative to other women. Canadian research has shown Black women's rates of self-reported CVD (7.3%) to exceed rates for all Canadian women (3.5%), as well as rates for Black men (2.8%) [2].

Figure 5: Prevalence of Hypertension by Age First Nations & Canadian Women, 2003



Source: First Nations Regional Longitudinal Health Survey (RHS), 2005. The RHS derived data on Canadian women from the CCHS 2003. [10]

Notes: The CCHS did not survey people in the northern territories, on military bases, in institutional collective dwellings or living on First Nations reserves. The RHS defined its youngest age category as 18-29, whereas the CCHS defined its youngest age category as 20-29.





Key Risk Factors Contributing to CVD for Women

Some of the major risk factors which predispose individuals to heart disease are shaped by both sex and gender [14]. Biological and epidemiological research have shown differences in the impact, prevalence, and expression of risk factors for women and men. For women, the individual biological or behavioural risk factors which have the greatest impact on CVD are advancing age, cigarette smoking and diabetes. Other major risk factors, including hypertension, overweight, and physical inactivity, hold a similar degree of risk for both sexes [17]. While behavioural factors receive considerable attention in research and policy, the importance of socioeconomic factors for women's CVD is increasingly recognized, in Canada and among international experts in the field. While several of these risk factors relate to other indicators covered elsewhere in the *Profile*, some important points with respect to CVD risks and Manitoba contexts are offered below.

Smoking is commonly recognized as the most important modifiable risk factor for CVD. Women who smoke have two to six times the risk for AMI and two to three times the risk for stroke, compared to women who do not smoke. As well, women who smoke and use oral contraceptives have an increased risk for stroke [1]. Smoking has also been found to be a stronger risk for AMI in middle-aged women than in men [2]. Overall, women are less likely to smoke, and when they do smoke, they consume fewer cigarettes than men (see Chapter Three), though the large differences in smoking behaviour that were seen a generation ago, no longer exist. In Canada, as in other developed nations, smoking has become as common among young women as it is among young men [18]. In Manitoba, the 2005 CCHS found little difference in the rates of smoking among females and males aged 15 to 19 (Chapter Three). As lifestyle habits that begin in youth often continue through life, early onset of smoking has lasting influences on risks for CVD.

Though the prevalence of smoking has declined in recent years, often attributed to public health campaigns and policies which restrict smoking in public spaces, less dramatic gains have been observed for women than for men. The influence of gender on smoking behaviour may be partially responsible, as women appear to have distinct motivations for smoking. Women often smoke to cope with psycho-social issues, often associated with poverty; women may also receive less social support for quitting [14]. Among female adolescents, initiation and sustained smoking are more often related to targeted advertising by tobacco companies, self esteem and issues of body image than for male youth [18]. As well, women are more physiologically susceptible to nicotine addiction and may find it more difficult to quit smoking [19]. It is important to recognize that because individuals may smoke for 2 or 3 decades before health consequences are seen, for a growing cohort of older women, many of whom quit only in the late 1970s (15 years later than men, on average) the consequences of their risk exposure may not yet be fully reflected in the incidence of CVD.

Physical inactivity, though not the most important risk factor for CVD, has been described as the most prevalent modifiable risk factor [17]. Regular physical activity can reduce body weight, improve serum lipids and cholesterol, blood pressure, and diabetes, and thereby reduce overall cardiovascular risk. National guidelines recommend a minimum of 60 minutes of light physical activity or 30 minutes of moderate physical activity daily [20]. Research has shown a five-fold greater risk of CVD mortality among





women who are the least active relative to the most active groups of women [15]. Many studies suggest that women are more likely to be sedentary than men. Canadian surveys of activity levels have classified 36% of women aged 18 to 74 as physically inactive, and found higher levels of inactivity among older individuals and those with lower socioeconomic status [2]. Nearly two-fifths of teenaged girls in Canada are physically inactive [7], and a wide gap between young women and men (12 to 19) persists, despite encouraging trends [18]. While surveys of activity levels have often been restricted to measures of leisure time, sport and exercise, the Manitoba *In Motion* survey, which incorporated a broader range of daily activities (e.g. house/yard work) still found that young women (aged 18 to 34) were less active than men of the same age. Even girls aged 13 to 17 have been found to be less active than their male peers (Chapter Three). Young women's lower levels of physical activity have been attributed to women's attitudes toward exercise and their bodies and to the limited availability of gender sensitive activities for girls and women. Despite the prevalence of sedentary lifestyles, and considerable attention devoted to the issue, physical activity is not well recognized by women as a means of reducing their risk for CVD [17]. However, studies have found that women tend to have positive attitudes toward physical activity, but may be unable or unwilling to take action. The most commonly reported barrier to women's participation in physical activity is family responsibilities [15].

Overweight, particularly obesity increases risks of morbidity and mortality associated with hypertension, heart diseases, cerebrovascular diseases, and diabetes mellitus. Excess weight has adverse effects on blood glucose levels, blood pressure and lipid profiles [15]. Obesity and overweight⁵ are highly prevalent among Canadians [2]. In Manitoba, 55% of women were either overweight (29%) or obese (26%) in 2004 [21]. While obesity is more common among men than women overall, women are particularly susceptible to weight gain in adolescence, pregnancy and menopause. Weight increase in menopause has been shown to be associated with a significant increase in blood pressure [15]. Among children (age 2-17) in Manitoba, the prevalence of unhealthy body weight was similar for girls and boys aged 2 to 17 (30-31%) [22]. The prevalence of obesity and overweight increase with age; approximately one third of Canadian women are obese by age 45 [23]. Women living in poverty may have somewhat higher risks for being overweight, which is associated with less access to high quality food. However, according to the 2004 CCHS, Canadian women in middle and upper-middle income households are more likely to be obese compared to women in the highest and lower income households. In contrast, men in the highest income households are most likely to be obese [24]. Sex differences in overweight and obesity are also influenced by ethnic background. The prevalence of overweight is lower among Black Canadians overall, but higher among Black women (20%) than among Caucasian women (15%). The Aboriginal population has the highest reported rate of obesity in Canada (25-30% for women and men) [15]. Social and environmental factors are important influences on activity levels and body weight. Canadian women living in urban cores report less overweight and obesity than those living in suburban or rural areas,

⁵ According to the 2003 Canadian Guidelines for Body Weight Classification in Adults, the following Body Mass Index (BMI) values distinguish four categories of body weight on the basis of associated health risks that have been demonstrated through research: Obese \Rightarrow 30.0 kg/m²; Overweight = 25.0 - 29.9 kg/m²; Normal Weight = 18.5 - 24.9 kg/m²; and Underweight $<$ 18.5 kg/m². However, the BMI is not an appropriate measure of healthy body weight for pregnant women and persons less than 3 feet tall (0.914 metres) or greater than 6 feet 11 inches tall (2.108 metres). See Chapter 3 for a gender-based analysis of BMI.





which is understood to partly reflect the greater convenience and opportunity afforded for biking and walking in urban neighbourhoods. Health promotion initiatives that remove social and environmental barriers, while creating opportunities for safe, active living, are recognized as effective means to promote weight loss for women and men [24]. Women's greater likelihood of suffering depression with obesity [24] is one aspect which calls for gender sensitive approaches to weight loss strategies for women.

Diabetes mellitus⁶ is an established risk factor for the development of CVD [15] and a particularly important risk factor for women. Diabetic women are significantly more likely to have coronary heart disease and adverse outcomes of acute myocardial infarction than are men and non-diabetic women [2]; a two-fold greater risk of coronary heart disease and stroke for women compared to men has been described in the literature [1]. Also, women of childbearing age who develop gestational diabetes, marked by high blood sugar levels in the late stages of pregnancy, have increased risk of developing overt diabetes in later life and, in turn, are at greater risk of heart disease [1]. Gestational diabetes occurs in about 2% to 4% of pregnant women [5]. Diabetes also affects the severity of CVD outcomes. Individuals with diabetes and heart disease are more likely to die than are non-diabetics with heart disease. A large Norwegian study, which followed participants with and without diabetes for 18 years, found that diabetes was a stronger predictor for death from ischemic heart disease (IHD) in women than in men, eliminating the usual gender gap in IHD mortality [25]. The link between CVD and diabetes is especially concerning in Manitoba where the highest reported diabetes prevalence among Canadian women has been found—20% higher than the average rate for Canadian women (i.e. age standardized prevalence of 5.3% versus 4.4%). The high prevalence of diabetes in Manitoba is understood to partially reflect the higher burden of diabetes borne by the Aboriginal population, who comprise a large proportion of the provincial population than the Canadian population (13.6% versus 3.3%⁷). Among First Nations women in Manitoba, as of 2006, the prevalence of diabetes was higher than for men and more than four times higher than among non-First Nations women. The growing incidence of diabetes in the province [13] and several risk factors being common to both conditions (e.g. hypertension, elevated blood cholesterol levels, overweight or obesity, and physical inactivity) indicate the importance of prevention and early intervention initiatives that address the early stages of both CVD and diabetes among women and men.

Women's Social Conditions and CVD Risk

There is a growing body of evidence that the determinants of health go beyond individual genetic endowment, lifestyle behaviour, and the health care system to the more pervasive forces in the physical, social and economic environment... Health policy makers and analysts have emphasized that these underlying determinants need to be addressed in order to prevent heart disease and stroke. They urge us to direct attention towards modifying not only risk factors and risk behaviours but also such 'risk conditions' as poverty, powerlessness and lack of social support [16].

⁶ See also Diabetes, this Chapter.

⁷ The Aboriginal identity population for Manitoba and Canada, according to the 2001 Census of Canada.





This statement challenges health promotion initiatives to address not only individual behaviours—the more immediately modifiable risk factors for CVD—but also the systemic level of risk, with the potential to benefit large sub-populations for whom improvements in CVD mortality and morbidity have proven resistant to medical and lifestyle approaches.

Research has demonstrated a relationship between socio-economic variables—income, education and occupation—and cardiovascular disease. Income level has been found to have both an independent effect on CVD and an interactive effect in relation to other risk factors. Several studies in the UK and US have documented a much higher risk of death from CVD for women and men in low income groups compared to high income groups. Generally, the relative risk of death has been two or more times as high for low income individuals [16]. While studies have not always disaggregated data by sex, some have found sex differences in the relative risk of death from heart or vascular disease by income. A study conducted in England and Wales found that women in the two lowest income groups had a 200% greater risk of death from CHD compared with women in the two highest income groups, whereas low income men had a 66% greater risk. Similarly, for CVD, individuals with low income were more likely to die than their higher income counterparts, and these risks were greater for women than men (i.e., 68% greater risk of death for women in low income than high income groups; 55% greater risk for low income men). A Canadian study of urban residents found smaller differences in CVD mortality by neighbourhood income among women than among men. However, the study also found that the relative risk of death comparing women from the lowest and highest neighbourhood income groups had increased (1.12 in 1991 to 1.20 in 1996) while for men it had declined (1.35 to 1.32)⁸ [16]. An analysis of the 2000/01 Canadian Community Health Survey found that women with heart disease were more likely to be poor than men with heart disease, and that poor women with heart disease were much more likely to report fair or poor health and higher levels of co-morbidity. Socio-economic factors (income, education, language), health behaviour (physical activity), access to care, and psychosocial factors (depression, stress, and sense of community belonging) were all found to be independently associated with poor health for women [26]. While low income may also be a consequence of living with CVD, longitudinal studies have found evidence that low income precedes the onset of cardiovascular disease and death, and still contributes to these outcomes when the influence of medical and lifestyle factors are removed [16].

An analysis by the Manitoba Centre for Health Policy of provincial data on hypertension, ischemic heart disease and AMI established the importance of socioeconomic factors for the occurrence of CVD among women and men in Manitoba. The study found that socioeconomic status (defined as area-level income) strongly influenced rates of cardiovascular disease. For women, age-adjusted rates of treatment for ischemic heart disease and hypertension and of death or hospitalization for AMI were higher among residents of low-income areas in both urban and rural settings, with statistical tests indicating a highly significant relationship between CVD and income ($p < .001$). A similar relationship was found for men,

⁸ These values represent ratios of death rates. Note that Canadian studies of differences in death rates by income have produced more conservative results for these ratios than studies from the UK or US. This has been attributed to the use of neighbourhood income as an estimate of individual income in Canada, where income and socioeconomic data for individuals are not routinely collected at death.





although the trend was not statistically significant for hypertension and a somewhat lower level of significance was achieved in income comparisons for AMI among rural men ($p < .01$) [3]. Closer examination of the data on ischemic heart disease also revealed a larger disparity by income for women than men. That is, women living in the lowest income areas, in both urban and rural settings, had 1.5 times the rate of treatment for the disease than women who lived in the highest income areas. For men, the difference in treatment by income was not as pronounced (ratios of 1.1 and 1.2 in urban and rural areas respectively) [3].

Raphael explored the influence of income inequality and social exclusion, recognized as distinct from income level alone, and found these two factors to be very important influences on cardiovascular disease rates. The extent of relative inequality in a society independently contributed to CVD among those with lower socioeconomic status, primarily resulting from the physiological effects of chronic stress on the heart [16]. Similarly, research with African-American women found that chronic exposure to discrimination contributes to early stages of coronary artery disease [27]. Although the mechanisms by which socioeconomic factors contribute to CVD are not well understood, the effects are believed to be mediated through social isolation, coping styles, behaviour, job strain or stress, and anger and hostility. The characteristics of low income neighbourhoods may also influence CVD outcomes [1]. For example, residents of low income neighbourhoods are exposed to more air pollution, which has been linked to increased rates of cardiovascular disease. The Ontario Medical Association has estimated that in 2005, there were over 16,000 hospital admissions in that province associated with air pollution exposure, of which approximately 11,000 were associated with cardiovascular illnesses [28, 29]. A report by the Royal Commission on Environmental Pollution presented a wide range of physical, environmental and social factors that can interact in residential environments to change cardiovascular risk (see Figure 6). Notably, sex and gender were not included among the pathways, though most of the effects listed are gendered, while certain effects differ by sex. Again taking the example of air pollution, research has shown that women are more physiologically susceptible to the effects of fine particles in air pollution on coronary heart disease [30].

The importance of socioeconomic factors and social status to women's cardiovascular health was recognized at the first international conference devoted to women's experience of heart disease and stroke. Leading experts in the field asserted that "the promotion of cardiovascular health and the prevention of heart diseases and stroke and its sequelae among women can only be accomplished with attention to the realities of women's various roles within the family, the workplace and the community, and their power base in the family and country" [1]. A lack of control in community, family, and work settings is believed to be detrimental to women's cardiovascular health. Research has found that high demand and low control jobs adversely affect heart health and that women tend to have a restricted choice of jobs and less control than men over the process and content of their work. As well, many women with a double workload, consisting of paid employment and unpaid work in the home, may experience high levels of stress. It is also important to note that there are considerable differences among women's status and opportunities for self-determination, which often follow divisions marked by levels of educational attainment and rural or urban residence [1, 14]. In the home environment, women usually carry the role of the primary caregiver in the family, and due to their longer life expectancy, are often less likely than older

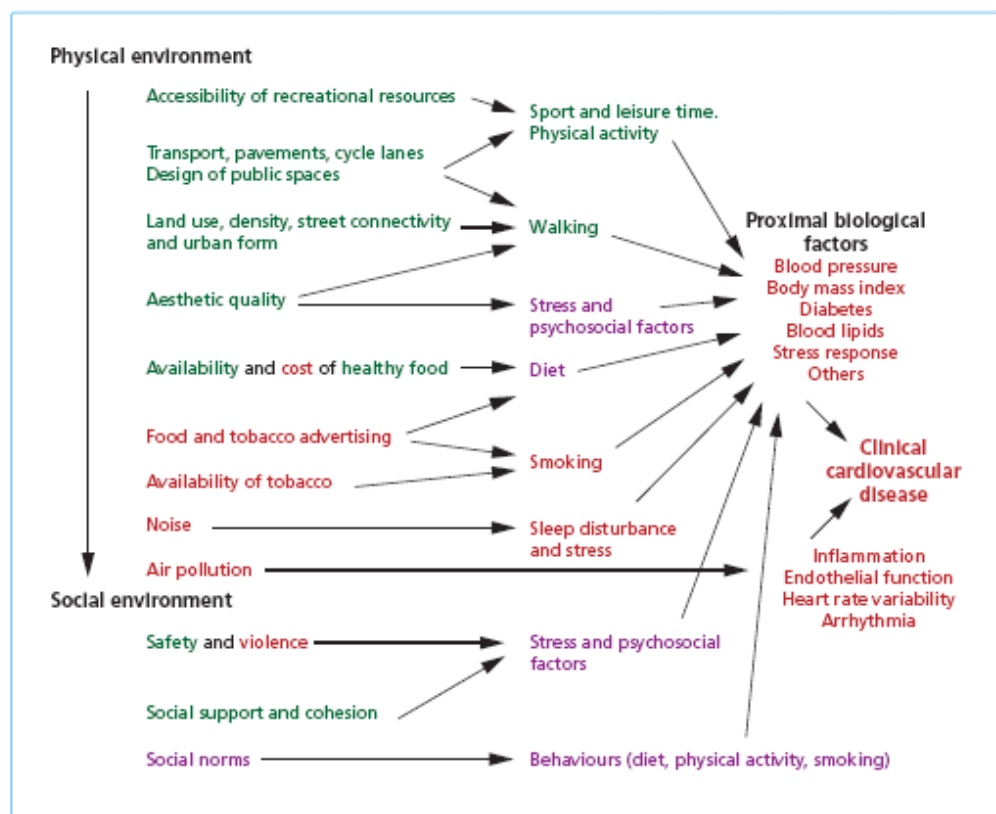




men to have a partner to provide care to them. Thus, women's more limited access to social support may affect both the risk for disease as well as their likelihood of success in recovering from an AMI or stroke [1].

The pathways that can link residential environments to cardiovascular risk¹¹¹

Green = positive effects Red = negative effects Purple = mixed/intermediate effects



Source: Royal Commission On Environmental Pollution, 2007 [28].

Figure 6

Women's CVD Outcomes

The Influence of Knowledge Gaps & Gender Bias

Research from Canada and other nations comparing sex differences for CVD have consistently found that men are more likely to be diagnosed with CVD and have higher age standardized death rates [8]. Despite this, women appear to have worse outcomes for CVD events. Women who suffer an AMI are less than half as likely to recover as men [31]. Studies have shown that, at all ages, women have higher in-hospital mortality rates following AMI than men. An analysis of health care outcomes for Canadians found that, compared to men, women's risk of dying within the first 30 days following a cardiovascular event was 16% higher for AMI and 11% higher for stroke, even when the study controlled for the older age of women with CVD and the greater likelihood of their having other illnesses that could complicate CVD outcomes [4]. However, Manitoba research, that examined a cohort of Manitobans diagnosed with an AMI from 1999 to





2002⁹, followed-up for outcomes at the time of hospitalization, 30 days after AMI and one year after AMI, found no statistically significant differences between women and men in age-adjusted rates of mortality [3].

Other research has found evidence of worse health status for women among survivors of CVD events. Women typically have longer stays in hospital and suffer greater disability related to CVD. The National Population Health Survey showed that among individuals diagnosed with heart disease, women consistently reported higher levels of pain, discomfort, activity restriction and disability secondary to their heart disease than men [8]. There is some indication that women with cardiovascular disease also receive less support than men, don't cope as well, and report more symptoms of anxiety and depression [14]

The ability to understand and improve upon CVD outcomes for women has been hampered by a lack of research and analysis of women at risk of, or living with CVD. Until recently, most clinical trials and epidemiological studies concerning CVD have been based on samples that are completely or predominantly made up of men. In 2003, a systematic review of research on coronary heart disease performed by the U.S. Agency for Healthcare Research and Quality still found a serious lack of sex-specific evidence in a number of important areas of diagnosis, treatment and risk prevention. In many cases, even when data were collected on women and minorities, the authors did not perform analysis or publish results for these subgroups [32, 14]. Furthermore, studies that have included women have often focused on young and middle-aged populations, age ranges in which CVD is much less common for women than for men [15]. Consequently, not enough is known about women's disease origins, risk factors, disease characteristics, effective practices for women in the areas of prevention or preclinical and clinical interventions, or the quality and responsiveness of health services for women with CVD [1, 2].

The lack of information on women's experience of CVD has raised concerns that this may lead to women delaying seeking help, thus contributing to their poorer outcomes. An example which is often mentioned in the literature is that research has more often explored the symptoms and signs of AMI experienced by men than those of women. Men typically experience severe chest pain, sweating and an inability to breathe as early symptoms of AMI. Women are less likely to report chest pain, and are more likely to experience unusual fatigue, sleeplessness, sudden dizziness, or nausea [14]. Consequently, the widespread public perception is that chest pain is the definitive sign of an AMI. Thus, women tend not to recognize 'atypical' warning signs and seek treatment. Though based on a small sample of research subjects, one study found that relatively few women recognized early signs of an AMI even when many women had experienced severe chest pain and were aware of their families' history of heart disease. The results contributed to evidence that delays in seeking medical care contributes to higher rates of disability and death for young women (under age 55) who suffer an AMI [33]. Similar studies have arrived at four main themes to account for delays in women seeking medical care, including: uncertainty about symptoms, competing social demands, problems with doctor patient interaction, and structural barriers to access to

⁹ Excluded patients who were hospitalized for AMI in the two years preceding the current AMI, in an attempt to exclude patients experiencing multiple AMIs in a short period [3].





health care [14]. However, a national survey of Canadians aged 35 and over found that women were generally very aware of heart health issues facing women, while many men were unaware of the risks to their female partners, mothers, siblings, or loved ones. Over half (53%) of men polled erroneously thought the number of heart and stroke deaths was somewhat or a lot less in women compared to men (an error made by only 27% of the women polled). Only 24% of men thought their partner or spouse would develop heart disease or stroke within their lifetime, while 45% of women acknowledged these risks to their own cardiovascular health [4]

Another study has pointed to evidence that coronary events are underdetected in women and attributed the failure in early detection, not to individual women's lack of awareness, but to the systems and health professionals whose policies, practice and behaviour determine diagnoses [34]. Gender bias in the delivery of health care has been recognized as a key contributor to women's CVD outcomes. Research involving primary care doctors in the UK and US found that the gender of patients significantly influenced doctors' diagnostic and management activities, while race, social class and age did not. Female CVD patients were asked fewer questions, received fewer examinations and had fewer diagnostic tests ordered for CHD, suggesting that doctors' actions may contribute to gender inequalities in health [35]. Research has also indicated that women receive fewer preventive services for CVD than are recommended, less advice regarding modifiable risk factors, and fewer referrals to specialists. One study found that physicians tended to assign lower risk for CVD to women than to men, despite identical risk profiles [36]. Furthermore, women receive fewer referrals for cardiac rehabilitation and are less likely to attend when they are referred [37]. A study of women receiving cardiac rehabilitation found that women aged 60 and over were well served by the program, but younger women appeared to have more unaddressed psychosocial issues associated with their cardiac disease [38]. Gender bias has also been found to affect women's access to intensive care. A recent Canadian study, which looked at almost 500,000 Ontario patients, found that older women (over age 50) with heart failure were 32% less likely to be admitted to intensive care units, received less life support, and were 20% more likely to die in intensive care units than men [39].

While women with CVD have been found less likely to receive intensive treatment, these results have not been consistently demonstrated. For example, women are less likely to undergo revascularization (e.g. angioplasty and coronary artery bypass surgery) and are more likely to be treated with medical therapy than men [37]. However, women's lower rates of revascularization may reflect an older age of onset of CVD which may affect their candidacy for surgery [37]. Research has also shown that lower revascularization rates have not adversely affected mortality rates for women [40]. Other studies have found no sex differences in revascularization [37]. In Manitoba, an analysis of provincial data on cardiac care found no evidence of gender bias in diagnosis or treatment rates for women and men with CVD. Researchers reviewed preceding diagnoses and treatment received by Manitoba males and females who experienced an AMI (1999 to 2002) which resulted in either death or hospitalization. Catheterization¹⁰ procedures were highlighted in the analysis. The study found similar diagnoses were attributed to men

¹⁰ A procedure to identify extent and location of blockages in coronary arteries.





and women in the year preceding an AMI. Sex differences in treatment rates were found, as males overall had a significantly higher rate of cardiac catheterization than female AMI survivors (35.7% versus 28.7%). However, the difference was accounted for by age differences in the male and female patient populations. Comparisons of catheterization rates between men and women within the same age groups found very similar rates of treatment for men and women. Younger patients were more commonly catheterized than older patients. Thus, apparent sex differences reflected more aggressive treatment of a relatively younger male patient population (7 to 10 years younger on average). Geographic differences were also indicated by the results, as patients residing in Winnipeg were more likely to have received aggressive treatment following an AMI than those who did not live in the city [3].

Use of Medications for Cardiovascular Diseases¹¹

Manitoba's Pharmacare system allows prescription drug use by provincial residents to be tracked. Pharmacare data include information about all prescriptions filled for Manitobans in Manitoba pharmacies, and out-of-province claims submitted by residents. The program pays the costs of prescription drugs, within an approved formulary, after residents reach an annual deductible amount. The deductible paid per resident is based on personal income. In 1998/99 cardiovascular drugs accounted for 32.7% of total drug expenditure in Manitoba [41].

Angiotensin-converting Enzyme (ACE) Inhibitors relax blood vessels to lower blood pressure and make it easier for the heart to pump blood. They are primarily used to lower blood pressure and are also prescribed for persons with congestive heart failure. ACE inhibitors were the most commonly prescribed drugs used to treat hypertension in Canada in 2004; 31% of prescriptions to treat hypertension were for ACE inhibitors [42]. They are recommended in Canada as the first line treatment for monotherapy of uncomplicated hypertension. (Other drugs are also used to treat hypertension, including older drugs such as diuretics and beta-blockers and newer, more expensive drugs such as angiotensin II receptor antagonists (A2RAs) [41].)

Rates of ACE inhibitor use have increased in Manitoba, as the number of patients for which these drugs are recommended has also increased [3]. During the 2003/04 fiscal year, 10% of Manitoba males and 8.7% of females (age adjusted, population 20 years of age and older) have had at least one prescription filled for ACE inhibitors. This difference was statistically significant ($p < .001$) [3]. Therefore, while women were more likely to be diagnosed with hypertension, men were more likely to receive treatment with ACE inhibitors.

ACE inhibitor use was strongly linked to age. Men aged 80 to 85 (31%) and women aged 85 to 90 (31%) were most likely to have had at least one prescription filled for an ACE inhibitor [3]. There was also a strong relationship between ACE inhibitor use and neighbourhood income. In both rural and urban Manitoba, men and women living in poorer areas were more likely to have used ACE inhibitors [3]. While

¹¹ Material in this chapter section was previously produced for the World Health Organization in *Manitoba Field Testing of Gender-Sensitive Core Set of Leading Health Indicators*, by Donner, Haworth-Brockman and Isfeld (2006). The authors are grateful to the World Health Organization for technical assistance.





this illustrates the greater burden of CVD borne by low income Manitobans, it also demonstrates the success of the Pharmacare Program, which provides public funding for prescriptions, with an income-related deductible amount.

Statins are cholesterol-lowering drugs. They are used to treat ischemic heart disease, as lower cholesterol or lipid levels may decrease one's risk of coronary heart disease (CHD), and, as a consequence one's chance of having an AMI [41]. Statins accounted for 9.6% of total pharmaceutical expenditures in 1998/99 and 12.6% of the growth in overall prescription drug costs in the three years from 1995/96 to 1998/99 [2]. Lipitor®, a statin, was the single most commonly prescribed drug in Canada in 2006, with over 12.7 million prescriptions dispensed by retail pharmacies in that year [43].

During the 2003/04 fiscal year, 7.4% of Manitoba females (age adjusted, population 20 years of age and older) filled at least one prescription for statins, with those aged 70 to 80 years of age most likely to have been prescribed a statin. About 26% of elderly women in this age group received at least one prescription for a statin [3].

Patterns of statin use varied by income among both women and men. For both urban and rural women, those living in lower income neighbourhoods were more likely to use statins. Among urban men, the opposite was true; those with the highest incomes were the most likely to have used statins. All of these differences were statistically significant. No relationship was found between income and statin use among rural men [3].

Beta-Blockers after Acute Myocardial Infarction: Beta-blockers, when used after an acute myocardial infarction (AMI), have been shown to reduce the risk of a second AMI. Other drugs, including ACE inhibitors and angiotensin II receptor antagonists can also be used for secondary prevention of recurrent AMI. Research by Metge et al found that approximately 17% of Manitobans received no secondary prevention drug treatment following an AMI [41].

During the five year period from April 1, 1999 to March 31, 2004, 79.8% of males and 72.7% of females who had an AMI filled a prescription for a beta-blocker within four months. This difference was statistically significant. Among rural AMI patients, those from higher income areas appear to have been more likely to have been prescribed a beta-blocker. This was true for both males and females, and the differences were statistically significant. For urban residents, there was a marginal difference for males and no difference for females [3].

The Appropriateness of CVD Medical Therapies for Women

The lack of clinical research involving women may place women at greater risk of receiving ineffective or harmful medical therapies. Many drug therapy protocols and medical interventions commonly administered to women are based on research solely on men. As a result, appropriate diagnostic criteria, drug dosages and interventions that are effective for women are often unknown [1]. Concerns have been raised regarding the effectiveness and safety of statins for women. Women have been underrepresented in trials of statins, yet they account for approximately half of the 3 million Canadians who take statins daily.





By age 75, one-third of Canadian women are on statins [44]. In Manitoba, administrative data for 2003/04 show that 7.4% of women and men aged 70 to 80 received at least one prescription for statins [3]. The rate of statin prescription for Manitoba women appears slightly less than for women of similar age in six Canadian provinces¹² (2006), among whom 8.8% of women age 15 and older and 28.7% of women aged 70 to 74 received statins [44].

While results from the Framingham Heart Study established that high cholesterol increased the risk of heart disease in young and middle-aged men, these findings were not demonstrated for women or individuals beyond age 60 [44]. In 2004, an in-depth review of women and trials of statins found that only 21 of 1,500 trials included women, and only 9 published results by sex. The study concluded that for women without known cardiovascular disease, the use of lipid lowering medications (hypothesized as a form of primary prevention) did not reduce mortality, and evidence was insufficient to show that it reduced stroke or AMI [44]. Yet 75% of female users of statins are prescribed the drug as part of a primary prevention strategy. Furthermore, there is evidence that statins may pose health hazards, particularly for women. The 1996-1999 CARE trial (14% of participants, or 576, were women) found a 12 fold, statistically significant increase in the incidence of breast cancer in statins users [44]. Another study found that statins were associated with muscular weakness, particularly for elderly women, as well as mood and memory problems [44]. Health Canada issues a caution about the use of statins for pregnant women and women of childbearing ages [44]. Despite the weak evidence that statins improve women's health, and the existing evidence linking statins with serious harms, statins continue to be prescribed to women in the belief that they will reduce morbidity and mortality due to heart disease.

The practice of prescribing Hormone Therapy (HT) to menopausal women for the prevention of cardiovascular disease has also been proven to carry significant risks for women's health [44]. Early studies had theorized that hormonal differences between the sexes were responsible for younger women's lower rates of CVD and, on this basis, suggested that HT might prevent heart disease in post-menopausal women. For many years, hormonal therapy (estrogen alone or combined with progestin) was commonly prescribed to prevent cardiovascular disease, as well as to alleviate symptoms of menopause, slow the development of osteoporosis, and to prevent cancer of the uterus. However the 2002 Women's Health Initiative found that women who took a combined estrogen and progestin therapy had a significantly higher risk of stroke. This and other research also found a greater risk for breast cancer in women on HT [45].

Policy Implications

The challenge of improving women's cardiovascular disease outcomes and addressing existing gaps and inequities concerning cardiovascular health requires a broad, collaborative and cross-sectoral approach to policy, as was voiced by the Victoria Declaration. International experts drew attention to the distinct cardiovascular health issues of women and called upon governments, NGOs, researchers, institutions, industry and other stakeholders to participate in the development of several different levels and types of

¹² Provinces included Alberta, Saskatchewan, Ontario, Quebec, New Brunswick and Nova Scotia.





policy. It was especially clear that significant improvements in CVD may only be achieved through addressing the ‘upstream’ determinants of risk factors—that is, the systemic and social issues believed to have a major impact on the cardiovascular health of women and other social and economic minorities [1, 26]. What we already know about socio-economic and environmental determinants of women’s cardiovascular health warrants greater action in programming and policy development, including stricter controls on air pollution.

Other key policy areas include improving the economic security and food security of women, including:

- access to nutritious food;
- addressing social support and care giving needs of women;
- addressing the quality of life for women in the workplace, particularly to increase women’s degree of control in work situations; and
- incorporating a gender and diversity perspective in all major policy areas.

Continued and greater attention to primary prevention is needed, particularly with greater consideration for the gendered nature of risk factors and the socioeconomic barriers that prohibit many women from pursuing healthy lifestyle choices. In Manitoba, considerable support has been directed to Healthy Living programs which focus on public education regarding modifiable risk factors for CVD and diabetes, among other chronic illnesses. Nationally, this work is supported through an integrated public health initiative, the Strategy on Healthy Living and Chronic Disease, which builds collaboration between provinces to reduce the burden of chronic disease, including CVD. As well, the Healthy Baby program and the Child Tax Benefit have enhanced the food security of Manitoba women and their children, and provided education on the health benefits of nutritious foods. Manitoba’s provincial ban on smoking in public places is an important component of policies protective of heart health. However, there is also a particular need for gender sensitive smoking cessation programs. Given that inactivity is a major modifiable risk factor for CVD, and influences other risk factors, it is important to support gender sensitive physical activity programming for women over the life course.

Greater awareness must be built among women, men and health care practitioners of women’s risks for and symptoms of CVD. In clinical practice, primary prevention may benefit from improved and equitable access to services; programs tailored to women’s needs (e.g. rehabilitation); continued evaluation of health services and community program; reevaluation of the prescription of statins to women; and improved surveillance of women’s CVD outcomes.





The Victoria Declaration

Recognizing that heart diseases and stroke are the leading cause of death among women in the developed world and are fast approaching the same status in the developing world, that gender inequity, poverty, illiteracy, unemployment, and lack of access to health services influence women's health, that taking appropriate action to address these and other underlying determinants of health, and that promoting a healthy lifestyle would help prevent heart diseases and stroke,

the Advisory Board of the First International Conference on Women, Heart Disease and Stroke calls upon

women and men; health, media, education and social science professionals, and their associations; the scientific research community; government agencies concerned with health, education, trade, finance, culture and recreation, commerce and agriculture; the private sector; international organizations and agencies concerned with health and economic development; community health coalitions; voluntary health organizations; employers and their organizations;

to marshal their efforts and invest resources in the prevention and management of heart diseases and stroke among women in both developed and developing countries, and to adopt the following five values as the foundation for the development, implementation and evaluation of all policies, programs and services:

- **health as a fundamental human right**
- **equity**
- **solidarity in action**
- **participation**
- **accountability**

Advisory Board, First International Conference on Women, Heart Disease and Stroke
Victoria, Canada, May 10, 2000 [1].

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Diabetes

Introduction

Diabetes is serious and growing health concern in Manitoba. In 2006, about 38,050 Manitoba girls and women and about 38,600 Manitoba boys and men were living with diagnoses of diabetes, a 55% increase over the previous decade.¹ Currently, about 3,000 Manitoba girls and women are diagnosed with diabetes each year. The annual number of new cases among girls and women increased by 57% from 1989 to 2006 [2].

Manitobans were more likely than were other Canadians to be diagnosed with diabetes. In 2004/05, 4.7% of Manitoba females (aged 1 year and older) had been diagnosed with diabetes, compared with 4.2% of their Canadian counterparts [3].

Diabetes can lead to reduced life expectancy. In every age group, diabetic women and men are more likely to die than are other Manitoba women and men [2, 4]. The life expectancy of people with Type 1 diabetes at the ages of 20 to 24 years may be shortened by as much as 15 years, and by 5 to 10 years for those with Type 2 diabetes [5].

Diabetes also reduces disability-free life expectancy. Canadian research found diabetes reduced disability-free life expectancy by 14.1 years among Canadian women. Its impact was greater than for any of the other factors studied: arthritis, cancer, physical inactivity, smoking, low income, low education, and abnormal body mass index [7].

What is Diabetes?

Diabetes Mellitus is a serious, chronic, systemic disease, characterized by the body's inability to produce sufficient insulin and/or to use the insulin that it does produce. Insulin is a hormone produced by the pancreas that assists with the conversion of glucose (sugar) into energy. Insufficient insulin, or the inability to use insulin effectively, results in elevated blood sugar (glucose) levels, interfering with the proper nourishment of body cells. Over a long period of time, this can have serious consequences, including blindness, heart disease, reduced blood supply to the limbs (which may result in the need for amputation), nerve damage, stroke, and, in men, erectile dysfunction.

There is no cure for diabetes. Treatment is based on controlling blood glucose levels through diet, exercise, and medications if necessary

There are three main types of diabetes:

Type 1, where the body makes little or no insulin. This used to be called Juvenile Diabetes.

Type 2, where the body makes insulin but cannot use it properly. This is the most common type of diabetes in Manitoba.

Gestational diabetes occurs among some pregnant women, where the body does not properly use insulin during pregnancy [1, 6].

Note: This chapter does not discuss gestational diabetes.

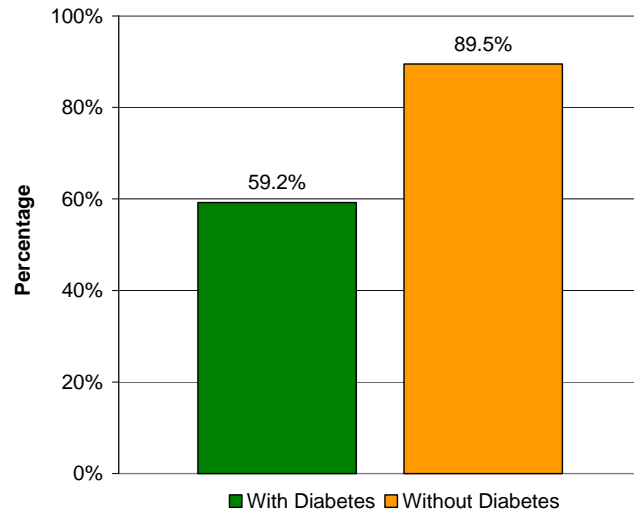
¹ Includes all those one year of age and older. Gestational diabetes is not included. Data are drawn from the Manitoba Health's databases of hospital discharges and medical services provided by physicians and include all those registered for health insurance (Medicare) in the Province. It therefore excludes diagnoses where no physician claim was filed (e.g. non fee-for-service physicians where no shadow billing was submitted). The case definition for diabetes includes those who have been hospitalized for diabetes; or who have had two physician claims for diabetes within a 2 year period; or who have had one physician claim followed by a hospitalization for diabetes within 2 years [2].





Diabetes affects the quality of life of those who live with it. Self-management of diabetes is important in the prevention of both immediate life-threatening events and long-term health problems. This requires ongoing monitoring of food intake, insulin levels, physical activities, and for many, regular medication (whether taken orally or by injection) [5]. It is therefore not surprising that only 59% of Manitoba women with diabetes perceived their own health to be “excellent”, “very good” or “good”, compared with 90% of women without diabetes² (See Figure 1) [8].

Figure 1
Good, Very Good or Excellent Self-Perceived Health
Manitoba Females 12 Years & Older With and Without Diabetes 2003



Source: CCHS 3.1 Public Use Microdata File [6]

The long term consequences of diabetes include heart disease, blindness, kidney failure, and lower limb amputations [9]. These occur at great personal and financial cost to those with diabetes, to their families, and to Manitoba as a whole. It is estimated that Canadians with diabetes incur medical costs that are two to three times higher than those without diabetes [10]. About three-quarters of those with diabetes use either insulin or oral anti-hyperglycemic medications. As the number of Canadians with diabetes increases, so do the costs to the health care system. Health Canada has estimated the direct treatment costs (including only hospital care and prescription drug costs, and excluding the costs of physician services), to be \$400 million annually in Canada [5].

In addition to the costs of physician and hospital care, diabetics can face personal financial costs for medication and supplies ranging from \$1,000 to \$15,000 a year [10]. Manitoba’s Pharmacare system reduces the financial burden on individuals and families in the province by paying the costs of diabetes medications and some supplies, after an income-related annual deductible has been reached.

Early diagnosis of diabetes is important, since early treatment and management can prevent complications and prolong life. Treatments are designed to control blood sugar (through diet, exercise, anti-hyperglycemic drugs, and injections of insulin), control blood pressure and blood lipid levels, to manage symptoms, reduce the risk of complications and to enhance the quality of life [5].

² This analysis is based on Statistics Canada’s Canadian Community Health Survey, Cycle 3.1., Public Use Microdata file, which contains anonymized data collected in the year 2005. All computations on these microdata were prepared by Prairie Women’s Health Centre of Excellence and the responsibility for the use and interpretation of these data is entirely that of the authors.





Women and men with diabetes are more likely than those without the disease to be hospitalized for a range of conditions including hypertension, cardiovascular disease, cerebrovascular disease, peripheral vascular disease, lower respiratory tract infection, renal disease and skin disease [5]. They are more likely to be diagnosed with depression [9]. They are also more likely to use home care services [6].

American research has found that approximately 30% of diabetes may be undiagnosed, and this is felt to be the case in Canada as well [9]. Delayed diagnosis of diabetes increases the risks of serious complications and premature mortality. However, screening based on current diabetes care guidelines will reduce the proportion of undiagnosed diabetes in the population.

Programs that focus on the early diagnosis of diabetes, diabetes education, and prevention are all important initiatives. If successful, they can reduce the incidence of diabetes, and delay or prevent the onset of complications in those already diagnosed with the disease. These programs are usually aimed at those with acknowledged risk factors for Type 2 diabetes including middle years and older adults, those with a family history of diabetes, those with hypertension or elevated blood cholesterol levels. Being overweight or obese, either alone or combined with physical inactivity places people at increased risk of diabetes. Aboriginal people and those of South Asian origin are also at increased risk of developing diabetes. Women face additional risk factors for developing diabetes. These are gestational diabetes, giving birth to a baby that weighed more than 4 kg (9 lb), or having polycystic ovarian syndrome. Income inadequacy is also acknowledged as an important risk factor for diabetes, but it has received much less attention in diabetes prevention programs [1, 5, 9, 11, 12].

Diabetes Incidence

The annual number of new cases of diabetes in Manitoba was relatively constant from 1989 to 1997. However, since 1998, the number of new cases of diabetes has increased by 63% from a 5-year average of 3,920/year between 1989 and 1993 to 6,390/year between 2002 and 2006 [2]. This was probably due to the enhanced detection of undiagnosed cases after introducing new Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, 1997.

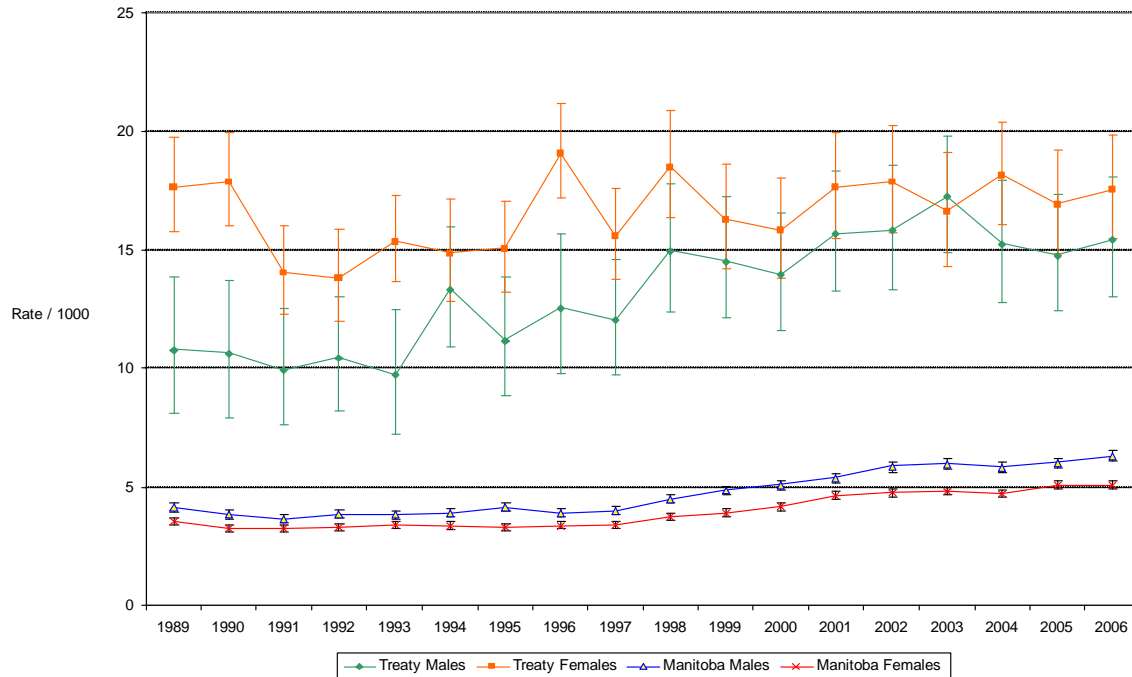
Diabetes Incidence is the number of new cases of diabetes detected in the population (as defined in footnote 1) during a fiscal year (April 1 to March 31) [2].

In 2005/06, 3,220 girls and women were newly diagnosed with diabetes. These represented about 48% of new cases, down from about 50% of cases in 1989, as the incidence of diabetes has increased more quickly among males than among females [2].





Figure 2
Age Standardized Diabetes Incidence Rates 1988/89 to 2005/2006



Source: Manitoba Health [2]

Note that "Treaty" = First Nations people who have identified themselves to Manitoba Health. See footnote 3 below.

Figure 2 shows the annual changes in the age standardized incidence of diabetes among First Nations³ and non-First Nations males and females from 1989 to 2006.

Overall, the age standardized incidence of diabetes increased by 50% from 4/1,000 in 1989 to 6/1,000 in 2006⁴. The highest incidence of diabetes occurred among First Nations women, at 18/1,000 in 2006, about four times the incidence rate of 5/1,000 among non-First Nations women. The female First Nations diabetes incidence rate is consistently though not significantly higher than the male First Nations incidence rate in most years [2]. This is consistent with national findings [14]. It is important to note that while the proportional burden of diabetes is highest among First Nations women, their actual number is

³ Manitoba Health includes in its definition of First Nations people all those who, through self-declaration, have advised Manitoba Health that they are residents with Treaty Status. It does not, therefore, include all Registered First Nations people living in Manitoba. It includes First Nations Manitobans living both on and off Reserves. In 2004, there were 77,371 people identified as First Nations in the Manitoba Health Insurance Registry, while Indian and Northern Affairs Canada included 123,378 in their records. In using this method, we assume that the distribution of diabetes rates and other health events among First Nations people included in the Manitoba Health Registry are representative of all First Nations people in Manitoba [2]. Manitoba Health's system does not include any separate identification of other Aboriginal peoples (e.g. Métis, Non Status and Inuit). They are included in the non-First Nations group.

⁴ In 2007, both the National Diabetes Surveillance System and Manitoba Health adopted a diabetes case definition that includes all persons one year of age and older. Earlier reports from MB Health and NDSS included only those aged 20 years and older. Rates included here **should therefore not be compared with** those in earlier reports from these sources, nor with those in reports from the Manitoba Centre for Health Policy, which has used the population aged 20 to 79 years of age in reporting about diabetes. The inclusion of those aged 1 to 19 years decreases the reporting prevalence by about 2% among the total Manitoba population [2].

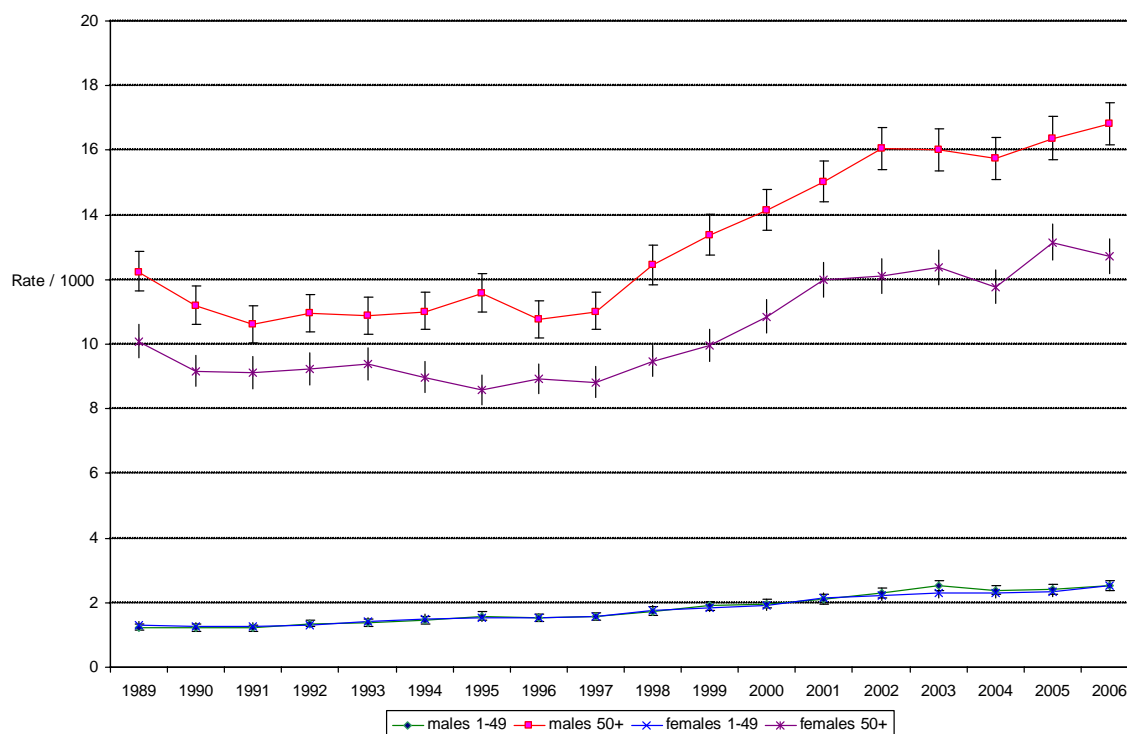




relatively small. Of the 3,224 new cases of diabetes diagnosed among Manitoba girls and women in 2006, 287 (9%) occurred among First Nations women [2].

While among the population as a whole males were more likely to be diagnosed with diabetes than females, important differences emerge when age-specific incidence rates are considered. Young women (aged 20 to 34) were significantly more likely than were their male counterparts to have been diagnosed with diabetes [2]. This is consistent with findings from the rest of Canada. The extent to which this reflects a higher burden of disease is not completely understood. It may be the result of young women's more frequent contacts with physicians (often for reproductive health care needs). As well, since women who develop gestational diabetes during pregnancy are more likely to develop Type 2 diabetes, this may also contribute to the higher rate of diabetes among young women [9].

Figure 3
Manitoba Age and Sex Specific Diabetes Incidence 1988/89 to 2005/06



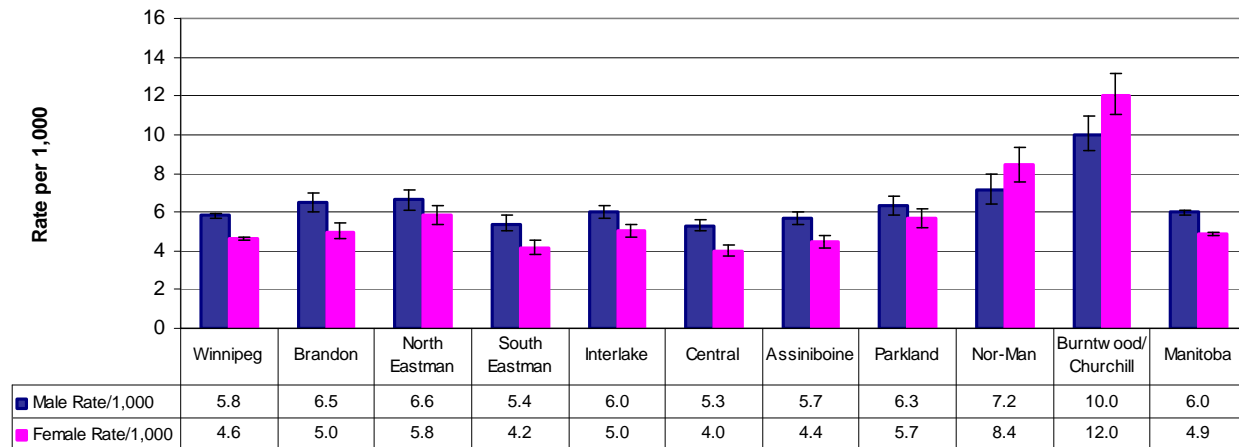
Source: Manitoba Health [2]

The incidence of diabetes also varied among women by RHA. From 2001/02 to 2005/06, the average annual age-adjusted incidence varied from 4.0/1,000 in Central RHA to 12.0/1,000 in Burntwood/Churchill RHAs.





Figure 4
Age Standardized Diabetes Incidence
Manitoba Females & Males by RHA 2001/02 to 2005/06



Source: Manitoba Health [2]

Diabetes Prevalence

Diabetes prevalence is a measure of the burden of this disease in regions and among communities. The growing numbers of people living with diabetes make it a serious public health concern in Canada [6]. This is particularly the case in Manitoba. Manitoba women have the highest reported diabetes prevalence rate in Canada⁵. In 2004/05, the age standardized prevalence rate among Manitoba females aged one year and older was 4.7%, higher than the national average of 4.2% [3].

Diabetes Prevalence is the total number of persons known to have had diabetes (as defined in footnote 1) at any time from April 1, 1988 to March 31, 2006. Data are presented here about both the numbers of people, and the percentage of the population with diabetes [2].

In 2006, there were approximately 38,050 Manitoba girls and women living with diagnosed diabetes, an increase of 55% from 1997. As in other parts of Canada, First Nations women bear a much higher burden of diabetes than do other Manitobans, both First Nations men and non-First Nations women and men [14]. While the rate of diabetes among non-First Nations women was 4.6/1,000 in 2006, it was more than four times higher at 19.9/1,000 among First Nations women. Figure 5 illustrates the increasing rates of diabetes among all Manitoba males and females, First Nations and non-First Nations [2].

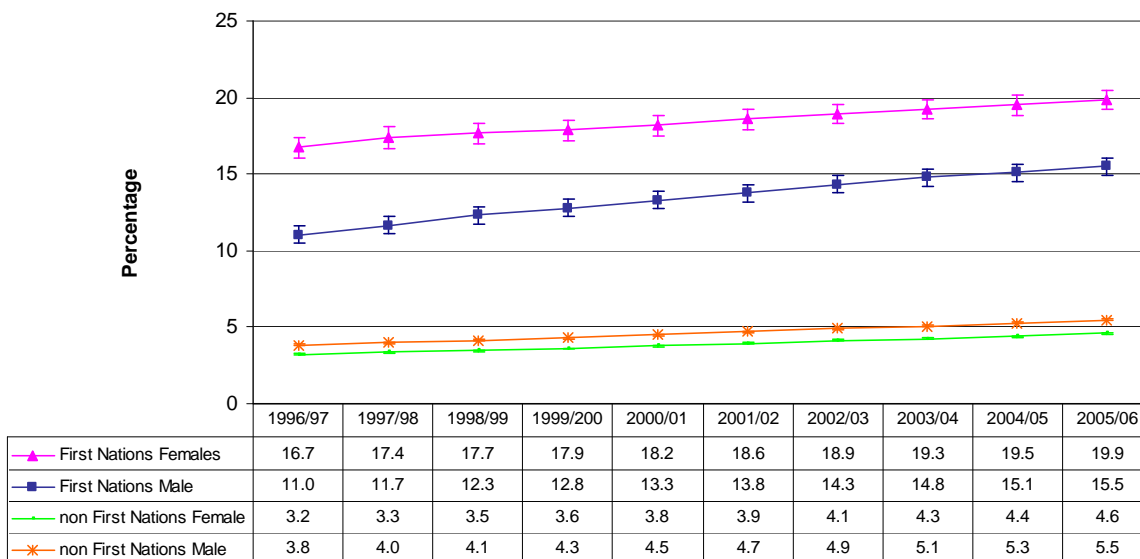
The prevalence of diabetes increases with age. In 2006, the prevalence of diabetes among Manitoba women aged 20 to 44 years of age was 2.5%, compared with a rate of 9.4% among women aged 45 to 64 and 18.7% among senior women older than 65 years of age. Among those 45 years and older, women were less likely than men to have been diagnosed with diabetes. As discussed above, among those 20 to 44, women were more likely to have been diagnosed with diabetes [2].

⁵ This includes only the ten provinces and territories participating in the National Diabetes Surveillance System (excluding New Brunswick, Newfoundland and Labrador, and Nunavut).



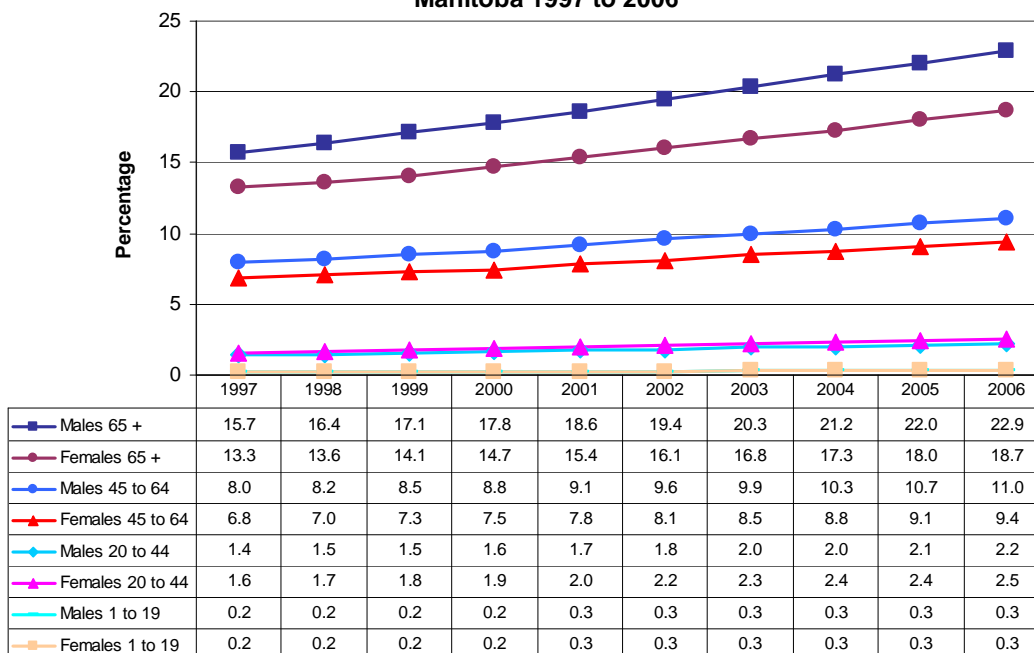


Figure 5
Age Standardized Diabetes Prevalence Manitoba
1988/89 to 2005/06



Source: Manitoba Health [2]

Figure 6
Age & Sex Specific Diabetes Prevalence
Manitoba 1997 to 2006

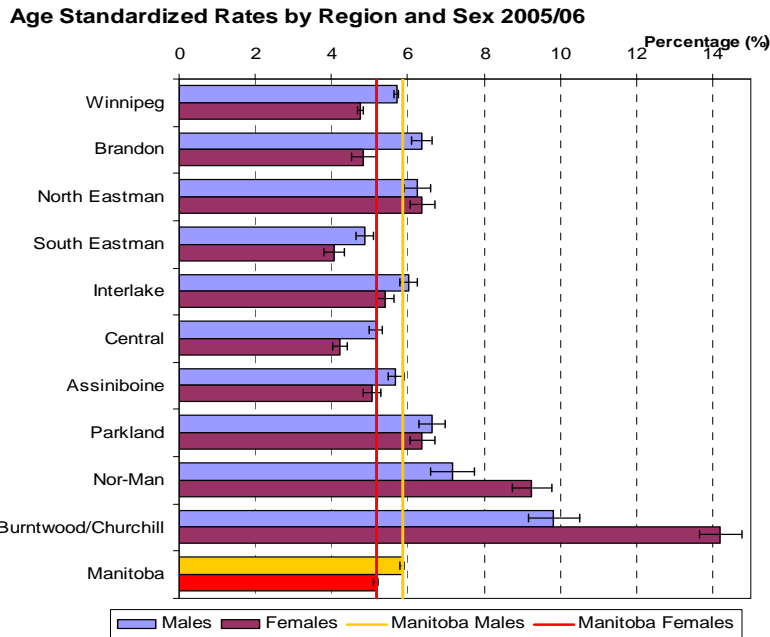


Source: Manitoba Health [2]





Figure 7



Source: Manitoba Health [2]

Diabetes prevalence also varied by region, as illustrated in Figure 5. While overall, males in the province had higher rates of diabetes than did females, females were more likely to have been diagnosed with diabetes in the Burntwood/Churchill and Nor-Man RHAs. These regions also had the highest overall diabetes rates in the Province. Women in the South Eastman and Central RHAs had the lowest rates of diabetes.

Aboriginal Women with Diabetes

In 2006, 4,671 First Nations women⁶ in Manitoba, and 33,376 non-First Nations women, were living with a diagnosis of diabetes. In every region of the Province, First Nations women were significantly more likely to have been diagnosed with diabetes than their non-First Nations counterparts. In Manitoba, First Nations females were over 4 times as likely to be diagnosed with diabetes as non-First Nations females. In Canada as a whole, First Nations women reported living with diabetes 5 times more than other Canadian women [15]. While diabetes rates have increased significantly among all Manitoba women from 1997 to 2006, the prevalence of diabetes increased by 54% among non-First Nations women and by 68% among First Nations women [2].

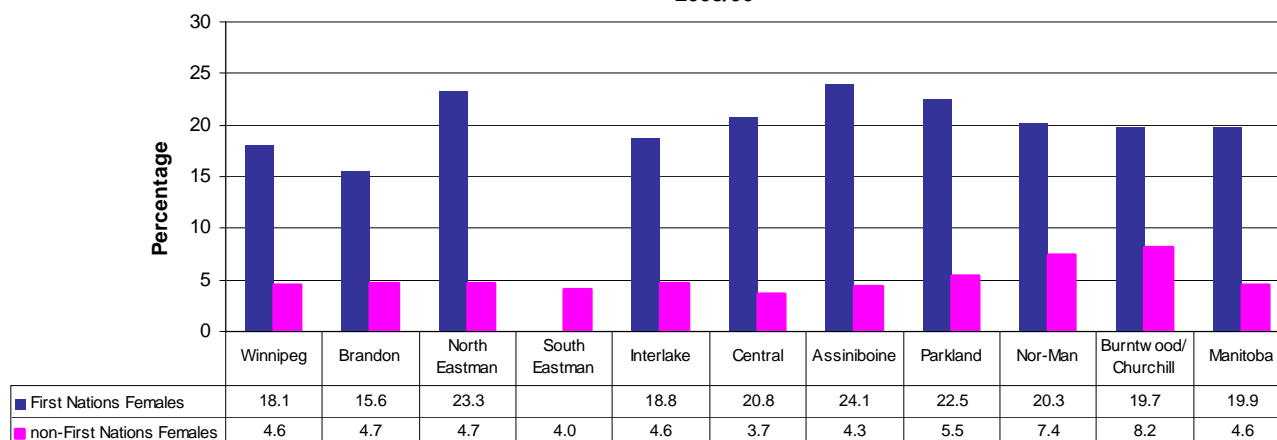
Health Canada has reported that, compared to other Canadian women, First Nations women are younger at the time of onset of type 2 diabetes, have more severe disease at the time of diagnosis, and experience

⁶ See footnote 3. This number includes only those First Nations women who had indicated to Manitoba Health that they had Treaty Status.





Figure 8
Age Standardized Diabetes Prevalence
First Nations and Non-First Nations Females
2005/06



Source: Manitoba Health [2]

Note: Data suppressed where numbers too small to be published.

higher complication rates. Almost one-third of First Nations women with diabetes reported being first diagnosed during pregnancy [15].

Data about diabetes among non Status and Métis people are more difficult to obtain, because their Aboriginal identity is not recorded in provincial health services data systems. Manitoba Health has worked collaboratively with the Manitoba Métis Federation (MMF) to examine the extent of diabetes among Métis people in Manitoba. Their study, *The Health of Manitoba's Métis Population and their Utilization of Medical Services: A Pilot Study*, was released in 2002. The authors were able to link provincial health data with MMF membership (primarily among people residing in the Interlake region), and compared members of the MMF to other Manitobans. They found that the age-standardized prevalence of diabetes among Métis girls and women aged 15 years of age and older as of December 31, 1997, was 11.3% for Métis females, compared to 5.7% for all Manitoba females⁷. In every age group, Métis women were more likely to have been diagnosed with diabetes than the total Manitoba population. Among Métis women aged 65 to 74 years, diabetes was found in epidemic proportions, with a prevalence of 40.0% [16].

The reasons for the high rates of diabetes among Aboriginal people are multi-factorial and not completely understood. Aboriginal ancestry itself appears to be a risk factor for diabetes. First Nations communities are not homogeneous. Across Canada, rates of diabetes are higher in some First Nations language groups, and there is a north-south gradient, with people in the south having higher diabetes rates than those in isolated northern communities. Survey data from Inuit communities show a lower rate of diabetes than in First Nations communities [6].

⁷ Note that in the Manitoba Health/MMF report, only the population aged 20 years of age and older was included, consistent with the national case definition of diabetes in use at the time. This explains why the prevalence rates appear higher in 1997 than in 2006. The inclusion of those aged 1 to 19 years decreases the reporting prevalence by about 2% among the total Manitoba population [2].





Recent research about diabetes among on-reserve First Nations Manitobans found that diabetes prevalence was significantly associated with both income and geography. Northern First Nations communities had lower rates of diabetes than southern First Nations communities. As well, the higher the income of the tribal council area, the lower the diabetes prevalence. Interestingly, access to specialists was not associated with diabetes prevalence [29].

As well as increasing the risks of chronic diseases such as cardiovascular disease, there may be a connection between diabetes and the increasing rates of tuberculosis (TB) in some First Nations communities. Research done in India has shown that diabetes makes a substantial contribution to the incidence of TB in India, where it is predicted that the current diabetes epidemic may lead to a resurgence of tuberculosis in endemic regions. There is evidence that people with TB and diabetes have worse TB outcomes than those without diabetes [17].

While much has been written about the increasing prevalence of diabetes among Aboriginal women in Canada, little has been written by them about their experiences living with diabetes. Health Canada has noted that information is urgently needed to help tailor prevention, diagnosis and treatment to the circumstances of Aboriginal populations in Canada [6].

One notable example of a diabetes prevention approach based on the experiences and knowledge of Aboriginal women is *Empowering Words of First Nations Women*, a diabetes resource tool published by the First Nations of Québec and Labrador Health and Social Services. It is based on consultations with over 50 First Nations women, living in nine Québec communities. All were 40 years of age or older were interested in participating in a project and in getting more control over their diabetes. These consultations showed the ways in which gender-based standards and surveillance had prevented these women from expressing themselves independently and taking independent action. For example, while health promotion materials for diabetics often stress the importance of regular walking for health, in many communities, women felt that they could not go out for a walk without raising suspicions of adultery, and risking violence from their husbands [18].

The authors concluded that:

- *when input from women is sought out for the creation of health promotion tools that affect them,*
- *when women are consulted in their capacity as specialists on what controlling diabetes among First Nations women means and requires*
- *when there is an incentive for women to open up and relate their experience, their suggestions and their concerns in order to construct a working tool which can be used to improve the health of other women in their midst and which can be made available to First Nations decision makers,*

...we are engaging in a strategy aimed at making First Nations women struggling with diabetes partners with whom we can pursue the search for a solution to this illness, which is now reaching epidemic proportions [18, p.10].





The authors of the manual based these conclusions on research showing that mainstream methods of behaviour modification are less likely to be successful among Aboriginal women. They recommend new and original initiatives, incorporating existing networks of women and engaging Aboriginal women with diabetes as full partners in the design and adoption of health promotion tools. They stress the need to focus on actions that work for diabetic Aboriginal women in their everyday lives, rather than on strategies that increase guilt without decreasing blood glucose levels. They recommend the creation of women's self-help networks to address both diabetes prevention and action to promote the health of women living with diabetes [18].

Complications of Diabetes

The many complications of diabetes include cardiovascular disease, kidney disease, and visual problems. Diabetes is the leading cause of acquired blindness among adults in North America [9]. These complications are not sex and gender neutral.

As described below, certain complications of diabetes, such as renal failure [20] and lower limb amputations (described below), are more common among men than among women. However, diabetic women are at greater risk of morbidity due to cardiovascular disease than their male counterparts. Diabetic women are significantly more likely to have coronary events than are men and non-diabetic women [21, 22, 23].

Diabetes has also been linked to two conditions more common among women: depression and eating disorders. In Ontario, the reported prevalence of depression among women with diabetes (8.3%) was much higher than among either non-diabetic women (5.4%) or diabetic men (3.6%) [9]. The Canadian Diabetes Association has recognized the importance of addressing eating disorders among young women and adolescent girls. Those with type 1 diabetes are at increased risk of eating disorders. In addition to the risks associated with eating disorders in the general population, diabetic women and girls with diabetes have poorer glycemic control and are at increased risk of long-term complications [24].

Data on the complications of diabetes in Canada are limited. It is anticipated that the next report of the National Diabetes Surveillance System will include estimates of diabetes-related cardiovascular disease, cerebrovascular disease, peripheral vascular disease, retinopathy and renal disease [6].

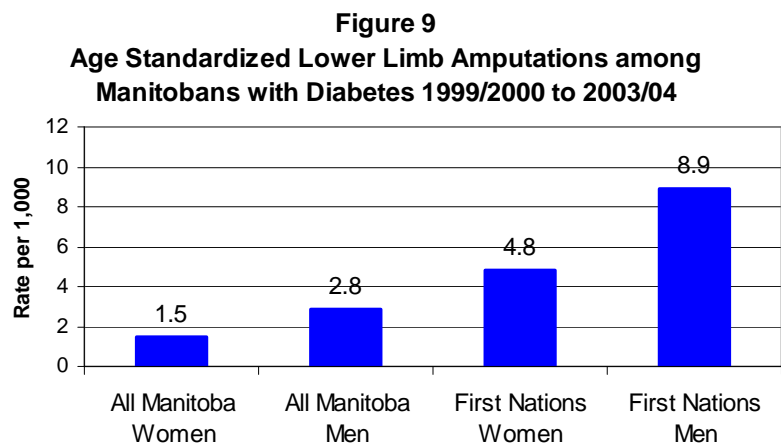




Lower Limb Amputations

Manitoba Health has provided information about one of the major complications of diabetes – lower limb amputations. Diabetes can lead to both nerve damage (diabetic peripheral neuropathy) and circulatory problems (atherosclerotic peripheral arterial disease). Both of these cause problems in the extremities, especially in the legs and feet. Usually, minor injuries to the foot will heal; however, in diabetics, they can lead to skin ulceration and infection. These can be difficult to treat, and, if gangrene develops, may result in amputation of the lower limbs. For this reason, diabetics have much higher rates of lower limb amputations than do other Manitobans. Foot problems account for about 20% of all diabetes-related admissions to hospital [2, 19]. Indeed, diabetics account for about 77% of all lower limb amputations (excluding those resulting from cancer and injuries) in Manitoba. From 1999/2000 to 2003/04, 1186 Manitobans with diabetes had lower limb amputations, including 427 women.

Women with diabetes are less likely than their male counterparts to have a lower limb amputation. The age adjusted rate of lower limb amputations among Manitoba women with diabetes was 1.5/1,000 compared with 2.8/1,000 among men (Figure 9). First Nations⁸ women and men were at higher risk of lower limb amputation. The rate of amputation among First Nations diabetic women was 4.0/1,000, over three times that of their non-First Nations counterparts [2].



Source: Manitoba Health [2]

Manitoba research found that among on-reserve First Nations people, lower limb amputation rates among those diagnosed with diabetes did not vary significantly between northern and southern communities, nor by income, in this population. However, the authors did find that among First Nations Manitobans, regions with the lowest consult rates (measured as access to specialist care) had the highest rates of amputations [29].

Mortality

Canadian adults with diabetes are twice as likely to die prematurely, compared with their non-diabetic counterparts [6, 9]. In 1999/2000 (the most recent year for which national data are available), the diabetes mortality rate ratio was 2.1 among Canadian women, compared with 1.9 among Canadian men [6]. Women with diabetes are significantly more likely to die as the result of cardiovascular disease than are men with diabetes [21, 23].

⁸ See Footnote 3.





From 2001/02 to 2005/06, the average annual diabetes mortality rate ratio among Manitoba women was 2.43, compared to 2.01 for men. That is, women with diabetes were almost 2.5 times as likely to die as were women without diabetes. More concretely, about 4,800 Manitoba women died each year, of whom about 1,225 (25%) had diabetes [4].

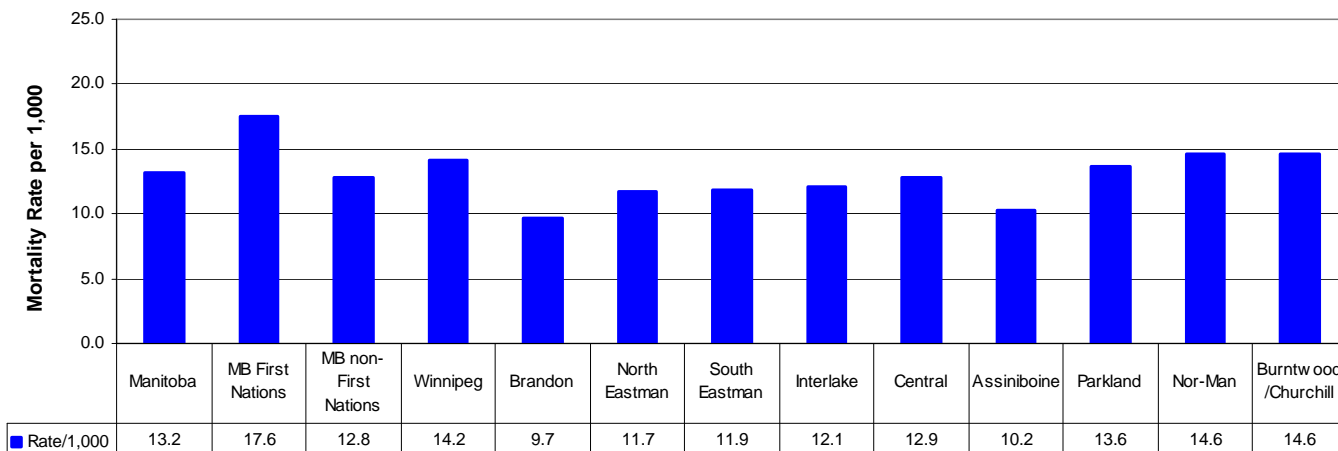
The costs of these deaths are huge – for the families of the women who have died, for their communities and for Manitoba as a whole. Health Canada estimated that the 1998 value of lost production due to premature mortality (defined as deaths among those under 75 years of age) among Canadian women was over \$300 million per year [5]. This is an understatement of the true economic value, since it includes only women’s work in the paid labour force.

Mortality Rate is the proportion of the population, aged 20 years and older, who died, for any reason, during one fiscal year. Consistent with the definitions used by the National Diabetes Surveillance System, Manitoba Health includes deaths among diabetics, for whatever reason, when calculating the diabetes mortality rate. This all-cause method is used since diabetes, although an underlying cause of death for many diabetics, is often not coded on death certificates.

Diabetes Mortality Rate Ratio is the comparison between the rate of deaths among people aged 20 years and older with diabetes, and the rate of death among those without diabetes, for any cause, in any given year [2, 6]

Figure 10 illustrates the mortality rate among Manitoba women with diabetes by RHA and among First Nations and non-First Nations women. Diabetic women in the northern regions of Nor-Man, Burntwood and Churchill were the most likely to have died and those in Brandon were the least likely to have died. First Nations women with diabetes were about 1.4 times as likely to have died as were their non-First Nations counterparts [4].

Figure 10
Age Standardized Mortality Rates
Manitoba Women with Diabetes 2001/02 to 2005/06



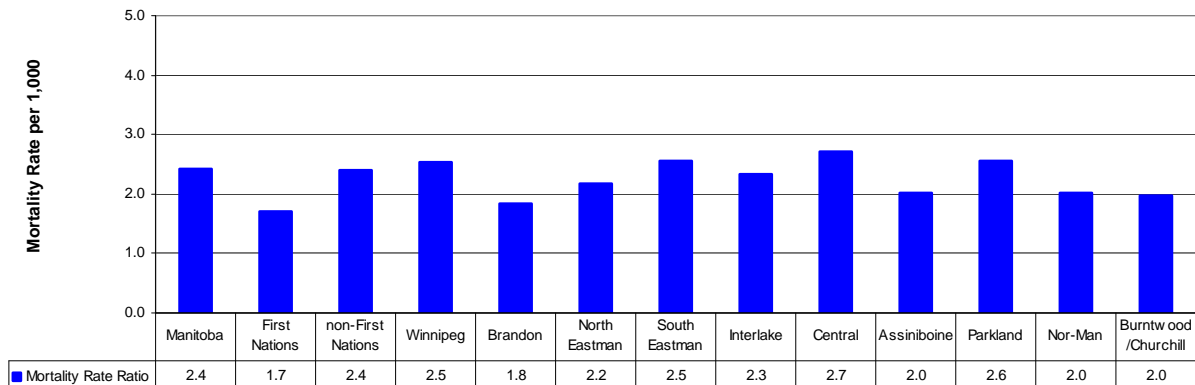
Source: Manitoba Health [4]





Mortality rate ratios by RHA allow us to gain insight into the differential impact of premature deaths due to diabetes. As illustrated in Figure 11, the diabetes mortality rate ratio was highest for women living in the Winnipeg and South Eastman RHAs, and lowest for those in the Brandon, Burntwood and Churchill RHAs. In part, these results reflect the way in which the diabetes mortality rate ratio is calculated. It will be lower in communities with higher mortality among the non-diabetic population. In Manitoba, RHAs with the lowest female age-adjusted premature mortality are located in the rural south of the province (South Eastman, Central, Assiniboine and Brandon). Those with the highest are located in the north (Nor-Man, Burntwood and Churchill) [25]. The higher overall premature mortality rate of First Nations women also explains why they have a lower diabetes mortality rate ratio than do non-First Nations women.

Figure 11
Age Standardized Diabetes Mortality Rate Ratios
Manitoba Women 2001/02 to 2005/06



Source: Manitoba Health [4]

Summary and Policy Implications

Diabetes is a growing and acknowledged health concern in Manitoba, and in Canada as a whole, as the number of Manitobans living with diabetes continues to increase. The Province of Manitoba has recognized this in the 1998 publication *Diabetes: A Manitoba Strategy* [26] and in the establishment by Manitoba Health and Healthy Living of Priority Initiatives for diabetes systems integration, prevention, education, care, research and support [27].

Manitoba has demonstrated its serious commitment to the National Diabetes Surveillance System, and the publication of *Diabetes in Manitoba 2007* [2] will place Manitoba in the forefront of diabetes surveillance in Canada. Because these data will be presented disaggregated by sex and First Nations status, our ability to understand the differential burden of diabetes among Manitobans will be greatly enhanced.

The important connections among obesity, physical activity, and the increased risk of diabetes are now well known. Less attention has been paid to the socio-economic determinants of diabetes [11, 12]. Manitoba research has shown that 14% of low income rural women aged 20 to 79 years of age were treated for diabetes, compared with 4% of rural women in the highest income group. Among urban





women, 9% of those in the lowest income group, compared with 3% of those in the highest income group had been treated for diabetes [13]. This trend is also found among men; however, income disparities are greater among rural and urban women than they are among rural and urban men [13]. This is consistent with other Canadian research that has found income-related disparities in diabetes to be greater among women than among men [9].

An important next step will be to ensure that those data are used to design and deliver programs that recognize the importance of gender, Aboriginal ancestry, and socioeconomic status in the development and progression of diabetes. The importance of these factors has been recognized by the Canadian Diabetes Association, which recommends that “diabetes programs and services should be culturally appropriate, community based and respectful of age, gender and socioeconomic conditions” [28]. Within Manitoba’s regionalized health care system, responsibility for the delivery of diabetes prevention programs, for the diagnosis, education and treatment of those with diabetes rests with the Regional Health Authorities.

Ground-breaking work with First Nations women in Québec has identified the importance of understanding women’s struggles with diabetes in the broader context of their daily lives. Involving women with diabetes in the design of health promotion programs, and using women’s self-help networks will lead to more successful programs. These important lessons may also serve to increase the efficacy of diabetes programming directed at non-Aboriginal women as well.

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Cancer

Introduction

In 2007, approximately 2,900 Manitoba women and girls were diagnosed with cancer, and approximately 1,300 died as the result of cancer. About 39% of Canadian women will develop cancer during their lifetimes and about 24% of women will die from cancer, making it the second leading cause of death after heart disease [1].

What is Cancer?

Cancer is a group of diseases in which abnormal cells in some organ or tissue begin to grow in an uncontrolled manner. Normally, the cells in the body grow and reproduce themselves, generally at the same rate at which old cells die. Cancer is a renegade system of cell growth occurring when cells grow out of control and form a mass, called a tumour.

There are two types of tumours: benign and malignant. Benign tumours grow and enlarge only at the site where they began. Malignant or cancerous tumours can also invade and destroy the normal tissue around them and spread to other parts of the body. Distant spread of a cancer occurs when malignant cells detach themselves from the original or primary tumour and are carried to other parts of the body, causing more tissue damage. When this happens, the cancer is said to have metastasized. When tumours affect organs such as the lungs, liver or brain, the damage and loss of organ function eventually causes death [2].

The development of cancer is a complex, multi-factorial, multi-step process. Cancer is believed to begin when the DNA of cells (the genetic material) is damaged by a genotoxic agent (an *initiator*) that causes a mutation in the DNA. Initiators include genetic factors, environmental and occupational exposures to carcinogens (cancer causing substances such as tobacco, asbestos, etc.), radiation, infectious agents (such as the Human Papilloma Virus - linked to cervical cancer, Hepatitis B virus - linked to liver cancer, and the bacteria *Helicobacter pylori* - linked to stomach cancer), and lifestyle factors (such as diets high in certain fats and physical inactivity). Other processes occurring spontaneously inside cells can also cause DNA damage. Exposure to *tumor promoters* (substances that enhance tumor formation after exposure to a genotoxin),

Measuring the Burden of Cancer

The data included here refer only to **invasive cancers**. Invasive cancer occurs when a cancer spreads beyond the layer of tissue in which it developed and grows into surrounding tissues. Invasive cancers reported here include in situ bladder cancer and exclude non-melanoma skin cancers.

Cancer Incidence refers to new cases of cancer, calculated as the rate per 100,000 people. Therefore, a rate of 1,000/100,000 is 1%.

These rates have been age standardized to allow the meaningful comparison of data over time, since cancer rates increase with age, and the Canadian population is aging. Canadian incidence data are drawn from Canadian Cancer Statistics 2007 [1] and have been standardized to the 1991 Canadian population. Manitoba incidence data were provided by Cancer Care Manitoba and have been standardized to the 1996 Manitoba population [4].

Cancer Prevalence refers to the number of people living with cancer at a certain point in time. Prevalence rates are influenced by two factors: the incidence of the disease and the average period of survival [1].

Cancer Mortality refers to deaths from cancer, using the rate per 100,000 population. The sources and age standardization are as described above for cancer incidence.





which may be other agents or the compound effect of exposures to a number of agents over time, cause the damaged cells to mutate, setting off the uncontrollable growth of cells that characterizes cancer [2,3,4].

For many cancers, the disease takes years to develop; the time between exposure to carcinogens and the diagnosis of cancer (latency period) may be decades apart. For example, many lung cancers diagnosed today are the result of smoking years ago. Exposures to carcinogens and other risk factors today will cause cancers many years in the future. Often our knowledge of these risks is limited, making it difficult to make the connection at the individual level between exposures and disease. Epidemiological studies of particular populations (such as groups of workers in a particular workplace or occupation) are therefore important to help identify risk factors and to prevent future cases of cancer.

The first environment for all human beings is the prenatal one, in the uterus. Prenatal exposures to certain substances can increase the risk of cancer among children and adults. For example, from 1941 to 1971, the drug diethylstilbestrol (DES) was prescribed to Canadian women to prevent miscarriage. The women themselves are at increased risk of breast cancer [5], and the daughters of women who took DES are at increased risk of vaginal and cervical cancer and fertility problems.

Cancer Incidence

In 2007, the estimated incidence of cancer among Manitoba women was 376/100,000, about 25% lower than the rate for Manitoba men (470/100,000) and 5% higher than the rate for all Canadian women (358/100,000). Cancer is more common among males than females in those younger than 20 years and those over 60 years old, and more common among women than men among those aged 20 to 59.

Canada is fortunate to have a well developed system of provincial cancer registries, using consistent national standards, allowing reporting based on actual cases, rather than on survey results or estimates. These reporting procedures have been stable since 1981 [1]. The following table shows the increases in selected cancers among Canadian women and men from 1981 to 2002. During this time, the incidence of cancer increased more quickly among women than among men, although men continue to be more likely to be diagnosed with cancer than women. The increases in lung and breast cancer are stark reminders of what many of us have experienced and witnessed in our personal lives. Some of the increase in breast cancer may be attributable to increased use of screening mammography, which may have resulted in the identification of some cases of breast cancer earlier than would have been the case without screening [1]. The national decreases in the incidences of colorectal and cervical cancers among women are encouraging.





Table 1
Age Standardized Incidence of Selected Cancers in Canada
1981 to 2003

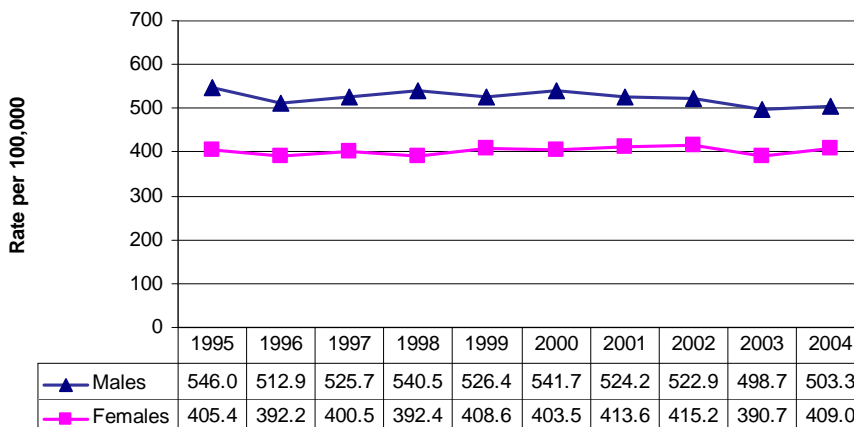
	All Cancers		Lung		Colorectal		Female Breast	Female Cervix
	Female	Male	Female	Male	Female	Male		
1981 Rate/100,000	328.3	442.9	24.3	91.2	48.6	62.6	86.5	13.9
2003 Rate/100,000	346.6	455.6	44.9	70.9	42.2	60.9	95.9	7.7
Percent Increase/ Decrease	5.6%	2.9%	84.8%	-22.3%	-13.2%	-2.7%	10.9%	-44.6%

Data Source: Canadian Cancer Statistics 2007 [1]

Figure 1 below shows the incidence of cancer among Manitoba females and males from 1981 to 2003, expressed as a rate per 100,000 people. The data have been age standardized. Since the Manitoba population is aging, and since the risk of developing cancer increases with age, age standardization is necessary to enable meaningful comparisons among different years. After increasing for many years, cancer rates among women may now be stabilizing [1].

Figure 2 below shows regional differences in rates of cancer diagnoses. Although the differences are small, female residents of Winnipeg were the most likely, and residents of Rural South Manitoba¹ were the least likely to have been diagnosed with cancer [6].

Figure 1
All Invasive Cancers - Age Standardized Incidence
Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]

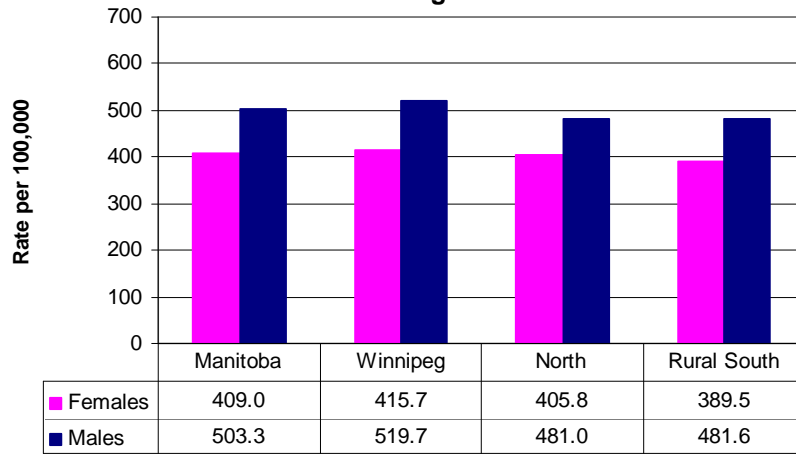
¹ RHAs have been grouped as follows: Northern RHAs include Nor-Man, Burntwood and Churchill; Rural South RHAs include Assiniboine, Brandon, Central, Interlake, South Eastman, North Eastman and Parkland.





Examining the rates of new cases of cancer enables us to understand trends. However, age standardized rates do not reveal the true burden of cancer on individuals, families, communities and the health care system. The actual number of new cases of cancer continues to rise steadily as the population ages [1]. From 1995 to 2004 (the most recent year for which data are available), the number of Manitoba girls and women diagnosed with cancer increased by about 10%, from 2,531 in 1995 to 2,794 in 2004 [6].

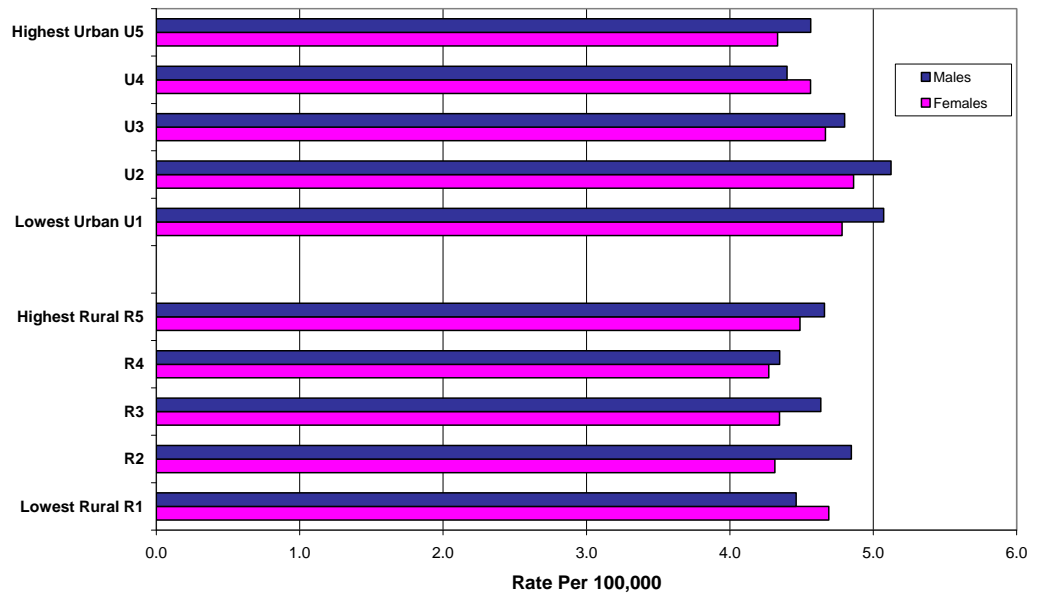
Figure 2
All Invasive Cancers - Age Standardized Incidence
Manitoba and Regions 2004



Source: Cancer Care Manitoba [6]

Cancer risk is also related to socio-economic status, although the straightforward relationship found in many other diseases (where low socio-economic status is associated with a higher risk of disease and high socio-economic status is associated with a lower risk of disease) has not been found in cancer. An international review found that lower socioeconomic status was consistently associated with increased risk of cancers of the cervix, stomach, esophagus and less consistently, with cancers of the liver. They found that high socioeconomic status among women was associated with increased risk of cancers of the breast, colon, ovary, and melanomas of the skin, but did not suggest why this was [1, 7].

Figure 3
All Invasive Cancers by Income Quintile
Age Adjusted Incidence, Manitoba, 1995-2004



Source: Cancer Care Manitoba [6]

Figure 3 shows the incidence of all invasive cancers

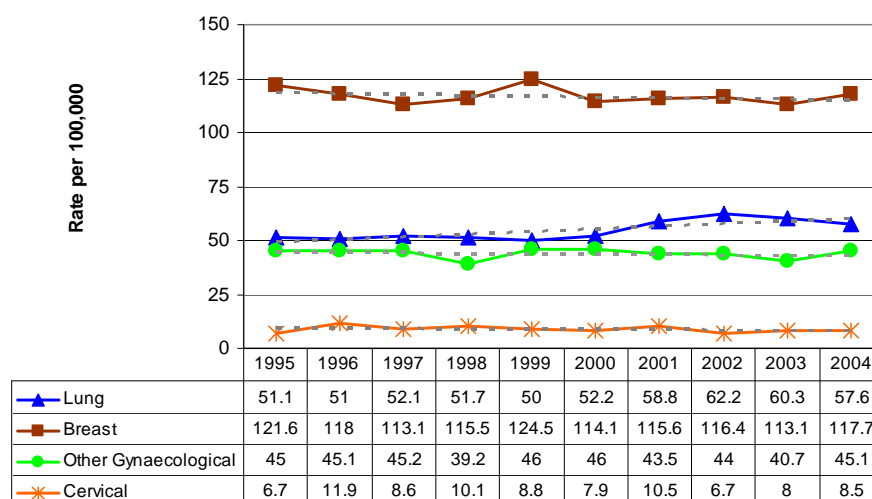




among Manitoba males and females from 1995 to 2004 by neighbourhood income quintile. While higher income women were at lower risk of being diagnosed with cancer, the results were not statistically significant.

Figure 4 provides more detailed information about four types of cancers diagnosed among Manitoba women from 1995 to 2004: the two most common cancer sites (breast and lung) and the two female-specific types (cervix and other gynaecological cancers²). Breast cancer remains the most common type of cancer among women, accounting for 28% of all new cancers diagnosed among Manitoba women in 2004 [6].

Figure 4
Selected Cancers - Age Standardized Incidence
Manitoba Females 1995 to 2004



Source: Cancer Care Manitoba [6]
 Trend lines are indicated by ----.

The increasing rate of lung cancer among women is particularly evident during this ten year period [6]. Lung cancer incidence continued to increase among Canadian women during this time, by about 1.4% per year, while decreasing among men. This is related to differences in tobacco consumption. While tobacco consumption among men began to decrease in the mid-1960s, women’s tobacco smoking did not decrease until the mid-1980s [1].

Figure 5 shows regional cancer rates among women for cancers of the lung, breast, cervix and other gynaecological cancers in 2004. As noted above, for all invasive cancers, residents of Winnipeg were the most likely, and residents of Rural South Manitoba were the least likely, to have been diagnosed with cancer. However, differences emerge when individual cancer sites are examined. While differences among

² Other gynaecological cancers exclude cervical cancer and include cancers of the ovaries and of the body of the uterus.

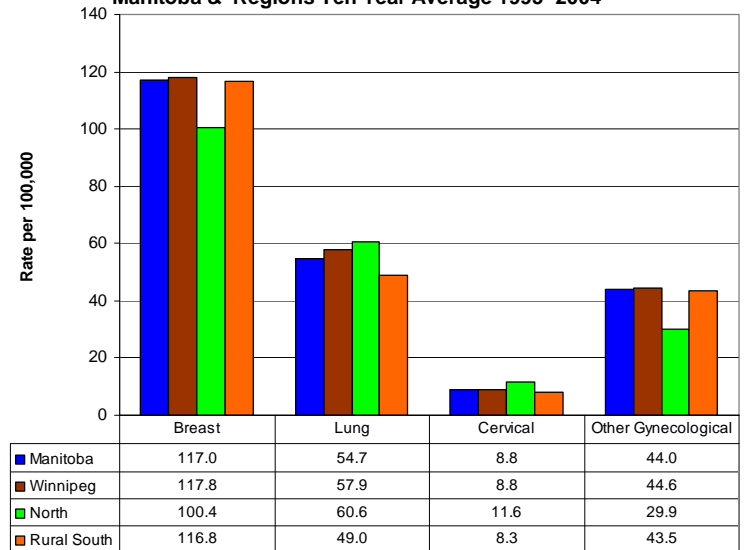




the regions are small, northern women were at highest risk of both lung cancer and cervical cancer. They were also at lower risk of gynaecological cancers other than cervical cancer, and breast cancer. Northern women are more likely to smoke tobacco, contributing to their increased risk of developing lung cancer. This is described in more detail in Chapter 3.

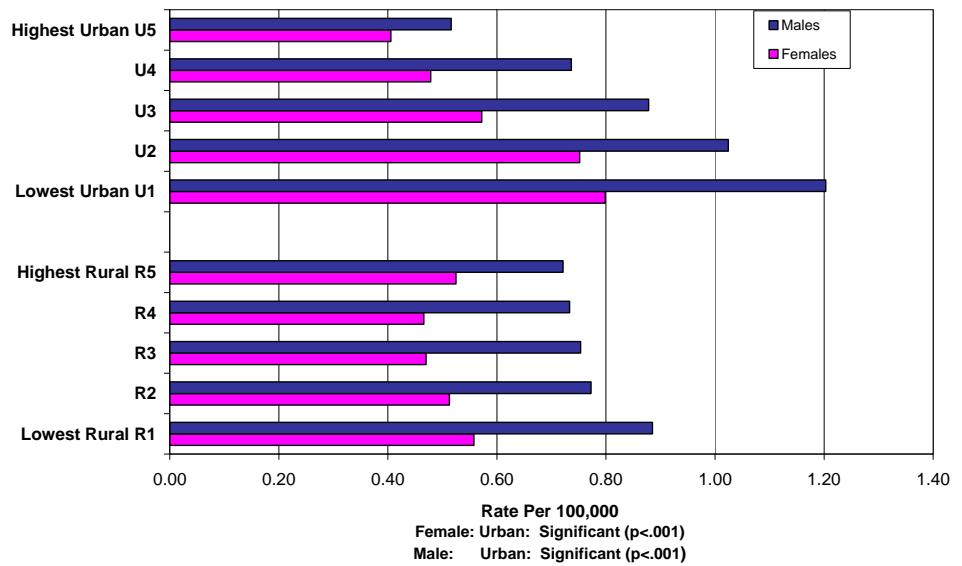
Figures 6 through 9 show income related differences in cancer incidence among Manitoba males and females for these same four selected cancers. Consistent with the international results described above, low income women in Manitoba were significantly more likely to have been diagnosed with cancers both of the lung and of the cervix [7]. The connection between income and smoking, a leading cause of lung cancer, has been well documented [8] (see Chapter Three). Low income earners also have greater exposures to occupational lung carcinogens and are more likely to live in neighbourhoods with higher levels of environmental air pollution, linked to lung cancer [9, 10]. The relationship between low income and cervical cancer diagnosis requires more investigation.

Figure 5
Selected Cancers - Age Standardized Incidence Among Females
Manitoba & Regions Ten Year Average 1995- 2004



Source: Cancer Care Manitoba [6]

Figure 6
Lung Cancers by Income Quintile
Age Adjusted Incidence, Manitoba 1995-2004



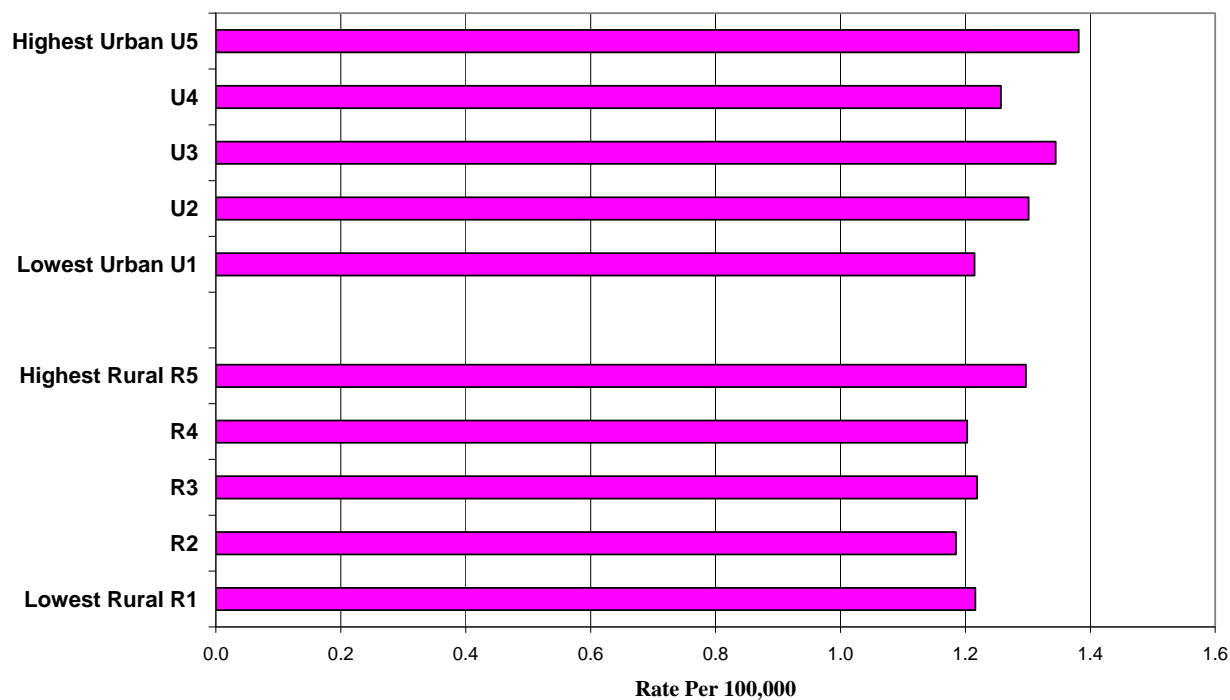
Source:
Cancer Care Manitoba [6]

It is noteworthy that there were no significant income differences found for cancers of the breast and other gynaecological cancers.



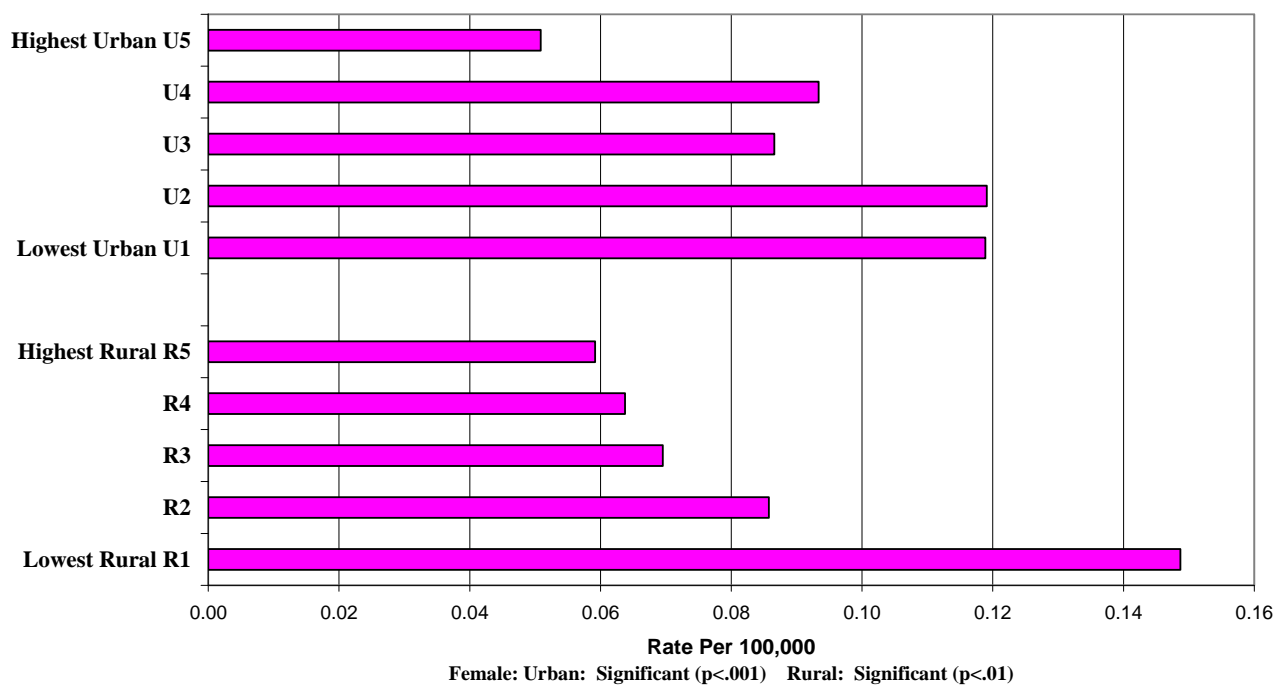


Figure 7
Female Breast Cancers by Income Quintile
Age Adjusted Incidence, Manitoba 1995-2004



Source: Cancer Care Manitoba [6]

Figure 8
Cervical Cancers by Income Quintile
Age Adjusted Female Incidence, Manitoba 1995-2004

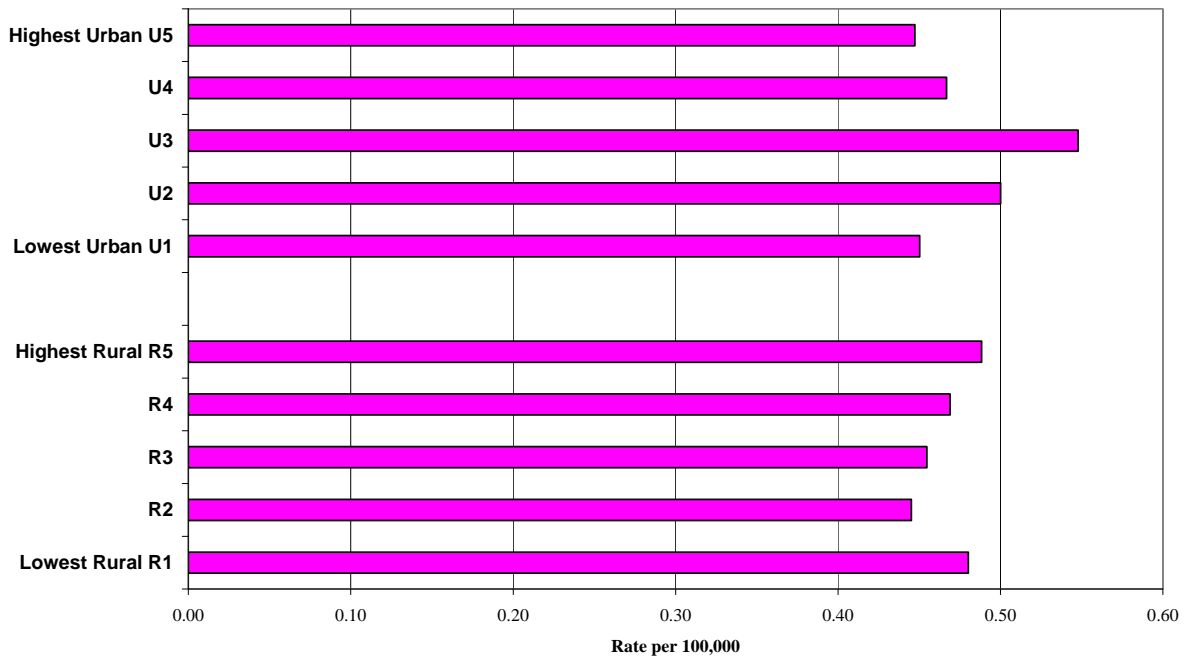


Source: Cancer Care Manitoba [6]





Figure 9
"Other Gynaecological" Cancers by Income Quintile
Age Adjusted Female Incidence, Manitoba 1995-2004



Source: Cancer Care Manitoba [6]

Cancer Prevalence

Cancer prevalence is an important measure of the costs of cancer for individuals, families and of the health care system as a whole. Those lucky enough to survive cancer are often left with physical, emotional, social and economic needs. Many cancer survivors require repeated testing, and active treatment, rehabilitation, mental health and social support services over many years [1].

In 2007, the National Cancer Institute of Canada and the Canadian Cancer Society estimated that the proportion of Canadians living with cancer, based on survival data from Saskatchewan, was 2.5% among men and 2.8% among women [1]. This means that about 1 in 40 Canadian men and 1 in 36 Canadian women had cancer diagnosed at some time during the previous 15 years, and were still alive. The mortality rate from breast cancer, for example, the most common cancer among women, and the second most common cause of cancer death among women, is declining, while an increasing number of women have had a diagnosis of breast cancer at some time in the past 15 years. It is estimated that 162,600 Canadian women, or 1% of Canadian females, have had a diagnosis of breast cancer at some time in the last 15 years [1].

In 2000, the crude prevalence (not age adjusted) of invasive cancer in Manitoba was 2.7% among men and 3.4% among women [11]. Prevalence was highest among females in South Westman RHA (which amalgamated with Marquette RHA to form Assiniboine RHA in 2003) at 4.7% and lowest among females in Burntwood RHA (0.7%). These differences are in part due to the different age structures of the RHAs, since cancer is more common among older people, and northern Manitoba RHAs have much younger





population than do those in the rural southwest of the Province. Projections by Cancer Care Manitoba suggest that by 2025 about 5% of Manitobans will be living with cancer, or approximately 58,000 to 61,000 people [11].

Cancer Mortality

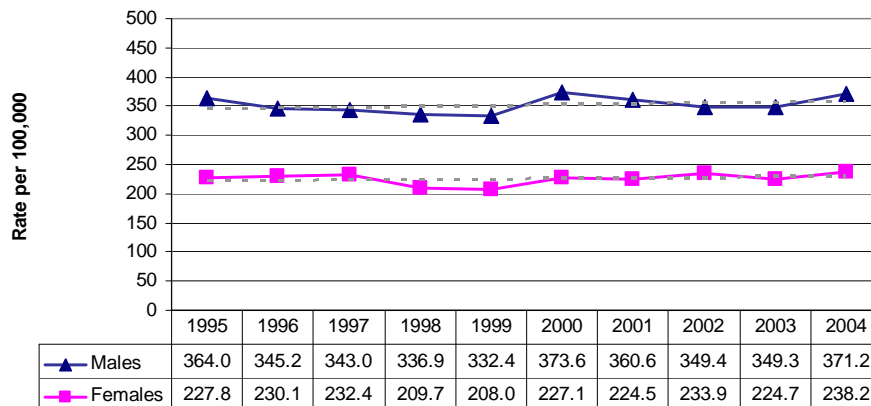
From 1995 to 2004 (the most recent year for which data are available), the rate of mortality due to cancer remained stable. Because of the aging population, the actual number of girls and women who died annually of cancer increased from 1,468 in 1995 to 1,730 in 2004 [6]. Figure 10 shows the rate of deaths from cancer among Manitoba women and men during that time, expressed as an annual age standardized rate per 100,000 females. During this time, women were much less likely to die from cancer than were men. For every 100 male deaths, there were approximately 64 deaths among females. This ratio did not change during this decade.

Figure 11 shows regional differences in rates of cancer deaths from 1995 to 2004.

Among Manitoba women, residents of northern RHAs had a slightly higher rate of death from cancer than residents of Winnipeg and rural southern RHAs [6].

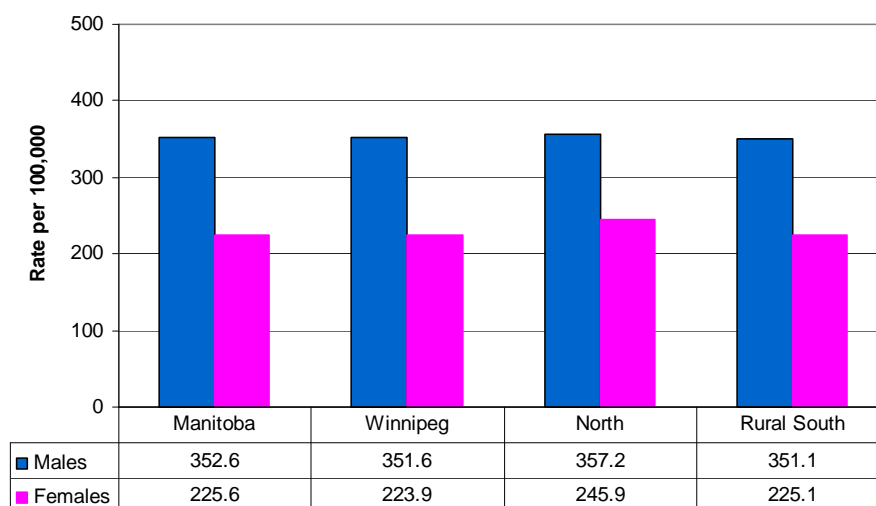
Figure 12 provides more detailed information about deaths among women from four types of cancer - breast, lung, cervix and other gynaecological, during the ten year period from 1995 to 2004. These four types accounted for about 50% of cancer deaths among females during this time [6].

Figure 10
All Invasive Cancers - Age Standardized Mortality
Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]
Trend lines are indicated by ----.

Figure 11
All Invasive Cancers - Age Standardized Mortality
Manitoba & Regions Ten Year Average 1995- 2004



Source: Cancer Care Manitoba [6]





As indicated by the trend lines in Figure 12, the death rate for lung cancer increased over the decade, while the rate of deaths due to breast cancer decreased slightly. The death rates due to cervical cancer and other gynaecological cancers remained stable.

Figure 13 shows average regional cancer death rates among women for cancers of the lung, breast, cervix and other gynaecological cancers during the ten year period from 1995 to 2004. Northern women experienced an increased rate of death compared to all Manitoba women for both lung and cervical cancers, and a decreased death rate due to other gynaecological cancers. Women from the Rural South experienced an increased rate of death compared to all Manitoba women for other gynaecological cancers [6].

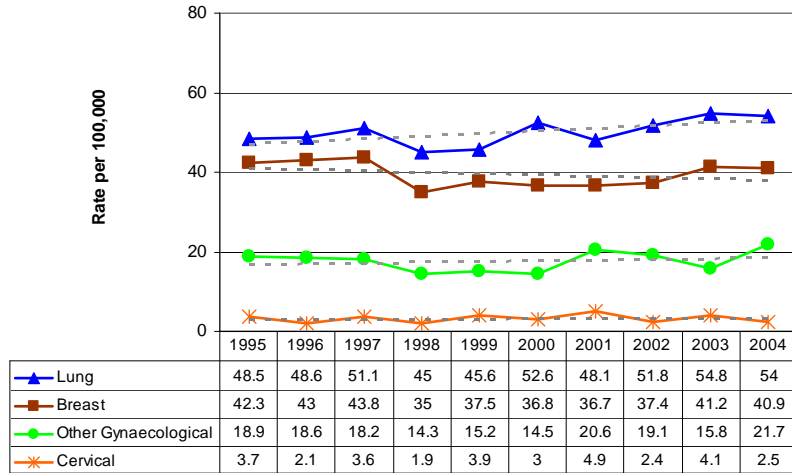
Cervical Cancer Screening

In 2004, approximately 50 women were diagnosed with cervical cancer, and 18 women died due to cervical cancer.

Screening for cervical cancer is essential to preventing cervical cancer and to early treatment when it is diagnosed. Screening is done using the Papanicolaou (Pap) Smear, a microscopic examination of cells scraped from the cervix used to detect pre-cancerous or cancerous changes in cervical cells, and cancer [12]. Organized screening programs have the potential to reduce both incidence and deaths from cervical cancer [13].

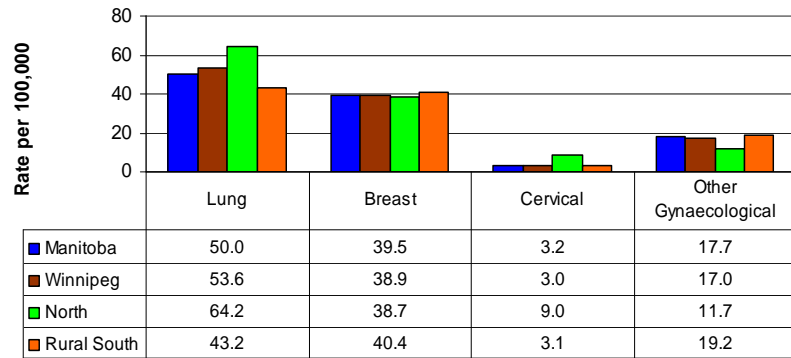
In Manitoba, it is recommended that all women who are sexually active have an annual Pap smear. After three consecutive normal results, the frequency can be reduced to once every two years, until aged 70 years. After aged 70, it is recommended that women discuss the need for ongoing Pap smears with their

Figure 12
Selected Cancers - Females - Age Standardized Mortality
Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]

Figure 13
Selected Cancers - Age Standardized Mortality
Females Manitoba & Regions Ten Year Average 1995 to 2004



Source: Cancer Care Manitoba [6]





physicians [14]. Among Manitoba women aged 18 to 69 years of age, just 67% were screened for cervical cancer in the two year period from 2001/02 to 2003/04 [15], although Manitoba offers publicly funded screening programs for cervical cancer.

Lower socio-economic status has been associated with higher risk of cervical cancer [1]. This is consistent with Manitoba research showing that rates of cervical cancer screening are related to socio-economic status. Higher income is associated with higher screening rates among both urban and rural women. Among urban dwellers, 75% of women aged 18 to 69 had had a Pap smear in the three year period from April 1, 2001 to March 31, 2004, compared with 61% of those in the lowest income group. Among rural women, 69% of those in the highest income group compared with 48% of those in the lowest income group had Pap smears during that period. This also reflects the added difficulties faced by rural women in getting Pap smears. Women living in the Brandon RHA were most likely to have had Pap smears (74%), compared with about 70% of Winnipeg women, 63% of women living in the Rural South and a disturbingly low 44% of Northern women [15]. Manitoba's Cervical Cancer Screening Program, introduced in 2001 and delivered by CancerCare Manitoba, is intended to reduce both the incidence of, and mortality from, cervical cancer in the Province.

Infection with the human papillomavirus (HPV) has been implicated in virtually all cases of cervical cancer. The federal government recently announced short term financial support for those provinces that implement mass immunization programs of girls for certain strains of HPV (types 16 and 18, using the vaccine Gardasil[®]), despite concerns raised about the efficacy and safety of this approach [16]. In May 2008, the Manitoba government announced a province-wide voluntary immunization program to be offered to girls in grade 6, plus additional funds to improve women's access to cervical screening [39].

Breast Cancer Screening

As described above, breast cancer is the most commonly diagnosed cancer among Manitoba women and the second most common cause of cancer-related deaths among women. In 2004, 795 Manitoba women were diagnosed with breast cancer, and 296 died as the result of the disease.

The publicly funded Manitoba Breast Screening Program is operated by Cancer Care Manitoba. Women are eligible to attend the program if they are asymptomatic, have never been diagnosed with breast cancer, and do not have breast implants. Women are recruited to the program through personal letters of invitation sent at the time of their 50th birthday. Screening mammography is also available for younger and older women, upon physician referral [17].

The program operates four fixed sites in Winnipeg, Brandon, Thompson and Morden/Winkler. Two mobile screening vans, operated in co-operation with RHAs, visit over 87 rural and northern communities each year [17].

Breast cancer screening is done with a mammogram, a specialized x-ray of the breasts. Unlike screening for cervical cancer, mammograms cannot prevent cancer; they can detect cancer, and lead to earlier treatment.





Despite this universal program, the use of mammograms varied widely among eligible Manitoba women. In the two year period from April 1, 2003 to March 31, 2004, just 60% of women aged 50 to 69 years had a screening mammogram. Women in the rural south were most likely (63%), and women in the north were least likely (53%), to have had a mammogram. In fact, all RHAs in the rural south had higher participation rates in the breast screening program than did Winnipeg (59%) [15].

Use of breast cancer screening is also income related. Among rural women, during the two year period from April 1, 2002 to March 31, 2004, 65% of those in the highest income group compared with 52% of those in the lowest income group had mammograms during the same period. Among urban women, 67% of those in the highest income group had mammograms, compared with 47% in the lowest income group¹⁵. Living in rural and remote communities, low levels of education, being born in Asia, and not having a regular family physician are among the factors that have been identified as linked to reduced participation in breast cancer screening programs [7].

Cancer and First Nations Women

Manitoba Health's administrative data enable us to look at cancer among some First Nations Manitoba women³. Historically, cancer rates have been much lower among First Nations Manitobans than among the population as a whole [11]. This is consistent with other provinces. For example, work done in Ontario, examining the health records of all First Nations people in the province, found that the age-adjusted incidence of cancer among First Nations women was significantly lower than that of other Ontario women [18]. Cancer incidence among First Nations Manitoba women has been increasing however, and is now close to that of other Manitoba women, as illustrated in Figure 14. During the ten years from 1995 to 2004, the incidence of cancer among First Nations women doubled, from 178/100,000 to 391/100,000. During the same time, the incidence of cancer among non First Nations women increased by just 1.5% [6]. While some of this increase may be due to improved diagnosis and treatment, the general trend is still a troubling one.

³ Manitoba Health includes in its definition of First Nations people all those who, through self-declaration, have advised Manitoba Health that they are residents with Treaty Status. It does not, therefore, include all Registered First Nations people living in Manitoba. It includes First Nations Manitobans living both on and off Reserves. In 2004, there were 77,371 people identified as First Nations in the Manitoba Health Insurance Registry, while Indian and Northern Affairs Canada included 123,378 in their records. In using this method, we assume that the distribution of cancer and other health events among First Nations people included in the Manitoba Health Registry are representative of all First Nations people in Manitoba. Manitoba Health's system does not include any separate identification of other Aboriginal peoples (e.g. Métis, Non Status and Inuit). They are included in the non-First Nations group.



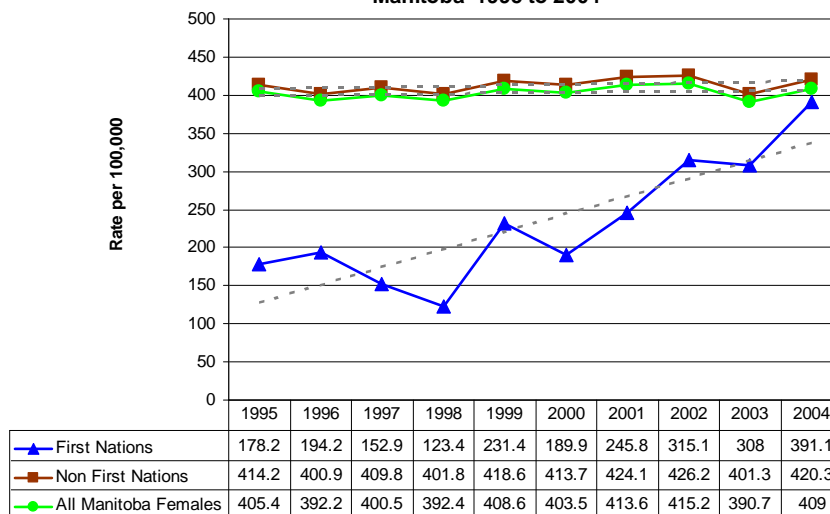


Figure 15 shows the average age standardized incidence of selected cancers among First Nations and non First Nations women in Manitoba from 1995 to 2004. For both First Nations and non First Nations women, breast cancer was the most commonly diagnosed cancer, and the rate of breast cancer was higher among non First Nations women. First Nations women were at lower risk of lung cancer and other gynaecological cancers than were non-First Nations women. However, First Nations women were at higher risk of cervical cancer. In 2004, the rate of cervical cancer among First Nations women was 2.9 times that of non First Nations women [6].

As described above, cervical cancer is preventable with screening. The high numbers of cases of cervical cancer among First Nations women reflects barriers to access to this essential preventive service. This points to the urgent need for improved outreach programs, reaching First Nations women in their home communities.

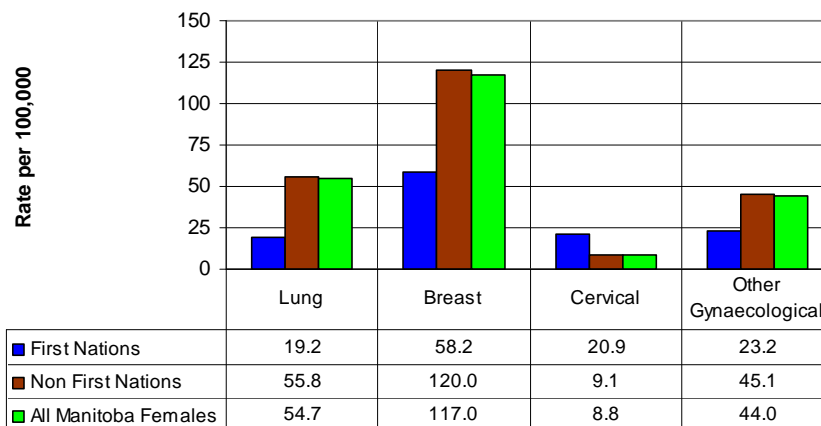
Figure 16 illustrates the incidence of breast cancer among First Nations and non First Nations women from 1995 to 2004 and points to a troubling trend. Due to small numbers, similar data cannot be presented for lung cancer, cervical cancer and other gynaecological cancers⁴.

Figure 14
All Invasive Cancers - Age Standardized Incidence
First Nations and Non First Nations Females
Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]
 Trend lines are indicated by ----.

Figure 15
Selected Cancers - First Nations & Non First Nations Females
Average Age Standardized Incidence - Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]

⁴ It is the policy of Manitoba Health and Cancer Care Manitoba to suppress data where the number of cases is 5 or fewer.



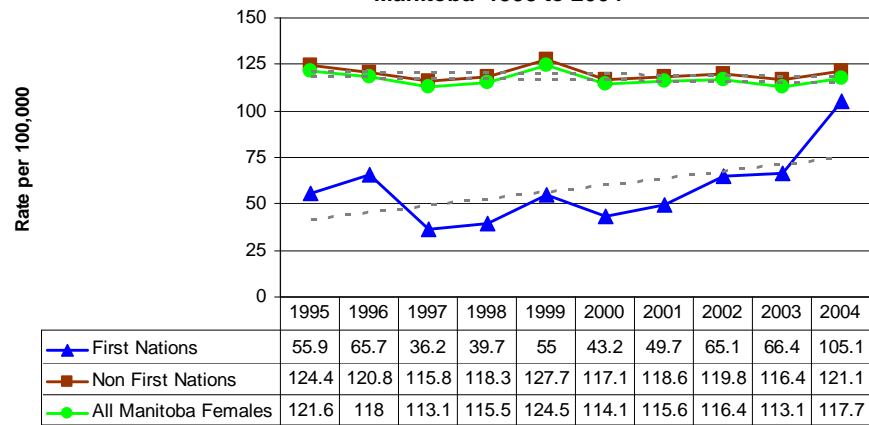


We do not have data available about cancer deaths among First Nations and non First Nations Manitobans. However, Ontario research has shown that Aboriginal people diagnosed with cancer in that province have a much lower 5-year survival rate than do other Ontarians [19].

Cancer Care Ontario has developed an Aboriginal Cancer Strategy, guided by a committee with representatives from First Nations and Aboriginal organizations, including the Ontario Native Women's Association and Cancer Care Ontario. The Strategy has four Guiding Principles: a holistic approach, encompassing the traditional Aboriginal approach to health which includes physical, mental, emotional and spiritual health; community-based programs that make a difference at the community level and are inclusive of Aboriginal peoples' voices; cultural competence - working in conjunction with natural, informal support and helping networks within culturally diverse communities,

understanding the Aboriginal world view and recognizing community knowledge and assets; and process oriented - respectful of people first [19]. Such an approach may be useful in improving prevention, screening, diagnosis and treatment efforts among Aboriginal women in Manitoba.

Figure 16
Breast Cancer - Age Standardized Incidence
First Nations and Non First Nations Females
Manitoba 1995 to 2004



Source: Cancer Care Manitoba [6]. Trend lines are indicated by ----.

Access and Barriers to Cancer Services

Manitoba's universal, freely accessible cancer screening, diagnosis and treatment programs are essential to our ability to provide screening, diagnosis, treatment and palliative care. One need only consider the situation of those in other countries, including many in the US, for whom cancer treatments often lead to financial hardship.

However, there are still barriers to cancer treatment. Those living with cancer may face cultural and linguistic barriers during cancer diagnosis and treatment. Some barriers are geographical. For example, while there are Community Cancer Programs providing some treatment in 15 locations throughout the province (Morden/Winkler, Brandon, Dauphin, Flin Flon, Gimli, Hamiota, Neepawa, Pinawa, Portage la Prairie, Russell, Selkirk, Steinbach, Swan River, The Pas, and Thompson), all of Manitoba's oncologists practice in Winnipeg [20]. While travel costs for northern patients are covered through the Northern Patient Transportation Program, residents in southern Manitoba must pay for their own travel and accommodation costs in Winnipeg.





Manitoba's public Pharmacare program will cover costs for those requiring prescription medication while outside of hospital, either for cancer treatments or to manage or ameliorate the effects of treatments, *after* an income-related deductible amount has been paid. Those with private (usually employment-related) extended health benefits may have this deductible reduced or eliminated, but as noted in Chapter 2 many women do not have jobs with employee benefits. Pharmacare does provide prescription drugs at no charge and with no deductible to cancer patients (and others) receiving palliative care in their homes, through the Palliative Care Drug Access Program. In this way, palliative patients at home do not pay for drugs that are provided at no cost in hospital or in long term care facilities. It is important to learn more about patients who must pay for cancer-related drugs, how much they pay, and whether and which women pay more.

Non-prescription items such as wigs can be expensive. Some are available to borrow through Cancer Care Manitoba.

Many cancer patients will require home care services, and these are available through Manitoba's public Home Care Program, for those who require health services or assistance with activities of daily living in order to remain safely in their homes. However, the Home Care Program is meant to supplement, not to replace informal care provided by family members and other community resources (See Chapter Six). The Home Care Program also provides, at no cost, some specialized equipment needed by some cancer patients.

Cancer Prevention

The best way to stop cancer is to prevent it. Based on current knowledge, it is estimated that at least one-half of all cancers in Canada can be prevented [21].

Cancer Prevention involves three different types of activities.

1. **Primary Prevention** is what is commonly understood as prevention. Primary prevention reduces the incidence of cancer, by preventing new cases from occurring. Removing or eliminating the causes of cancer such as tobacco smoking, and exposures to other carcinogens, eating a diet high in fruits and vegetables and being physically active, are all examples of primary prevention. Public policies such as anti-smoking legislation, health promotion activities, pollution prevention, and mandatory labelling of carcinogens are other important forms of primary prevention.
2. **Secondary prevention** involves measures to reduce prevalence. It involves the early treatment of cancer, at a stage when treatment may be easier and more effective. Screening programs for breast, cervical and colorectal cancers are examples of secondary prevention [12].
3. **Tertiary prevention** involves treatment to alleviate established disease, in order to prevent further disability and restore a higher level of functioning [20, 22].

This discussion focuses on primary prevention which has, historically, received much less research attention than other forms of prevention and treatment, though in Canada this has begun to change. In





2006, the federal government announced support for the Canadian Partnership against Cancer (CPAC), charged with the leadership of Canada's cancer control strategy, the objectives of which are to:

- reduce the expected number of new cases of cancer among Canadians;
- enhance the quality of life of those living with cancer;
- lessen the likelihood of Canadians dying from cancer [23].

Most Canadians are familiar with primary prevention messages aimed at promoting healthy behavioural change to prevent cancer and other chronic diseases. These include messages to stop smoking, be physically active, eat adequate amounts of fruits and vegetables, maintain healthy body weights, and avoid sun exposure. While important, these do not address exposures to carcinogens which are the result of societal or governmental actions or inactions, and which are difficult or impossible to modify through personal changes in behaviour. For example, in 2005, Manitoba businesses reported to the federal government, through the National Pollution Release Inventory, that they had released 746,052 kilograms of known carcinogens into the Manitoba environment. (This includes only those companies with 10 or more employees, which also used at least 10 tonnes or more of an NPRI listed substance, with certain exceptions) [24,25].

Determining which cancers are caused by occupational and environmental exposures is difficult.

With rare exceptions, cancers with different causes look the same. In other words, there is no test that can be performed to identify the cause of a cancer. In addition, it is now recognized that the great majority of cancers have multiple causes, such as a combination of genetic, lifestyle and environmental factors. The implications of this for prevention are that if any one cause is removed, the risk of cancer may be significantly reduced [26].

Thus in order to make change, we must be vigilant wherever possible.

Because of these difficulties, the Precautionary Principle was first adopted by the European Council in 2000. It states:

Whenever reliable scientific evidence is available that a substance may have an adverse impact on human health and the environment, but there is still scientific uncertainty about the precise nature or magnitude of the potential effect, decision-making must be based on precaution in order to prevent damage to human health and the environment [27].

The Precautionary Principle was adopted by the Canadian Strategy for Cancer Control, the predecessor of the CPAC, and more recently by the Canadian Cancer Society, which has stated that it:

...Believes that Canadians should not be exposed to known or probable cancer-causing substances at home, at work, or in their environment.

Wherever possible, exposure to substances that are known, or believed, to cause cancer should be identified and eliminated by substituting safer alternatives. When elimination is not possible, exposure should be reduced to the lowest possible levels.





The Society strongly supports a community's right to know what they are being exposed to so they can make an informed decision about their health.

Some of the most important information needed to make this happen includes:

- an understanding of what substances increase cancer risks
- providing information to the public about ingredients in consumer products
- advocating for the use of safer alternatives where they exist

Current scientific evidence is the cornerstone of our information and positions about cancer. However, we believe it is important in some circumstances not to wait for perfect scientific clarity to take action to protect Canadians [28].

The Precautionary Principle directs decision-makers to act to protect health in the face of uncertainty. This is important because long latency periods (the time between exposure to a carcinogen and the development of cancer), limited research attention to primary prevention, and a socio-legal environment in which chemicals are presumed harmless until demonstrated to be hazardous, mean it is not always possible to know with absolute certainty that something is or is not carcinogenic. In some cases, those with interests in the continued production of suspected or known carcinogens will invest heavily in public relations and lobbying campaigns to discredit the evidence against their products. The campaign by cigarette manufacturers to prevent legislation limiting tobacco use is the best known example of this. Such campaigns are not limited to tobacco. The current campaign by Canadian manufacturers and exporters of asbestos is another such example [29,30].

The International Agency for Research on Cancer (IARC), part of the World Health Organization, conducts thorough scientific reviews of epidemiologic and experimental research, including studies about the carcinogenicity of individual chemicals, groups of chemicals, processes, occupations, and physical and biological agents known or suspected to cause cancer [31].

Much of the research used by the IARC to determine carcinogenicity is based on occupational health research – studies of workers exposed to carcinogens in the workplace. Women's occupational health has received much less attention than that of men, and traditional "women's work" has been assumed to be safer than that of men. This has resulted in a knowledge gap about the occupational health risks, including the risks of occupational cancer, faced by women [32] (see Chapter Two). Some recent work has begun to address this. For example, hairdressing, an occupation dominated by women, has been classified by the IARC as Class 2A

The IARC classifies agents into one of five types:

Group 1: The agent is *carcinogenic to humans*.

Group 2A: The agent is *probably carcinogenic to humans*.

Group 2B: The agent is *possibly carcinogenic to humans*.

Group 3: The agent is *not classifiable as to its carcinogenicity to humans*.

Group 4: The agent is *probably not carcinogenic to humans* [25, 30].

The IARC publishes monographs and a searchable database, which are publicly available at <http://monographs.iarc.fr>





(probably carcinogenic to humans) because of chemical exposures faced by hairdressers, specifically exposures to certain hair dyes [33]. A study of women in the Windsor, Ontario area found that women with breast cancer were nearly three times more likely to have worked in agriculture when compared to a control group of women not diagnosed with breast cancer [34].

The cancer surveillance data presented earlier in this chapter are an important record of the burden of cancer in Manitoba. However, because of long latency periods in the development of many cancers, cancer surveillance includes and reflects exposures that may have happened many years in the past. Cancer surveillance, therefore, is of limited value in primary cancer prevention.

Surveillance of exposure to carcinogens, on the other hand, allows for intervention to prevent further exposures and to prevent the development of cancer. In Canada, the best example of such a surveillance program is the National Dose Registry which monitors occupational exposures to ionizing radiation. There are no similar programs for measuring exposures to other occupational or environmental carcinogens in Canada [25]. Research done in British Columbia used CAREX, the International Information System on Occupational Exposure to Carcinogens, originally developed by the Finnish Institute for Occupational Health as part of a European Union effort, to estimate the extent of exposures to occupational carcinogens. Examining only the ten most common occupational carcinogens, they found that over 325,000 BC workers were exposed to chemical carcinogens, 164,875 were exposed to solar radiation, 17,312 were exposed to environmental tobacco smoke and 9,958 were exposed to ionizing radiation [35].

Carcinogen surveillance would monitor exposures to known carcinogens. Better still would be the elimination of these exposures. In Canada, many community groups, environmental organizations, labour unions, and organizations of cancer survivors have advocated for the removal of carcinogens from products, and substitution with safer alternatives. Breast cancer survivor groups have been especially active in lobbying the federal government to remove carcinogens from cosmetics and household cleaners. Partly as the result of these efforts, the federal government introduced regulations to require mandatory ingredient labelling for all cosmetics sold in Canada beginning in November 2006. However, there is no requirement that cosmetics sold in Canada have labels that identify which ingredients are carcinogens. Consumers are only able to avoid using these if they know which of the chemicals listed are carcinogenic [25].

The Primary Prevention Action Group (PPAG) of the Canadian Strategy for Cancer Control undertook a review of best practices in the prevention of occupational and environmental cancers in Canada. They identified the following as best practices:

- identification and surveillance of hazards and exposed populations;
- transmission of information through labelling and disclosure legislation;
- public education;
- reduction of exposure to carcinogens using substitution or process changes;
- using legislation and regulation to contribute to cancer prevention [25].





The PPAG concluded that improved primary cancer prevention requires action in the following six key areas:

1. to raise the profile of the primary prevention of the environmental and occupational exposures as a priority issue within provincial cancer control agencies/programs;
2. to disclose the presence, use and release of classified carcinogens, as a necessary prerequisite to primary prevention in workplaces, the environment and the home;
3. to develop further legislation, regulation and policy, as required for primary prevention.
4. to focus efforts nationally and provincially more specifically on primary prevention of exposures to occupational and environmental carcinogens;
5. to establish the elimination, when possible, and minimization of exposure at all times, for Group 1 and 2A carcinogens as an objective for primary stakeholders and governments;
6. to exploit opportunities for inter-sectoral collaboration in order to maximize our effectiveness and focus activity on primary prevention strategies [25].

The European Union has taken leadership in the elimination of exposures to carcinogens, through its REACH Program (Registration, Evaluation and Authorization of Chemicals). REACH became law among the member nations of the EU in 2007, with implementation to be phased in over the next 11 years. It requires manufacturers and importers to gather information on the properties of their chemical substances, which will allow their safe handling, and to register the information in a central database. REACH also requires the progressive substitution of the most dangerous chemicals when suitable alternatives have been identified. The EU Environment Commission has stated that in addition to cancer prevention, REACH will contribute to the reduced pollution of air, water and soil as well as to reduced pressure on biodiversity, and to reduce the effects of endocrine disrupting chemicals [36]. The European Union has concluded that the costs of implementation of REACH in Europe (one of the largest producers of chemicals in the world) will be very limited, in terms of the reduction in the EU's Gross Domestic Product [25, 35].

The introduction of a similar system in Canada would have similar health and environmental benefits. This would require legislation by the federal government. However, provinces and municipal governments can act to reduce exposures to carcinogens in their own areas of jurisdiction. For example, through occupational health and safety legislation and regulation, environmental legislation, regulation and development approvals, the Province of Manitoba can act to reduce or eliminate exposures to carcinogens. Municipalities can also act to promote primary prevention. Several Canadian municipalities have taken action to eliminate the ornamental use of pesticides, a position supported by the Canadian Cancer Society [37]. The City of Toronto has used its Sewer Use By-law to require those using the sewage system to plan for the reduced use of toxic substances. As a result of this, the dumping of waste water containing cadmium (classified by the IARC as a confirmed human carcinogen) into the Toronto sewage system has been reduced [24].





Summary

Cancer is a serious disease that causes pain and suffering for patients, their family and friends; it is a disease that still evokes fear. More than a third of women (approximately one of every 2.6) will be diagnosed with cancer during their lifetimes.

While Manitoba women as a whole have a 25% lower incidence of cancer than men, women aged 20 to 59 are more likely than men of the same age to be diagnosed with cancer. In particular the incidence of both breast and lung cancers among women has increased sharply since 1981. The greater availability of screening tests and better diagnoses, have contributed in part to this increase, through earlier and better detection. However, the rise in the incidence of cancer remains a serious public health concern, pointing to the need to emphasize cancer prevention.

After rising for many years, cancer rates now appear to be stabilizing among Manitoba women. Women living in Winnipeg were the most likely to be diagnosed with cancer in 2004 and women from Rural South Manitoba were the least likely. Breast cancer remains the most common type of cancer to be diagnosed; however rising rates in lung cancer incidence are also alarming and are linked to women's use or exposure to tobacco over the past 40 years. The increasing rates of these two types of cancer are particularly evident for women who live in the northern parts of the province. Northern women were at highest risk for both lung cancer and cervical cancer. Cancer incidence among First Nations women in the province has risen dramatically, particularly since the late 1990's.

As cancer treatments improve, more women are living with cancer. In 2000, about 3.4% of Manitoba women were living with a diagnosis of cancer. CancerCare Manitoba estimates that by 2025, about 5% of Manitobans will be living with cancer, or approximately 58,000 to 61,000 people [1].

Cancer remains the second leading cause of death for women after heart disease; approximately one in 4.2 Canadian women will die of cancer. Cancer is the leading cause of *premature* death among Canadian females (as it is for males), expressed as potential years of life lost. In 2003, deaths due to cancer were responsible for 520,700 potential years of life lost to Canadian girls and women. Approximately 20% of the potential years of life lost due to cancer were attributable to smoking. The leading causes of cancer deaths among Canadian women are those of the lung, breast and colorectum [1].

Mortality rates from breast cancer, the most common cancer among women, the second most common cause of cancer death among women, and the leading cause of cancer death among women under the age of 50, have declined.

Among Manitoba women, those living in Northern RHAs Manitoba women had the highest rate of cancer deaths and residents of Winnipeg and Rural Southern RHAs had the lowest rates of death due to cancer. The death rate for lung cancer increased over the decade from 1995 to 2004, while the rate of deaths due to breast cancer decreased slightly. Death rates due to cervical cancer and other gynaecological cancers remained stable.





Manitoba's cervical screening program is increasingly reaching many women in the province, but coverage is still incomplete, with only about 2/3 of women aged 18 to 69 years screened in a two year period. Women living in lower income areas are persistently less likely to be screened. Northern women were also far less likely to be screened for cervical cancer. Manitoba's breast cancer screening program, reached just 60% of women aged 50 to 69 years during the two-year period from April 1, 2003 to March 31, 2004. Northern women and women in lower income areas are consistently less likely to receive screening mammography, while women living in Rural Southern RHAs were the most likely to be screened. As First Nations women appear to be particularly vulnerable to cervical cancer, developing culturally respectful and appropriate screening and outreach will be fundamental to reaching First Nations and other Aboriginal women in the province.

Along with screening, diagnosis, treatment and palliative care, we need systematic cancer prevention programs, as the best way to stop cancer is to prevent it. Based on current knowledge, it is estimated that at least one-half of all cancers in Canada can be prevented [20].

Most cancers are caused by multiple factors. Diet, lifestyle, viral agents, genetics, and exposures to environmental and occupational carcinogens can all contribute to the initiation and progression of a tumour. In the past, there has been much debate about what percentage of cancer is attributable to each of these factors. Rather than focus on attributable percentages, we support the call for a new cancer prevention paradigm, one based on limiting exposures to all avoidable environmental and occupational carcinogens and to important risk factors including diet, exercise and other lifestyle factors [4].

All levels of government – federal, provincial and municipal, can act to prevent cancer, by joining the Canadian Cancer Society in supporting the Precautionary Principle, which directs decision-makers to act to protect health in the face of uncertainty.

Promoting cancer prevention, like other forms of primary prevention, can be difficult. Prevention doesn't offer any "magic bullets". Dr. Harvey Fineberg, the President of the US Institute of Medicine has provided seven reasons why prevention is a "hard sell". These are:

1. there is no drama in prevention;
2. non-events are not counted;
3. statistical lives don't have immediacy;
4. prevention is not profitable;
5. prevention often runs against commercial interests;
6. prevention may conflict with personal preferences or religious beliefs;
7. there is declining trust in leaders and institutions, challenging people's willingness to follow guidelines [38].

However, these difficulties are not insurmountable barriers. Other countries, notably the European Union, have acted to eliminate exposures to carcinogens, through its REACH Program (Registration, Evaluation and Authorization of Chemicals), which became law among EU member nations in 2007.





Primary Prevention Resources for Consumers

The CancerSmart Consumer Guide is available from Labour Environmental Alliance Society 1203–207 West Hastings St. Vancouver, B.C. V6B 1H7 or from <http://leas.ca/CancerSmart-3-The-Consumer-Guide.htm>

The Canadian Cancer Society's web site has information on cancer prevention and what the CCS is doing to promote primary prevention at:
http://www.cancer.ca/ccs/internet/standard/0,,3172_10139_langId-en,00.html

Through its Health and Environment Awareness Project, **Breast Cancer Action Montreal** has published *The Beast of Beauty: Toxic Ingredients in Cosmetics*,
http://www.bcam.qc.ca/heap/heapdfenglish/Beauty_products_f5.pdf and
The Dirt on Cleaners: Toxic Ingredients in Cleaning Products
http://www.bcam.qc.ca/heap/heapdfenglish/Cleaning_products_f5.pdf

The U.S. Environmental Working Group has developed an online searchable database of cosmetics and personal care products, including many of those sold in Canada. The database contains information about carcinogens and other hazardous chemicals in these products.
<http://www.cosmeticdatabase.com>

The U.S. National Institutes of Health and National Library of Medicine maintain an online searchable Household Products Database of information about the contents of household products, using information provided by manufacturers for products sold in the U.S. Many of these are also available in Canada. Products that contain chemicals that have been identified as carcinogens by the U.S. Occupational Health and Safety Administration and other U.S. regulators are indicated.
<http://hpd.nlm.nih.gov/products.htm>

Manufacturers and sellers of products to be used in Canadian workplaces are required to provide purchasers with Material Safety Data Sheets (MSDS) for each of their products. These are not normally made available to consumers. However, using an internet search engine to search for the term “MSDS” followed by the product name, will often lead you to the relevant MSDS, which must, by law, contain information about the carcinogenicity of any ingredients.





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Arthritis

Introduction

Arthritis is one of the most prevalent chronic conditions in Canada, and a leading cause of long-term disability, pain, and increased health care utilization [1]. Osteoarthritis is the most prevalent type of arthritis, affecting approximately 1 in 10 Canadians, compared to 1 in 100 affected by rheumatoid arthritis [2]. However, these conditions are both far more common among women than among men. Osteoarthritis is generally twice as common among women as men, whereas rheumatoid arthritis is two to three times as common among women [3]. National health surveys have ranked arthritis/rheumatism second only to non-food allergies as the most commonly reported health problems among women [4]. Similarly, in Manitoba, arthritis represents the second-most common disease for which Manitobans report having received treatment, and treatment prevalence rates are significantly higher among women than men [5].

The effects of arthritis vary considerably between the sexes. Women are known to exhibit more aggressive rheumatoid disease and to have poorer long-term outcomes than men [6]. Chronic pain and reduced mobility and function are the most common outcomes of long-term arthritis. Overall, musculoskeletal disorders account for higher disability costs than any other category of illness in Canada. Specifically, arthritis and osteoporosis account for more productivity losses due to long-term disability than any other diagnostic category. According to one study, arthritis and heart disease are each responsible for about 15% of total disability in the US [7].

While biological factors play an important role in women's greater risks for arthritis and some disease outcomes, gender considerations often mediate women's capacity to utilize and fully benefit from effective treatments and informal supports that can improve functioning. Women's roles and social and economic circumstances often constrain the resources necessary to cope with a chronic degenerative condition. Providing more gender-sensitive care, addressing biases in practice, and removing barriers to access hold promise for improving the health of the large numbers of women affected by arthritis.

What is Arthritis?

Arthritis is a group of disorders that affect joints and are often characterized by inflammation and joint or musculoskeletal pain. Arthritis consists of more than 100 distinct conditions, which range widely in severity from mild and localized forms (e.g. tendonitis) to more severe and systemic forms (e.g. systemic lupus erythematosus). The most common forms of arthritis are osteoarthritis and rheumatoid arthritis.

Osteoarthritis

Osteoarthritis (OA) is caused by the breakdown of cartilage at a joint, often resulting from overuse or an injury. OA can involve any joint, but usually affects hands and weight-bearing joints such as hips, knees, feet and spine. Over time, the breakdown of cartilage may result in damage to bone, inflammation and pain. Loss of functional ability results from reduction in joint mobility and weakening of surrounding muscles through lack of use.

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is an autoimmune disease that causes chronic inflammation in the lining of joints. It can also affect other tissues and internal organs. Autoimmune diseases are illnesses that occur when the body's immune system mistakenly attacks its own tissues. RA may develop gradually or begin with a sudden attack of flu-like symptoms. Symptoms and the rate of disease progression (or remission) vary considerably between individuals. RA can lead to permanent damage to joints. Individuals with RA may suffer severe pain and experience difficulty carrying out activities of daily life [8].





Prevalence of Arthritis¹ in Manitoba Women

It has been estimated that only 40-60% of those with symptoms of arthritis will consult with a health professional [1]. A common misconception that arthritis symptoms are a normal part of aging may contribute to the large numbers of people who do not seek a diagnosis for these conditions. Thus, the Canadian Community Health Survey (CCHS), which is based upon self-reporting of medical diagnoses, provides a conservative estimate of the prevalence of arthritis in the population.

According to the 2005 CCHS, 21.4% of women (age 12 and older) in Manitoba, the equivalent of 101,739 individuals, reported having received a diagnosis of arthritis or rheumatism from a physician. The prevalence of arthritis among women was significantly higher than

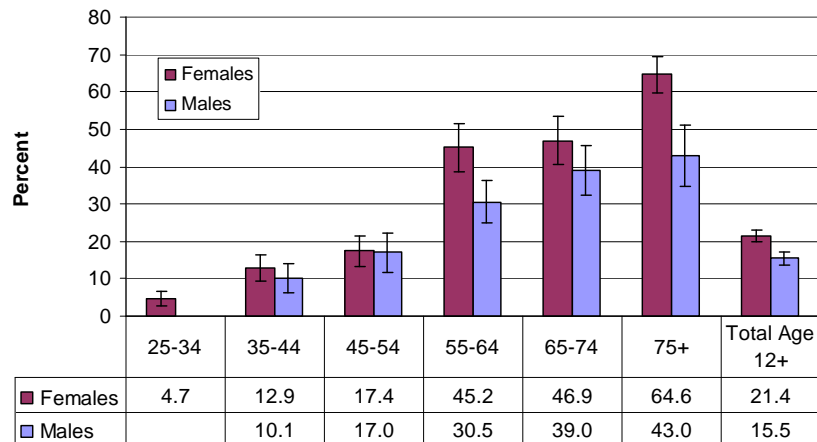
among males in the province, 15.5% of whom had received a diagnosis for the condition (Figure 1). The prevalence of arthritis among women increased with advancing age and at a steeper rate after middle age. In fact, rates more than doubled from 17.4% in the 45 to 54 age category to 45.2% in the 55 to 64 age range. Arthritis was more prevalent for women than men in all age categories, although differences achieved statistical significance only in the 55 to 64 and over age 75 age ranges. The majority of elderly women were affected by

arthritis: nearly two-thirds of women over age 75 had received a diagnosis for arthritis or rheumatism, which was 50% higher than the prevalence among men of the same age [10].^{2,3}

CCHS Definition

The Canadian Community Health Survey (CCHS) asked participants (aged 12+) about their chronic health conditions, defined as long-term conditions that had lasted or were expected to last 6 months or more, and that had been diagnosed by a health professional. Included in the list of conditions was “arthritis or rheumatism”, which were differentiated from back problems and fibromyalgia [9].

Figure 1: Prevalence of Arthritis or Rheumatism By Age and Sex, Manitoba 2005



Source: CCHS 2005 [10].

Notes: Rates for women aged 25-34 and men aged 35-44 were associated with high sampling error and should be interpreted with caution. Results for men and women aged 12-24 and for men aged 25-34 were too unreliable to publish. Confidence intervals (95%) illustrate potential variability in estimated rates due to sampling error.

¹ Includes both osteoarthritis and rheumatoid arthritis.



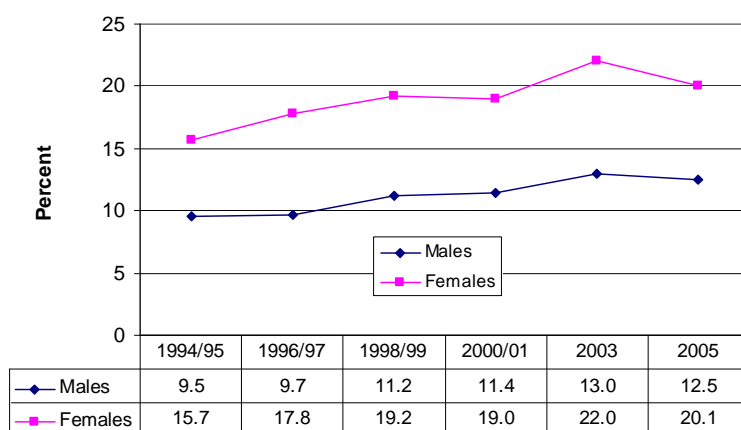


A misconception that arthritis affects only the elderly persists, yet the largest number of people with arthritis are in the 45-64 age range [1]. Among women, rheumatoid arthritis most commonly appears between the ages of 25 and 50 [2]. In comparison with other chronic degenerative diseases, arthritis affects a relatively large proportion of women under age 65.

The rates based on the CCHS are generally consistent with the results from an analysis of health administration data for Manitoba, which found that approximately one in five women in the province had been treated for arthritis⁴ and that women had significantly higher rates of treatment than men (22.3% of females versus 19.2% of males aged 19 and older). Consistently higher rates of treatment for women were found across nearly all age categories, the highest rates relative to men having been found in the 50 to 60 age range [5].

The prevalence of arthritis among Manitoba women is also comparable to that of Canadian women overall (20.1%), though Manitoba men have higher rates than the male national average (12.5%) [10](Figure 2). The trend in national data shows a steady increase in the prevalence⁵ of arthritis among women and men over the past decade with, again, women having consistently higher rates than men [7]. However, long-term trends have

Figure 2: Trends in Arthritis/Rheumatism Prevalence, Canada 1994-2005



Sources: National Population Health Surveys (NPHS) 1994/95, 1996/97, & 1998/99; CCHS 2000/01 & 2003 [7], CCHS 2005 [10]. Note: CCHS and NPHS definitions of arthritis differ. The NPHS definition did not explicitly exclude fibromyalgia, as did the CCHS. Therefore, more people may have reported arthritis in the NPHS than in the CCHS [9].

² The CCHS includes people aged 12 years or older who were living in private dwellings in the 10 provinces and three territories. People living on Indian Reserves or Crown lands, those living in institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded.

³ This analysis is based on Statistics Canada’s Canadian Community Health Survey, Cycle 3.1., Public Use Microdata file, which contains anonymized data collected in the year 2005. All computations on these microdata were prepared by Prairie Women’s Health Centre of Excellence and the responsibility for the use and interpretation of these data is entirely that of the authors.

⁴ The Manitoba Centre for Health Policy also combines osteoarthritis and rheumatoid arthritis in this measure of arthritis treatment prevalence. The prevalence is defined as the percentage of residents aged 19 years or older diagnosed with arthritis using a combination of data on physician visits, hospitalizations and prescription drugs (see original for specific, validated criteria) from 2002/03 to 2003/04 fiscal years. These rates are adjusted to control for differences in age structure between male and female populations [5].

⁵ Crude rates, unadjusted for any differences in age structure over time.





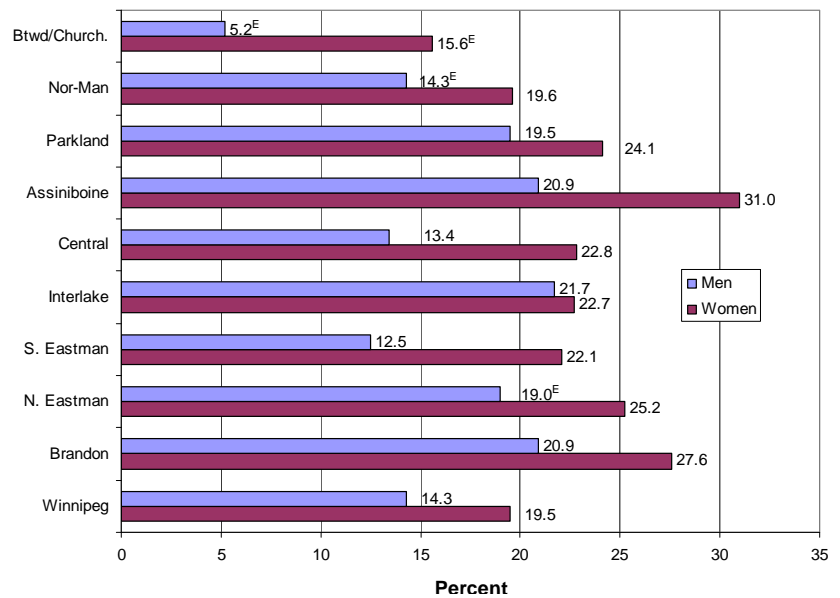
shown that, for Canadian women⁶, the odds of having arthritis were higher in the late 1970s than in the mid-1990s, even when the effects of age, education and income were taken into account. Arthritis was significantly less prevalent among women aged 32 to 49 and 50 to 67 in the mid-1990s than for women in the same age ranges in the late 1970s, particularly for younger women. Although the Canadian population is aging and the *number* of individuals with arthritis and other chronic diseases is expected to increase, women (and men) may stay healthier longer than previous generations. Delayed onset of chronic disease among women in the middle-age range and lower rates of activity limitation among senior women has generally been attributed to healthier lifestyles and improved health care and health promotion efforts [11].

Arthritis Prevalence by Region

According to the 2005 CCHS, the prevalence of arthritis varied widely among women in different regions of the province. For example, a two-fold difference could be seen in a comparison of rates among women in the combined Burntwood-Churchill region in Northern Manitoba (15.6%^E) and the Assiniboine region (31%) in the South. Although rates of arthritis were consistently higher for women than men in all regions, the disparity was particularly large in Burntwood/Churchill, South Eastman and Central regions [10](Figure 3).

It is important to note that these regional prevalence rates represent crude rather than age-adjusted rates. Crude rates are useful in providing a realistic assessment of the disease burden for the population in a given region, which may inform health care planning. However, caution must be taken when comparing the prevalence of arthritis between and among regions, because differences in rates may reflect differences in age structure between regional populations as well as differences in exposure to risk factors for arthritis. In the comparison above, an older population in the rural, southern Assiniboine region may account for higher rates of arthritis than in the rural north, where the average age of residents is younger.

Figure 3: Crude Prevalence of Arthritis or Rheumatism By Region and Sex, Manitoba 2005



Source: CCHS 2005 [10].

Note: 'E' signifies a high degree of error in estimated rates. Interpret with caution.

⁶ Data sources included the 1978/79 Canada Health Survey (CHS) and the 1996/97 National Population Health Surveys. The CHS covered the non-institutionalized population, excluding residents of the territories, First Nations reserves and remote areas. The NPHS covered household and institutional residents in all provinces and territories, except persons living on First Nations reserves, on Canadian Force bases, and in some remote areas.





Using age-standardized rates of treatment of arthritis, an analysis of health administration data for Manitoba (2002/03-2003/04) demonstrated that in all regions, women were more likely to have been treated for arthritis than their male counterparts, though the sex difference did not achieve statistical significance in the Churchill region. Comparing women across the regions showed significantly higher age standardized rates than women's average treatment prevalence (22.33%) in the Nor-Man (28.74%), Parkland (26.26%), Burntwood (25.86%), and Brandon (23.38%) regions. Women in the Interlake (21.3%) and Central (21.57%) regions had significantly lower-than-average rates of arthritis treatment [5]. As this analysis controlled for differences in age-structure, the variation in these rates may reflect regional differences in underlying risks for arthritis, and/or differences in the delivery of health care and community resources.

Prevalence of Arthritis Among First Nations & Aboriginal Women⁷

Arthritis or rheumatism is the most common chronic condition diagnosed among Aboriginal women. A national survey of First Nations' health found the prevalence of arthritis/rheumatism⁸ among First Nations women to be 1.7 times higher than among Canadian women overall (age adjusted prevalence of 30.1% versus 17.4%), with the most notable differences found among women younger than 60 years [12].

The CCHS also found elevated rates of arthritis/rheumatism for those who identify as Aboriginal, living off reserve (Figure 4). Nineteen percent of Aboriginal Canadians had arthritis, which would be equivalent to 27% if this population had the same age structure as the overall Canadian population. In all age groups, Aboriginal women had a significantly higher prevalence of arthritis than non-Aboriginal Canadian women. Among men, the difference between Aboriginal and non-Aboriginal rates achieved significance only in the 35 to 44 age group. The CCHS also found that Aboriginal people under age 65 were more likely than non-Aboriginals to report activity limitations with arthritis [13].

An analysis of 1999 survey findings concluded that First Nations women were more likely to report several chronic health conditions, including arthritis, as compared to their male counterparts and other Canadian women. Women also tend to develop arthritis, as well as respiratory and cardiovascular problems, at a younger age than men [14]. Although the Manitoba First Nations survey reported a growing prevalence of arthritis among the provincial First Nations population, sex disaggregated data were not published [15]. The growing problem of obesity among First Nations is expected to affect rates of osteoarthritis in this population [16].

⁷ The CCHS gathered data on Canada's Aboriginal population, defined as those individuals who self-identified as North American Indian, Métis, or Inuit. The CCHS did not survey people in the northern territories, on military bases, in institutional collective dwellings or living on First Nations reserves. The First Nations Regional Health Survey (RHS) identified as First Nations, those individuals living in First Nations communities (on-reserve) in all provinces and territories except Nunavut.

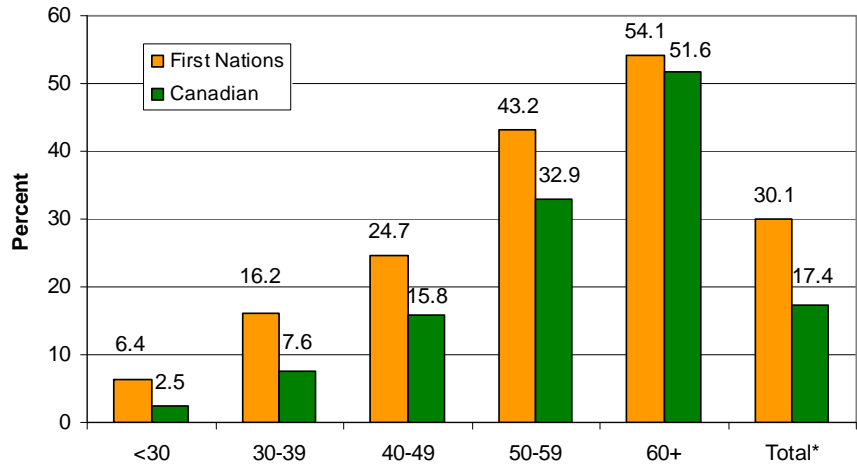
⁸ Similar to the question posed by the CCHS, the RHS asked respondents about long-term health-related conditions that have lasted, or that are expected to last, six months or more and that have been formally diagnosed by a professional.





Although data concerning First Nations and Aboriginal people are most accessible in Canada, relative to other ancestral populations, US studies have demonstrated a higher prevalence of rheumatoid arthritis and osteoarthritis in African Americans [1]. A US study found higher rates of knee osteoarthritis among women of colour in comparison with Caucasian women [17]. Other ethnic or cultural sub-populations of significance among Manitoba women may also be at greater risk for arthritis. However, until prevalence data on other populations becomes available, the extent of these differences will remain unknown.

Figure 4: Prevalence of Arthritis/Rheumatism by Age, First Nations & Canadian Women, 2002/03



Source: 2002/03 First Nations Regional Longitudinal Health Survey (RHS). The RHS derived data on Canadian women from the CCHS 2003. [12]

Notes: *Age-adjusted prevalence.

Comparing rates from different surveys, such as the RHS and the CCHS, may be problematic due to differences in the design and contexts of surveys that affect response rates.

Risk of Arthritis – Sex & Gender Differences

Several factors are understood to contribute to the development of arthritis, although the specific causal mechanisms remain unknown. Hereditary susceptibility, hormonal and biomechanical influences, such as injury or overuse [9], and excess weight [8], are commonly named among key contributing factors. Female sex and sex hormones have been recognized as independent risk factors for arthritis. Immunological differences between the sexes also play a role in women’s greater risks for arthritis. Women have enhanced immune systems compared to men, which offer women greater protection from many types of infection, but also makes them more vulnerable (2.7 times more likely) to acquire an autoimmune disease, of which RA is one. Men have higher levels of natural killer cell activity than women, which is associated with lower levels of autoimmune disease [18].

Women’s greater susceptibility to arthritis has been attributed to female hormones, though their influence is not well understood. The observation that women disproportionately experience osteoarthritis around or after menopause suggested a relationship between hormones and arthritis. Clinical research has found elevated levels of estrogen in arthritic cartilage of women with osteoarthritis, implicating estrogen in the development of arthritis in women [19]. Elevated risk for arthritis has been demonstrated for women who have had their ovaries surgically removed, and women who have never been pregnant or who have recently given birth [20]. Conversely, women with existing rheumatoid arthritis often experience an improvement in symptoms during pregnancy, and the contraceptive pill may





also be protective [6]. Pre-dating evidence of harms associated with hormone therapy (HT), clinical trials which hypothesized a protective effect of HT on arthritis were contradictory and failed to confirm the association. However, a Canadian longitudinal study found evidence of a two-fold greater two-year incidence of arthritis among middle-aged and older women who were on HT, when age and the frequency of visits to a physician were controlled for [20]. Clearly more research on the role of female hormones in the development of arthritis is needed.

Excess body weight is recognized as an important modifiable risk factor for arthritis. Excess weight places greater strain on joints and increases risks for arthritis [8]. Obesity may confer similar risks for women and men, as some research has indicated [9]. Other research has found greater risk of arthritis for obese women than men [9]. An analysis of Canadian survey data found the elevated risk for developing arthritis to be similar for obese women and men (60% higher incidence than those with weight in normal range), which was independent of other known influences. However, for individuals who were overweight, but not obese, only women had a higher risk of developing arthritis (30% higher than those with weight in normal range) [9]. The effect of excess weight on arthritis may be mediated by other physiological differences between the sexes. For example, men are known to have significantly larger knee cartilage volumes than women, even when individuals of similar body and bone size are compared. Thus, men may have more natural protection from the exacerbating effects of weight on arthritis of the knee than women [19].

Other modifiable and biomechanical risk factors for arthritis, including intensive physical activity and previous knee injury may be less detrimental for women than men. Physical activity generally reduces the risk of hip/knee osteoarthritis, especially among women [17]. However, high intensity and high impact activity, more often engaged in by young men, is associated with a small increase in risk. Men's greater involvement in sport increases their risks for injury as well as long-term strains on joints. These gender differences in the level and type of physical activity have been used to explain higher levels of osteoarthritis among men than women in young adult age groups. As well, research on occupational health has established that kneeling and squatting for extended periods of time represent risk factors for osteoarthritis of the hip and knee. However, this research has primarily focused on men in 'masculine' occupations, and little is known about women's occupational risk exposures [17]. For women, biomechanical risk factors may also interact with social role expectations to create unique risks, as has been demonstrated by the effect of women's footwear on arthritis. Several US studies have shown that wearing high-heels over two inches increases the risk of osteoarthritis for women, with longer term wear likely increasing those risks. High heels increase forces (torques) in the region where women typically get osteoarthritis. These forces lead to joint degeneration [19].

Several socioeconomic factors have been associated with higher rates of arthritis, though again causal mechanisms are poorly understood. Nevertheless, social factors appear to have a stronger relationship with the development of arthritis for women than for men. An analysis of the 1998/1999 National Population Health Survey (NPHS) found differences in income, education, relationship status and labour force participation among Canadian women and men with arthritis, though women demonstrated greater disparities than men for these social indices. For example, twice the proportion of low-income women





reported having a diagnosis of arthritis or rheumatism compared to women in the highest income category (30% versus 15%), whereas lower prevalence rates and a more moderate income disparity was apparent among men (17% versus 11%). A very similar set of rates were found in the comparison of arthritis prevalence among women and men with different levels of education [1].

Further evidence has come from a newly released gender and equity analysis of 2000/01 CCHS data. Using five categories of income, the study clearly demonstrated income gradients in the prevalence of arthritis for Canadian women (age 25+) and men, as well as higher rates of arthritis for women than men in all income groups. Again, nearly one third of women in the lowest income group reported a diagnosis of arthritis compared to 21% of women in the highest income group and 21% of men in the low income group [21]. An analysis of hospital administration data by the Manitoba Centre for Health Policy also established the importance of socioeconomic factors for the occurrence of arthritis among women and men in Manitoba. Age-adjusted rates of arthritis were higher among residents of low-income areas in both urban and rural settings, with statistical tests indicating a highly significant relationship between arthritis and income ($p < .001$) [5].

Effects & Outcomes of Arthritis for Women

Arthritis has serious and far-reaching effects on women's health and well-being. Arthritis is associated with a broad range of physical, social and psychological impacts with consequences for the quality of life, the ability to work, and numerous direct and indirect costs. While this breadth of effects is difficult to adequately quantify, research has focused on several measures that demonstrate key areas of impact for women; these primarily include mortality, ill health, including pain and psychological health, and long term disability.

Physical and Mental Effects - A comprehensive report on the effects of arthritis on Canadians found that women are at greater risk of death attributable to arthritis than are men. In 1998, 497 women and 257 men in Canada died from arthritis and related conditions identified as the underlying cause. Indeed, in every age category, women's risk of death was higher than that of men, with approximately four female deaths for every three male deaths [13].

Among individuals with arthritis, women report more severe symptoms of pain, greater functional limitation and disability than men [17, 22]. Forty-five percent of women with arthritis report pain that prevents some activity; 21% report pain that prevents all or most activity [1]. Considerable research suggests that women and men differ in their experience of pain [23]. Experimentation in laboratory settings has shown that when women and men are exposed to similar stimuli, women exhibit greater pain sensitivity. Several mechanisms have been proposed to account for differences in pain perception between the sexes, including psychosocial factors such as sex role beliefs, pain coping strategies, mood, and pain-related expectancies [23]. As well, sex hormones are known to have different effects on pain perception in the male and female brain [24].

A study that compared arthritis symptoms in women and men showed that women's experience of greater pain was fully accounted for by greater severity of disease in women, contrary to the stereotype





that women over-report symptoms or over-rate their severity. Depression also accounted for some part of women's greater pain severity [25]. Women still report more pain and disability when x-ray results show comparable severity of disease for women and men. This observation has raised concerns that clinical measures used to determine the need for hip and knee replacement surgery are not sensitive to differences in women's and men's bodies and experience of arthritis [17]. Similarly, a study that followed women and men with rheumatoid arthritis over one year found that women suffered greater disability over time, though objective ratings of disability by a physician's assistant were not associated with a client's self-perceived pain and disability. However, depression again had a significant influence on women's greater loss of function over time [26].

Arthritis is a particularly important cause of long-term disability for women. Women are more likely to suffer long-term disability attributable to arthritis, whereas long-term disability in men is more likely to result from back problems [1]. Compared to women with other chronic conditions, women with arthritis are more likely to suffer long-term disability, report poorer health, more pain that restricts activity, and consult with a general physician, specialist and physiotherapist [1]. Arthritis commonly interferes with women's daily activities; 43% of women with arthritis required assistance with daily tasks (personal care, household chores, shopping) compared to 30% of men with arthritis and 13% of women with other chronic conditions [1]. Further, arthritic women with functional limitations have been found to be more likely than men to require personal assistance with daily activities, but are less likely to report having access to unpaid support. This difference may be accounted for by the larger number of elderly women who live alone [17].

Arthritis is associated with psychological impacts, including depression, particularly among individuals who have lost functional capacity or the ability to carry out their role in work or home life. Furthermore, research has shown that women with arthritis report greater depression than men [27]. A study of sex differences in psychological impacts of rheumatoid arthritis, which controlled for other known variables, including the quality of emotional support, passive pain coping, and physical functional impairment, found that these factors only partially explained differences in negative indicators of psychological wellbeing. Thus, other mechanisms in the relationship between gender and depression in arthritis patients remain unexplained [27]. A study of RA patients found that emotional distress increased with decreasing functional ability, increasing pain, and exposure to such work characteristics as low autonomy, low income, and high demands. No sex differences in measures of distress remained after controlling for disease and work variables and the study concluded that men and women with high levels of functional disability and exposure to stressful work characteristics are at equal risk of emotional distress [28]. Nevertheless, arthritic women may be more likely to suffer poor emotional outcomes because women tend to have lower incomes and less workplace autonomy, as well as greater declines in functional ability and more severe pain.

Socioeconomic Effects - Differences in social and economic capacities between and among women and men factor into the impact of arthritis. Because women are more likely to lack economic resources, income loss due to long-term disability compounds deprivation for many women living on low-income, lacking sufficient insurance or other resources. Research has found that compared to women living with other





chronic conditions, women living with arthritis have been found to be in many ways more vulnerable in social and economic respects. Women with arthritis tend to be older, have lower incomes, have fewer years of education, are more likely to be widowed, and are less likely to participate in the labour force than women with other chronic conditions. Thus, it appears that women with arthritis are particularly lacking in resources to deal with the effects of the condition on their daily lives [3].

Income has been found to mediate several health outcomes for women and men with arthritis. A recently released analysis of CCHS data demonstrated significant socioeconomic disparities across several key measures of health for arthritic women. Women with arthritis in the lowest income categories were significantly more likely than women in the highest income categories to report fair or poor health, worse health than in the previous year, poorer functional capacity⁹, pain that limits activities, probable depression¹⁰, and four or more coexisting chronic conditions. As well, comparisons between women and men found greater disparities by income for functional limitations and multiple chronic conditions among women than men. Half of women in the lowest income group with arthritis reported having four or more chronic conditions [21].

Some research that focused on the importance of social support in mediating the effects of stress on arthritis and other chronic conditions has seen women as benefiting from more supportive social environments. However, more in-depth research has noted other important gender distinctions. Based on data from the National Population Health Survey, a comparison of women and men matched for age and chronic illness found that men had significantly higher odds than women of being in poor health or having died after four years of follow-up. While women's resilience was attributed to their greater access to social support, interestingly, the sexes also differed in the nature of support received. Women were more likely to report having people to talk to, to provide advice in a crisis and to understand their problems, whereas men were more likely to report having someone to help if they were confined to bed, to prepare meals and to help with activities [29]. Women's more limited access to concrete social support may pose challenges for women with arthritis who require assistance in coping with activity limitations and recovery following surgery.

A study which explored specific ways in which social networks are utilized in the self-management of arthritis and other chronic diseases found evidence of gender and race differences that may account for gender differences in disease outcomes. Women tended to speak more of how others influenced their coping (positive or negative), whereas men spoke only of receiving support for doctor's appointments. Men tended to receive more support from a spouse, whereas women were more likely to have children or

⁹ Functional capacity was measured by the HUI, Health Utility Index, a single index based on assessment of functional capacity from eight attributes of health (vision, hearing, speech, mobility, dexterity, emotion, cognition and pain). Scores on the HUI range from 0 to 1, where 0 indicates death and 1 indicates perfect health. The Health Utility Index is an indicator of overall health. A score equal to or less than 0.8 is considered poor health [21].

¹⁰ Proportion of population who score equal to or greater than 0.90 Depression Scale Predicated Probability Score using the Composite International Diagnostic Interview (CIDI). Note: Questions about the validity of this measure have been raised and it is no longer included in the CCHS [21]. See Depression, this chapter.





friends who influenced their self-management. The extent to which the influences from children were not beneficial was unanticipated by the researchers. Not unlike the social circumstances of older men and women in the overall population, most men in the study population were married, whereas most women were single, divorced, or widowed, although more African American than Caucasian women lived with family members [30].

Women's Access to Treatment

While there is presently no cure for arthritis, available treatments, including medication, surgery, rehabilitation and self-management, aim to prevent disability, maintain function and reduce pain [1]. Research has shown that prognoses are improved by aggressive treatment early in the progression of arthritis [2], and that cost savings—to individuals and health systems—are gained through timely surgical treatment [17] and treatment with medications proven to be effective in preventing joint damage [13]. In light of the higher prevalence of arthritis among women and certain sex disparities in disease outcomes, sex differences in treatment are warranted. Yet there is evidence indicating that differences in treatment and timeliness of treatment do not adequately respond to the needs of women [13, 17].

Medication - A variety of arthritis medications are available in Canada, including non-steroidal anti-inflammatory drugs (NSAID)—both conventional varieties and the newer COX-2 inhibitors, low-dose corticosteroids, disease modifying anti-rheumatic drugs (DMARD), and the newly available, more effective biologic response modifiers (biologics). NSAIDs and corticosteroids target inflammation and pain, whereas DMARDs and biologics limit disease progression [13].

According to national survey data¹¹, women and men with arthritis are equally likely to be prescribed any medication, but women are more likely to be prescribed pain medications and antidepressants than men and than women with other chronic conditions [1]. These treatment differences may appropriately reflect women's experience of arthritis, as described earlier—that is, arthritic women's more common experience of pain and depression. Nevertheless, there is also evidence that higher rates of prescription of pain medication (e.g. NSAIDs) to women may have adverse consequences that are unaddressed by medical practice. Long term use of NSAIDs has been linked to gastrointestinal, liver or renal injury, heart failure and adverse reproductive outcomes [13]. Research has shown that women, particularly aged 65 and older, are more likely to experience ill health from use of nonspecific non-steroidal anti-inflammatory drugs (NS-NSAIDs). Female sex and older age (65 and older) are associated with nausea, abdominal pain, and dyspepsia [31]. However, research has also shown that men are more likely to die from gastrointestinal bleeding as the underlying cause, most often the result from NSAID use [13]. A study of sex differences in NSAID use by older adults found that physicians were significantly more likely to prescribe NSAIDs to women than to men (37% versus 30%), and that usage did not diminish with greater risk of adverse effects or self-reported symptoms [32].

¹¹ National Population Health Survey data.





While newer arthritis medications, such as COX-2 inhibitors and the biologics family of drugs, are more effective and may lessen adverse effects, their costs are a problem for equitable access through provincial health systems and for individuals. In the case of DMARDs, the primary therapy recommended for rheumatoid arthritis, prescription rates have increased consistently over time. Nevertheless, in all provinces, the rate of provision of these drugs still falls well short of the estimated prevalence of rheumatoid arthritis. In Ontario, the cost of arthritis-related prescription medications nearly doubled between 1999 and 2000, and is expected to continue to rise as the use of biologics increases. Annual per patient costs for biologics may exceed \$18,000 (USD) [13]. In Manitoba, biologics may be covered under the Exceptional Drug Status program¹². Thus Pharmacare reduces the financial barrier to biologics considerably, though this and other care costs may still represent a formidable expense for some women. Thus, the lack of affordability of some arthritis medications is likely to have a greater effect on women, particularly in light of arthritic women's fewer resources, as was previously described.

Surgery - National data indicate that Canadian women have a slightly higher rate of total knee and hip replacement surgery than men. For 2004/05, age-standardized surgical rates for women exceeded those for men by 7% and 22% for hip and knee replacement surgery respectively [33]. In light of the two-fold greater prevalence of arthritis among women compared to men, these small differences in surgical rates indicate that treatment is insufficient to the level of need among women [1, 13]. Similarly, in Manitoba, comparisons of age-adjusted rates of hip replacement found no significant difference between men and women (1.62 versus 1.72 surgical events per 1,000 residents aged 40+) and significant, though small sex differences in rates of knee replacement surgery (2.7 versus 2.1 per 1,000 residents aged 40+)¹³ [5]. As well, women have longer hospital stays than men for both knee and hip replacement [13, 33]. In 2004/05, Manitoba women undergoing hip replacement averaged 17 days in hospital compared to 10 days for men, though both sexes had a nine day average stay for knee replacement [33].

Arthritic men are actually more likely to receive certain surgical procedures than women. Men were significantly more likely to undergo minimally invasive surgery (MIS), a new surgical technique used for hip and knee replacement procedures, which is associated with improved outcomes and quicker rehabilitation. Men's higher rates of MIS remained significant even when the age and body mass index of patients was controlled for [33]. As well, rates of joint replacements for other than knee and hip joints and arthroscopic knee procedures are higher among men with arthritis and related conditions than for women. Higher rates of arthroscopy may reflect the greater exposure of young males to injury from physically demanding jobs or sports [13]. Despite apparent inequities in access to surgery, trends seen in national data indicate that surgical rates are rising most rapidly among some groups of women. Between 1994/05 and 2004/05, rates of knee arthroplasty more than tripled for women aged 45 to 54, while rates more than doubled among men in this age category [33], indicating notable improvements for women.

¹² A patient's specialist must demonstrate the individual's circumstances meet specific criteria set by the Manitoba Drugs Standards and Therapeutics Committee. If a claim is successful, a patient living on low income may expect to pay an annual deductible of approximately \$500-\$775.

¹³ Taken from hospital data for 1999/2000 to 2003/04; all surgical events are counted, which may include more than one procedure performed on a resident.





Knee and hip replacements are underused by both women and men, though there is evidence for greater concern for women. A study in southern Ontario found that although women had a higher prevalence of arthritis of the hip or knee, had worse symptoms and greater disability associated with arthritis, they were less likely to discuss the possibility of surgery with their physician, and less likely to have undergone joint replacement than men. Based on a sample of residents (over 48,000), excluding those who had undergone arthroplasty, more than twice as many women as men (45 per 1,000 women compared to 21 per 1,000 men) were identified through a standardized screening process as having a potential need for surgery. After adjusting for willingness to undergo surgery, the need among women was three times that for men (5.6 per 1,000 women and 1.6 per 1,000 men). Thus, the degree of underuse of knee and hip surgery is greater among women than men, despite their being equally appropriate and willing candidates for surgery. Possible reasons given by the authors for the difference included lower rates of referral of women, women being less likely to initiate discussion of treatment options or to demand surgery when it is discussed, or attitudes among primary care givers that make them consider women less suitable candidates for surgery than men [34]. A gender-based review of the available literature on wait times for knee and hip surgery confirmed that, compared to men, women are less likely to be referred, or are referred after a longer interval, to orthopedic surgeons. Moreover, waiting lists do not adequately represent the delays in surgical intervention for women, as standard definitions of 'waiting' account only for time spent waiting after a patient has indicated they are ready to receive service and the physician has booked it [17].

Studies of patients on surgical waiting lists have found some evidence of poorer surgical outcomes for women, partly reflecting the tendency of women to be listed at a more advanced stage of disease. Although a prospective study found no differences in the severity and frequency of pain experienced by women and men waiting for surgery, women had worse pre-operative functioning on physical performance measures, including the ability to walk quickly, climb stairs, and get in and out of a chair. Within three months following surgery, women also showed a slower rate of recovery for all physical performance measures. Research comparing rates of recovery between women and men must be able to remove the influence of women having lower initial scores on function, which may require longer prospective studies [35].

A recent study attributed underuse of surgery by women to practitioner bias. The study examined the effect patients' sex had on surgical recommendations made by 71 physicians in blinded assessments of standard patients, who differed in sex but shared identical clinical presentations of knee osteoarthritis. The study found that family doctors and particularly orthopedic surgeons were more likely (2 and 22 times as likely, respectively) to recommend knee replacement to a male patient than to a female patient, indicating that a gender bias contributes to sex-differences in surgical rates. Physicians have been shown to take women's symptoms less seriously and attribute their symptoms to emotional rather than physical causes, which may stem from conscious or unconscious biases. The authors suggest that physicians may unintentionally succumb to gender biases by acting on information that women do not gain the same degree of benefit from surgery, although this is an inappropriate preconception that results from women typically receiving surgery at a more advanced stage of disease than men [36].





Other factors contributing to delays in and underuse of surgery by women are seen to relate to the larger social contexts in which women access health services and physician-patient interactions. For example, the tendency for arthritic women to lack social and economic resources, described earlier, may influence women's willingness to undergo surgery, or surgeons' willingness to recommend surgery [17]. Research has found that patients' concerns about a lack of social support for post-operative recovery and rehabilitation affects their willingness to undergo surgical procedures. This issue may disproportionately affect older women who are more likely than men to live alone [37, 17]. As well, because women represent the majority of caregivers, the time they have to take for recovery from surgery and rehabilitation may be seen by women as conflicting with this role [17]. As disability and employment studies have largely focused on paid work, relatively little is known about the effect of arthritis on unpaid work and women's roles, which may influence access to care [3].

Research conducted in the UK sought to explain why women and men with similar arthritis symptoms differed in their decisions to undergo surgery. Psychosocial factors were seen to influence individuals' perceptions of need for surgery and health care professionals' decisions. Women were less likely to discuss treatment options with their doctor, more likely to have heard negative examples of surgical outcomes from family or friends, more likely to discuss pain and mobility issues than activities requiring higher function, and more likely to discuss the effect of arthritis on their mood. These factors may delay women's access to surgery until later in the disease course. In contrast, men were more likely to discuss treatment options and to question or disagree with their doctor, which was thought to explain why men tend to be listed for surgery earlier in the course of their disease. The authors concluded that in the absence of consensus on criteria to establish the need for surgery (in the UK as well as in Canada), psychosocial factors are likely to affect whether individuals are listed for surgery, which may contribute to a bias toward fewer invasive procedures for women [38].

Policy Implications

Recognizing that women with arthritis often have few social and financial resources to cope with the impacts of the disease, social policy and program initiatives that help ensure women's adequate income, access to disability insurance, and enhance social support may be particularly beneficial. Assuring food security and a healthy diet also needs to be a component of arthritis prevention and management. As for other chronic conditions, socioeconomic factors (e.g. income, education) appear to be especially influential for women's outcomes of arthritis. Thus, it is important to address arthritis with other chronic diseases through a broad socioeconomic strategy and tie surveillance of disease prevalence with measurement of indicators of social equity [21].

As age, income, care giving, other familial responsibilities, and the availability of social support influence women's decisions to undergo surgical treatment, gender-sensitive care that addresses the needs of women, particularly older women, as providers and recipients of care is important. The provision of respite, formal home care or supports to informal care-giving needs to be coordinated with treatment and rehabilitation plans. As well, it is important to address gaps in knowledge concerning indirect costs of treatment and waiting for treatment experienced by women as this relates to women's responsibilities for





unpaid work. A new pilot project with federal and provincial support, announced in March 2008, aims to ensure timely and appropriate referral to specialists in several areas of practice, including orthopaedics [39]. Women's lower rates of referral and greater delays in referral, as well as distinct barriers in pathways to surgical wait lists, demonstrate the importance of incorporating a gender-sensitive approach to the revision of Manitoba's referral system.

A gender-sensitive approach to arthritis should also better take into account women's distinct physical and emotional experiences of arthritis, including women's greater likelihood of suffering depression and more severe pain with arthritis. Women and men with arthritis are more likely to report having had a mental health visit than Canadians overall, which underscores the need for coordinating mental and physical health care services. High levels of co-morbidity among women with chronic disease have led experts in this field to call for more widespread adoption of patient-centred models of care [21]. There is a need to better address gender-specific pain in arthritis. The arthritis research community is exploring gender-specific pain relief and surgery, yet many gaps in knowledge remain with regard to sex differences.

In part, the approach to women's experience of pain includes ensuring that women have access to effective medications. In Manitoba, the Pharmacare program subsidizes prescription drugs on an approved formulary. Manitoba residents pay an annual deductible based on personal income, beyond which costs of several drugs used in the treatment of arthritis are covered. While DMARDS are included on Manitoba's formulary, the newer biologics are not. As this family of drugs is very expensive, women relying on limited incomes, disability insurance or pensions may be particularly challenged in affording these medications. Subsidizing access to biologics and DMARDS has been deemed cost effective, in light of the great direct and indirect costs of arthritis [13].

Public education and prevention efforts aimed at arthritis must dispel misconceptions that symptoms of arthritis are a normal part of aging. As well, women need to be sensitized to the benefits of early surgical interventions. Furthermore, evidence of a gender bias in arthritis treatment demonstrated a need for gender sensitivity training in medical curricula and training to better inform physicians on when and for whom to consider surgery as well as the potential benefits of early treatment. Policies that increase diversity among health care providers were also recommended by this study [36].

A heavy burden of arthritis among women residing in some southern rural regions, which may reflect a higher average age in these populations, indicates another area of need. As well, First Nations and Aboriginal women's high rates of arthritis, which may account for high age-adjusted rates of arthritis in Northern regions of Manitoba, suggests a need for culturally appropriate responses to arthritis prevention and treatment. Accessible housing and home care for women with functional limitations living in rural and northern communities is one critical issue requiring attention. Other local needs must be defined in consultation with women and planners in these communities.

Overall, the response to arthritis in terms of research or policy and programming initiatives has been disproportionate and inadequate to the impact of this disease on women's health. The new wait-time





reduction project [39] gives provincial and regional health planners an opportunity to build in gender-sensitive approaches to delivering care that is timely for women's needs.

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Self-Rated Depression and Treatment for Depression

Introduction

Historically, women's mental health has either been ignored in the context of health assessments and health surveys, or has been exclusively medicalized and pathologized to male gender norms [1]. Raeburn and Rootman comment, however, that Canada was one of the first countries to develop health promotion in the area of mental health (though Canada may no longer be a leader in the field) [2]. Whereas mental health had routinely been characterized in terms of mental illness, a new concept of mental well-being was conceived at a Toronto workshop in 1996:

Mental health is the capacity of each all of us to feel, think and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual well-being that respects the importance of equity, social justice, interconnections and personal dignity [Joubert & Raeburn, in 2].

In recognition of the new understanding of the importance of mental well-being to overall health, the WHO Expert Working Group included women's self-rated depression as a critical indicator (among 36 other core indicators), particularly as there has been greater appreciation of the extent to which women world-wide experience depression [3]. It is noteworthy that other recent documents issued by the WHO also recognize mental diseases and mental well being as critical to overall health status.

Data Collection

Until recently, data on depression were collected by Statistics Canada using the Composite International Diagnostic Interview (CIDI) Short Form for Major Depression. Data were collected as part of two national surveys - the National Population Health Survey (1994, 1996 and 1998) and the Canadian Community Health Survey (2000-01 and 2003). In keeping with international standards Statistics Canada used their data to report on self-reported probable risk of depression. In July, 2006, however, Statistics Canada announced that they would no longer support the use of "probable risk of depression" as an indicator of population health using the data available.¹

Statistics Canada recommends, instead, two indicators using the concept of Major Depressive Episode, available only in the 2002 CCHS Cycle 1.2 Mental Health and Well-being (I. Ledrou, pers. comm. July 4, 2006; unreferenced).

¹ "The depression module used in CCHS Cycle 3.1 (as well as in Cycles 1.1 and 2.1 and in the NPHS) is based on a long form of the Composite International Diagnostic Interview (CIDI) scale, which was developed in the late 1980s/early 1990s. This scale was never fully validated by the CIDI research team and its psychometric properties are therefore not well understood... At this time, Statistics Canada recommends that analysis of data from this module be restricted to examination of depression as a correlate of other health behaviours and characteristics. For now, use of the data as an indicator for the probability of depression or to calculate simple population prevalence is discouraged." [4].





Major Depressive Episodes are periods of 2 weeks or more with persistent depressed mood and loss of interest or pleasure in normal activities, accompanied by symptoms such as decreased energy, changes in sleep and appetite, impaired concentration, and feelings of guilt, hopelessness, or suicidal thoughts.

The proportion of Canadians who have experienced a **Major Depressive Episode** was derived from responses to questions asked as part of the *Canadian Community Health Survey Cycle 1.2 Mental Health and Well-being* (2002). Respondents were questioned about symptoms of depression during both the previous 12 months and during their lifetime. They were considered to have experienced a Major Depressive Episode if they reported:

1. a period of two weeks or more with depressed mood or loss of interest or pleasure plus at least five additional symptoms; **and**
2. the symptoms were not better accounted for by bereavement; **and**
3. clinically significant distress or impairment in social, occupational or other important areas of functioning.

The questions on **Major Depressive Episode** are based on a World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI) modified for the needs of CCHS 1.2. The WMH-CIDI instrument, as part of the WMH2000 Project (World Mental Health 2000) is a World Health Organization worldwide initiative to assess the prevalence rates of various mental disorders in multiple countries [5].

Women's Depression

Because small sample sizes created unacceptably high coefficients of variation, making the data unreliable, we are unable to report on sex and age disaggregated data for Manitoba. All data presented in this section are therefore for Canada as a whole.

In the 2002 CCHS about 6% of Canadian females and 4% of Canadian males aged 15 and older, reported having a Major Depressive Episode (MDE) in the previous twelve months.² For both males and females, rates were highest among those aged 35 to 44 years of age and second highest among young women and young men aged 15 to 24³ [6] (Figure 1). In every age group, women were more likely to have experienced depression than were men. Among all Canadians, women were about 1.6 times as likely as were men to have experienced a MDE in the previous 12 months. For both men and women, the risk of MDE decreases with age [6]. The gender gap was the greatest among those aged 45 to 54, where women were about twice as likely as men to have experienced a MDE in the previous 12 months [6].

² The CCHS includes people aged 12 years or older who were living in private dwellings in the 10 provinces and three territories. People living on Indian Reserves or Crown lands, those living in institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were.

³ This analysis is based on Statistics Canada's Canadian Community Health Survey, Cycle 1.2., Public Use Microdata file, which contains anonymized data collected in the year 2002. All computations on these microdata were prepared by Prairie Women's Health Centre of Excellence and the responsibility for the use and interpretation of these data is entirely that of the authors.

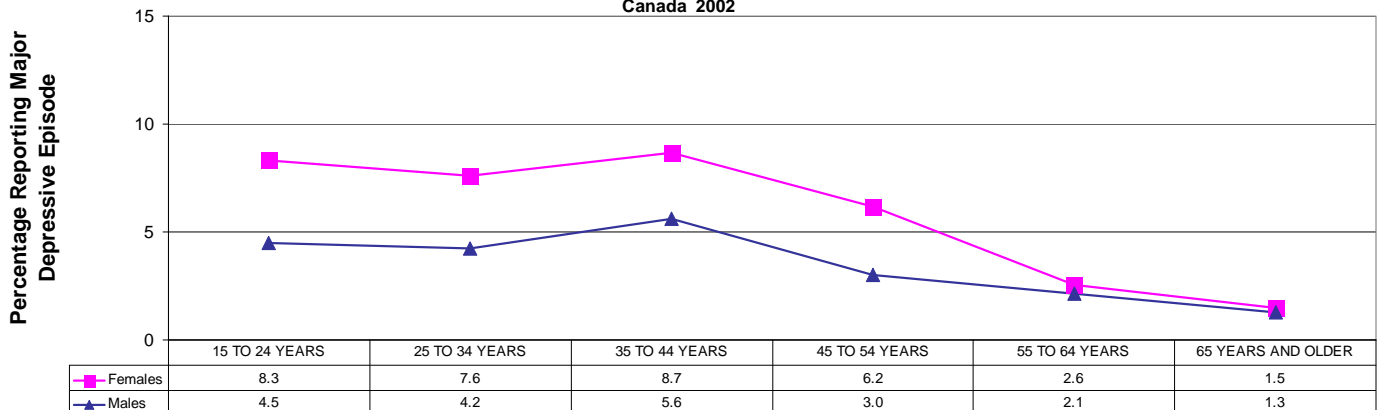




MDE – Previous 12 Months shows that women aged 35 to 44 are at highest risk, which is different from earlier data investigations showing highest rates among young women for probable risk of depression. While the Short Form CIDI (now unusable) may not have reliably identified major depression, it did serve as an early alert to troubling trends in mental health, particularly among young women. The CCHS (2002) also included a straightforward question, in which respondents were asked to rate their own mental health as excellent, very good, good, fair or poor. Unlike the MDE, this question showed that the rate of excellent and very good self-rated mental health decreased with age [7].

As with depression in the previous 12 months, in every age group women were more likely to have experienced a MDE over the course of their lifetimes than were men. About 15% of Canadian females aged 15 and older reported having a MDE at some point during their lifetime. The gender gap was the greatest among those aged 15 to 24, among whom girls and young women were 2.1 times more likely to have had a MDE than were boys and young men. Women also tended to be younger when they first experienced a MDE. About 37% of women and about 31% of men reported that they were less than 20 years of age when this first occurred [6]. The risk of ever having had a MDE was highest among women aged 45 to 54. About 20% of women in this age group reported ever having experienced a MDE, compared to about 11% of men [6].

Figure 1
Major Depressive Episode Previous Twelve Months
Canada 2002

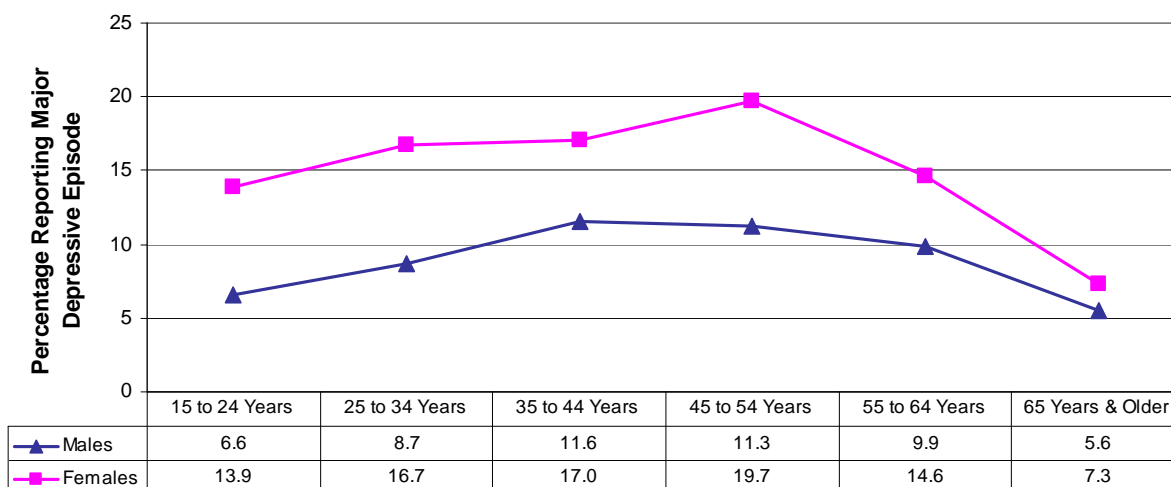


Source: CCHS Cycle 1.2 Custom Tabulation





Figure 2
Major Depressive Episode - Lifetime, by Age, Sex
Canada 2002



Source: CCHS Cycle 1.2 Custom Tabulation

While it would seem that the lifetime risk of having experienced MDE would increase with age, women and men 55 years and older reported a lower rate of lifetime MDE than their younger counterparts. This may reflect changing social attitudes about the expression and interpretation of symptoms which are today understood to be indicative of depression. Additionally, since clinical depression may be associated with a higher risk of cardiac arrest and with overall all-cause mortality [8, 9], those who do survive to old age may be less likely to have ever experienced major depression. Note however, that the data available on suicide in Manitoba (see later, this chapter), demonstrates troubling suicide rates among elderly men.

Treatment for Depression

More can be learned when treatment for depression is also examined. In Canada, depression is now the third leading reason for physician office visits, after hypertension and diabetes [10, 11]. Psychotherapeutic drugs are the second largest category of oral solid prescription drug spending in Canada and antidepressants account for 59% of this spending [12].

The Manitoba Centre for Health Policy (MCHP) found that from 1997/98 to 2001/02, 23.6% of females aged 10 years of age and older received treatment for depression.⁴ It is concerning to realize that almost one in four girls and women, 10 years of age and older, were treated for depression during this five year period. Others, who received help only from professionals outside of the health system, including private

⁴ MCHP defined the treatment prevalence of depression as an age-adjusted percentage of the population aged 10 or greater that satisfied the following criteria in the five-year period from 1997/98 to 2001/02:

From the hospital or Mental Health Management Information System files: Any of ICD-9-CM codes 296.2-296.8 (affective psychoses), 300.4 (neurotic depression), 309 (adjustment reaction), or 311 (depressive disorder), ICD-9-CM code 300 (neurotic disorders) plus a prescription for an antidepressant or mood stabilizer (excluding the anti-anxiety drugs paroxetine, citalopram and venflaxamine). *From the physician files:* Any of ICD-9-CM codes 296, 309, or 311, ICD-9-CM code 300 plus a prescription for an antidepressant or mood stabilizer (excluding the anti-anxiety drugs paroxetine, citalopram and venflaxamine).





practice psychologists, school psychologists, school counsellors, and social workers in agencies not part of the health care system, are not included in these data [13]. Those most likely to receive treatment for depression were women aged 40 to 50, of whom 28% received treatment [13]. Women in their middle years were also the most likely to have experienced a MDE in the previous 12 months [6].

MCHP also found a significant income-related gradient in treatment prevalence of depression by neighbourhood income quintile for urban Manitobans. Among Winnipeg females, 27% in the lowest income group were treated for depression compared with 22% in the highest income group. This association was not found among rural residents [13].

Finally, MCHP was able to link the files of Manitobans who reported as being at probable risk of depression in Statistics Canada's 1996/97 National Population Health Survey, with the Manitoba Health administrative data. Of the 409 Manitobans who were found through the survey to be at probable risk of depression, only 150 (37%) were actually treated for depression; the remainder received no treatment. Of the 581 who were treated for depression, 431 (74%) were classified as not at "probable risk of depression" using the criteria of the NPHS, which are the same as those used in the CCHS [13]. These findings support the reservations expressed by Statistics Canada about the usefulness of this measure as an indicator of the prevalence of depression in the population.

Depression and Women

Why are women and girls at increased risk of depression? The psycho-social-economic position of women in a society is an important contributor to women's increased risk. For example, women have less access to education and well paying jobs, and are at higher risk of low income, combined with more unpaid and unrecognized work as unpaid caregivers [14]. Women are also more likely than men to describe their problems in psychological or social terms [10]. In Canada, women's higher rate of depression has been largely uncritically attributed to characteristics either of sex-specific hormones, or of women's "nature". Women's health scholars and activists have identified other factors that are also involved:

- Women are more likely to seek medical care than are men, both because of reproductive health needs, and because they suffer from more chronic diseases than do men. This may result in women being more likely to be diagnosed with depression or anxiety [10].
- Women are more likely than men to describe their problems in psychological or social terms, and are therefore more likely to receive a diagnosis of depression [10].
- Women are more likely than men to have lower education and income, combined with more unpaid caregiving work, in their roles as caregivers to the young and the elderly [14].
- Societal stereotypes about women are also held by some physicians. This may lead them to look for psychological, rather than physiological, explanations for women's complaints [15].
- Women are more often the victims of intimate and family violence, including childhood sexual abuse, which may result in depression in later life [10].
- Men are more likely to handle feelings of depression without seeking help from professionals, through, for example, alcohol consumption [10].





- Pharmaceutical companies have actively marketed antidepressants as the solution to women's emotional distress in response to normal, or traumatic, life events [10].

Policy Implications

Both the self-rated measure of depression and the treatment prevalence measure of depression show that depression is a major health issue for women in Manitoba, since it is clear that girls and women are more likely than boys and men to report and be treated for depression. It is important to consider gender issues, including the different social and economic pressures faced by women, in order to reduce depression in girls and women.

Acknowledging there is currently no adequate health indicator to monitor or track mental health of women and men in Canada, Tannenbaum tested the validity of using self-reported rates of psychotropic drug use, physician billings for mental health visits and self-reported symptoms. She concludes that while each indicator contributes valuable information on mental health, they are each also deficient measures. Tannenbaum suggests that a combination of indicators would give a more robust picture of women's mental health [16].

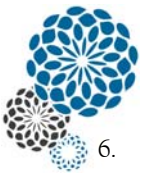
In a review of four provinces Morrow found that while there was broad agreement on the importance of mental health and to improving mental health services, mental health policy continues to be guided by frameworks that are "gender-neutral and do not take into account relations or race, class, and other forms of social differences" [1, page 370]. Morrow notes that there is, however, an understanding in some jurisdictions that people seeking mental health care are not a homogeneous group, and that a wide range of services are needed. Similarly, the 2006 Senate Committee report, *Out of the Shadows*, sets an agenda and calls for leadership to change understanding of mental illnesses and improve access to mental health services, with some attention to specific Canadian populations. It does not include a gender-based analysis nor make mention of women's specific mental health needs [17].

Measures to address women's increased risk of depression should include public policy changes to address the systemic discrimination faced by women, their lower incomes, unpaid caregiving expectations, greater risk of intimate partner and family violence, and to increase social supports available [16].

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Injuries, Self-Inflicted Injuries, and Suicide

Introduction

Injuries are an important, although often overlooked, contributor to ill health and death among Manitoba women. Falls are the leading cause of injury hospitalization among both Manitoba males and females, and the leading cause of injury death among females. Suicide is an important, although often overlooked cause of death, particularly among young men in Manitoba. In fact, suicide is the leading cause of injury-related death among men. Self-inflicted injuries, however, are much more common among women than among men. *Injuries in Manitoba: A 10-Year Review* [1] provides a comprehensive look at injuries for women and for men in the province. In this section we examine a summary of the findings.

The data below are from two sources: Manitoba Health’s 2004 injury surveillance report [1] and Health Canada’s national injury surveillance reporting system [2]. Both these sources describe only the most serious injuries, those that resulted in either death or an in-patient hospital stay. Injuries that were treated only in hospital emergency departments or by physicians outside of hospital are not included.¹

Injury Deaths

In Manitoba, from 1992 to 1999, 1,337 women aged 15 and over died as the result of injuries, amounting to about 14 women every month. In 2000, Manitoba women were more likely to die as a result of injuries than were women in any other Canadian province [2]. While injuries were responsible for about 7% of all deaths in the province, they were the leading cause of death among girls and women aged one to 24 years [1].

Figure 1.

**Leading Causes of Injury Deaths in Manitoba
1992 to 1999**



Source: *Injuries in Manitoba: A Ten Year Review* [1].

¹ Both of these sources use data that were collected using the WHO’s International Classification of Diseases Ninth Revision (ICD-9). Those included are hospitalizations and deaths where a Supplementary Classification of External Causes of Injury and Poisoning (E Codes 800 – 999, excluding adverse events) were included in the record.





From 1992 to 1999, injury deaths among females increased by 48%. For men, the increase was 7%. Some of this increase is due to the aging of the Manitoba population, since older people are more likely to die of injuries than are younger people, and on average women live longer than do men. However, the increased rate of injury deaths among women is concerning and points to the need for additional research [1].

Patterns of injury deaths were different for women and men. Men and boys were over twice as likely to die as the result of injuries than were women and girls, and women and men tended to die as the result of different types of injuries. Women who died as the result of injuries were most likely to die due to falls (328 of 1,095 deaths) while men were most likely to die as the result of suicide (819 of 2,964) deaths.

First Nations girls and women² were about 1.5 times as likely to die as the result of injuries as were their non-First Nations counterparts. Whereas falls were the leading cause of injury deaths for all Manitoba women (7.1/100,000), the leading cause among First Nations women was motor vehicle traffic collisions (11.6/100,000), followed by suicide (7.8/100,000).

Women living in Northern Manitoba³ were 2.5 times as likely to die as the result of injuries as were all Manitoba women. Northern men were also at greater risk of death due to injury than were all Manitoba men (1.8 times as likely to die), however, the increased risk was greater for northern women than northern men.

Injury Hospitalizations

From 1992 to 2001, there were 52,293 hospitalizations for injuries among women aged 15 and over. That's about 435 hospitalizations per month, or more than 14 every day. Over half of these (28,142) occurred among women aged 65 years and older. Manitoba women had the fourth highest rate of injury hospitalization among all the Canadian provinces [2].

The total rate of injury hospitalization was about the same for females and males. Falls were the leading cause of injury hospitalization for both sexes. However, there were other notable differences in injury hospitalizations among women and men. Self-inflicted injuries were the second most common cause of injury hospitalizations among women, while among men, motor vehicle injuries and assault were more common causes of injury hospitalization [1].

² Data on deaths were provided by Manitoba Vital Statistics. They identify First Nations people as those living on Reserve. Non-First Nations Manitobans are defined as all those living in municipalities other than a Reserve on June 1 of the year of their deaths, including First Nations Manitobans living off-Reserve. This under-represents First Nations Manitobans, since it excludes those living off Reserve. It also excludes all other Aboriginal Manitobans, including Non Status and Métis people.

³ Northern Manitoba includes three Regional Health Authorities – Nor-Man, Burntwood and Churchill.





First Nations girls and women⁴ were over three times as likely to be hospitalized as the result of injuries as were their non-First Nations counterparts. While the leading cause of injury hospitalization among non-First Nations women was unintentional falls (597/100,000), the leading cause among First Nations women was self-inflicted injuries (622/100,000). First Nations were less likely to be hospitalized as a result of falls (540/100,000) than were other Manitoba women. This may be due to the younger average age of First Nations females in Manitoba, compared to non-First Nations females.

There were also regional differences in injury hospitalizations among women. Women living in Rural South Manitoba⁵ were most likely to be hospitalized as the result of injuries (1.2 times more likely than were all Manitoba women). It is important to note that these data are not age adjusted, and the older age of the rural population is likely a factor, as older people are more likely to be hospitalized due to injuries.

Unintentional Falls

Unintentional falls⁶ are the leading cause of both injury death and injury hospitalization among Manitoba women [1]. From 1992 to 1999, 328 Manitoba women died as the result of falling: 302 of these women (92%) were 65 years of age and older and 198 (65%) were women aged 85 years and older. From 1992 to 2001, there were 29,712 hospitalizations due to falls among women aged 15 and older. That's over 8 women each day. In 2001, women hospitalized for falls remained in hospital for about 23 days each, or an equivalent of over 67,000 hospital bed days per year [1].

Notably, while women are more likely than men to be *hospitalized* as the result of falls, men are more likely than women to *die* as the result of having fallen.

First Nations women were less likely to die due to falls than were other Manitoba women. This may be related to First Nations women's shorter life expectancy, since deaths due to falls are more common among older women.

Fall prevention is therefore an important way to improve the health of Manitoban women.

⁴ Manitoba Health includes in its definition of First Nations people all those who, through self-declaration, have advised Manitoba Health that they are residents with Treaty Status. This system includes Manitobans living both on and off Reserves. It is a voluntary system, which therefore does not include all First Nations people. From 1992 to 2001, the average annual number of First Nations people in this data set was 66,306. The Manitoba Centre for Health Policy reported that in 1998, there were approximately 85,959 First Nations people in Manitoba [3]. Therefore, the Manitoba Health First Nations data set represents about 86 per cent of the total First Nations population. For hospitalization data, all Manitobans who have not declared to Manitoba Health that they are First Nations people are considered to be non-First Nations people.

⁵ This includes seven Regional Health Authorities – Assiniboine, Central, Interlake, South Eastman, North Eastman, Brandon and Parklands.

⁶ Unintentional falls are those that were neither intentionally self-inflicted, nor the result of assault.



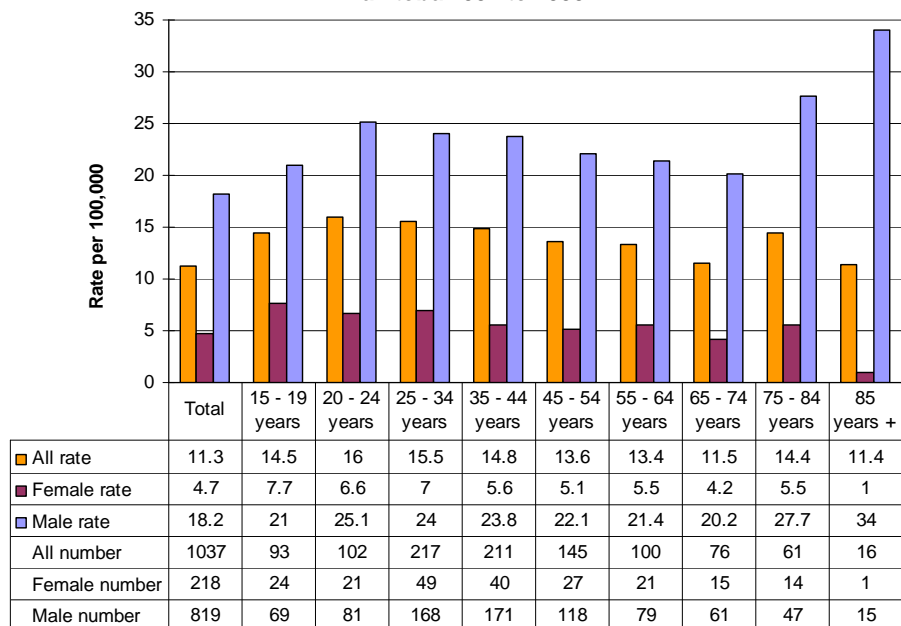
Suicide and Self-Inflicted Injuries

Self-inflicted injuries are intentionally committed by a person on her- or himself. They do not include unintentional self harm. The data presented below include only those self-inflicted injuries that resulted in hospital admission (usually at least one night’s stay in hospital) or death (suicide). These topics can be uncomfortable and difficult to discuss. However, without open discussion, including increasing our understanding of the important role played by gender in suicide and self-inflicted injuries, we will not be able to prevent intentional self-harm and death.

Suicide

From 1992 to 1999, suicide was the third leading cause of injury death for Manitoba women, after falls (328 deaths, 7.1/100,000) and unintentional motor vehicle traffic (301 deaths, 6.5/100,000). During that time 819 men (18.2/100,000) and 218 women (4.7/100,000) died by suicide. Among women, young women were at greatest risk of committing suicide. However, among men, men aged 75 and older were at greater risk than younger men, but the greatest number of suicides occurred among young men [1].

Figure 2
Deaths Due to Suicide
Manitoba 1992 to 1999



Source: Injuries in Manitoba: A Ten Year Review [1]

Self-Inflicted Injuries

From 1992 to 2001, self-inflicted injuries were the second leading cause of injury hospitalization after falls for Manitoba women and girls. During this ten year period, Manitoba girls and women were hospitalized 5,868 times due to self-inflicted injuries. Women were about 1.7 times more likely to be hospitalized for self-inflicted injuries than were men [1].





Self-inflicted injuries were the fifth leading cause of injury hospitalization among men¹ [1].

Some women were at much higher risk of hospitalization for self-inflicted injuries: they were the leading cause of injury hospitalization among girls and women in the age groups 10 to 14 years through 25 to 34 years; First Nations women were about 9

times as likely to be hospitalized for self-inflicted injuries as were non-First Nations women. First Nations women accounted for 35% of the hospitalizations for self-inflicted injuries [1].

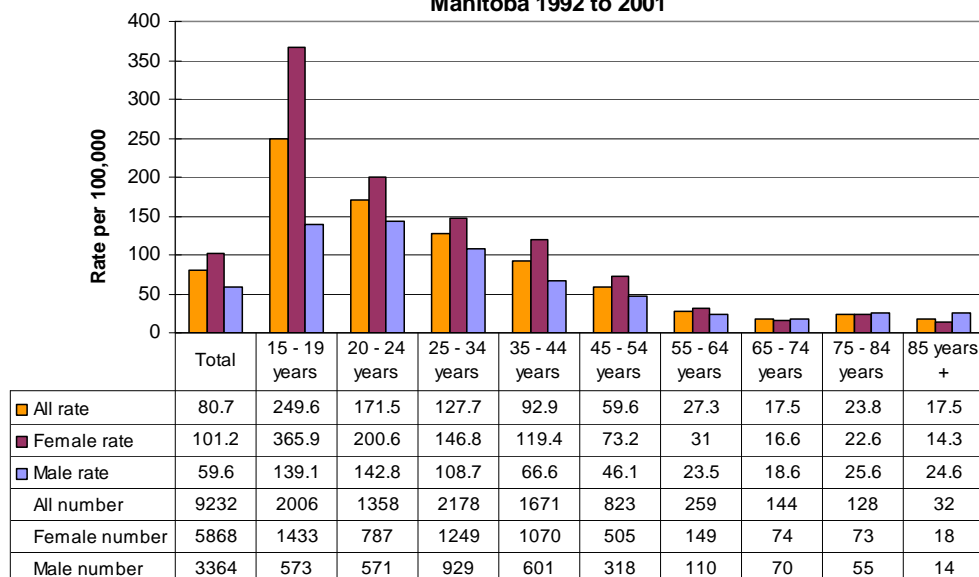
While most women who currently harm themselves are adults, many began as adolescents. One study of incarcerated Manitoba women who had a history of self-inflicted injuries found that these women had become disenfranchised through poverty, sexism, a history of colonization and violence, racism and discrimination. The authors concluded that it was within this context that some women turned to self-harm [6].

Policy Implications

These data illustrate important differences between the injury experiences of women and men, boys and girls. Within the health system, injuries are often over-looked as an important cause of ill health. Yet they were the leading cause of death among all Manitobans aged one to 25 years, and the leading cause of death among girls and women aged one to 24 years. Successful injury prevention therefore requires attention to gender issues, and the development of gender-specific injury prevention strategies.

However, examining suicide alone underestimates the importance of self-inflicted injuries among women. For each Manitoba man who committed suicide from 1992 to 1999, there were about 3 hospitalizations among men for self-inflicted injuries. For each Manitoba woman who committed suicide during this period, there were about 21 hospitalizations for self-inflicted injuries.

Figure 3
Hospitalizations for Self Inflicted Injuries
Manitoba 1992 to 2001



Source: Injuries in Manitoba: A Ten Year Review [1].

¹ After falls, motor vehicle injuries, assault and being struck by an object.





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