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Arthritis Community Research & Evaluation Unit

**ARTHRITIS COMMUNITY RESEARCH &
EVALUATION UNIT (ACREU)
University Health Network**

**ARTHRITIS IN WOMEN:
A CHALLENGE FOR HEALTH
CARE IN ONTARIO
APRIL 2005**

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1.0 Highlights

1.1 *Impact of Arthritis*

- At a population level the burden of **arthritis is higher in women than men**, but at an individual level the impact is similar.
 - Arthritis affects more women than men across all age groups. Overall arthritis affects 21% of the women of Ontario compared to 13% of men.
 - Arthritis and rheumatism affects 1.03 million women in Ontario aged 15 years and older.
 - Given that the population is aging, the number of women who will be diagnosed with arthritis in the future is expected to grow. By 2026 it is estimated that 27% of women in Ontario (1.73 million) aged 15 years and older will be living with arthritis. This has huge policy implications, as anticipated costs related to arthritis will rise due to increased health care utilization including medication use and medical procedures such as arthroscopy and joint replacement surgeries.
- Women with arthritis differ from men with arthritis and from other women (women with other chronic diseases and women with no chronic health problems) with respect to **socioeconomic circumstances, including education and income**.
 - Women with arthritis have less education and are more likely to be in the lowest income category than men with arthritis and women with other or no chronic conditions.
 - Women with arthritis are less likely than women with other chronic health issues to have young children.
- Women with arthritis frequently live with **pain and disability**.
 - Women with arthritis experience more pain and long-term disability than those without the disease.
 - Women and men with arthritis report similar levels of pain and long-term disability.
 - Women with arthritis report more **sleep difficulties** than women with other chronic diseases across all age groups and men with arthritis in older age groups.
- **Stress and depression** often accompany chronic health problems.
 - Women with arthritis experience higher rates of depression than women with no or other chronic disease, as well as men.
 - Younger women with arthritis have higher rates of depression than older women with arthritis.
 - The disparity between rates of depression in women with arthritis compared to women with no or other chronic conditions is most notable in younger women.

- Similarly, higher proportions of women with arthritis report stress than women with no or other chronic conditions. As with depression, women with arthritis in younger age groups report higher levels of stress than those in older age groups.
- Women with arthritis are more likely to report fair or **poor health** and worsening health over time at any age than women with other chronic conditions. Women with arthritis are also more likely to report that they have unmet health care needs than women with other chronic health problems. This is particularly true of younger women.
- Accompanying disability and poor health, women with arthritis are more likely to **require help with daily activities** and more likely to be **without a job** than men with arthritis or women with other chronic conditions. The impact of arthritis on women with respect to work is likely underestimated as many of the current methods for capturing contribution to society do not take into account many of the roles that women traditionally undertake.

1.2 Access to Health Care

- Women with arthritis use a **higher proportion of health care services** than women with no or other chronic conditions and men.
 - Women with arthritis are more likely to report that they visited a primary care physician four or more times, and a specialist two or more times, in the previous year than women with other chronic conditions.
 - A higher proportion of women than men make physician visits specifically for arthritis.
 - At all ages, women with arthritis are more likely to see a specialist than women with other chronic health problems.
 - Men who visit a physician for arthritis-related conditions, and specifically osteoarthritis (OA), are more likely to see an orthopaedic surgeon than women in every age group. However, women with these conditions are more likely than men to see rheumatologists and internists. With a few exceptions, women who visit a physician for reasons related to rheumatoid arthritis (RA) are more likely to see specialists (rheumatologists, internists, orthopaedic surgeons) than men who had RA-related visits.
 - Women with arthritis are more likely to see physiotherapists and chiropractors than women with other chronic conditions.
- **Medication use** is an important type of treatment for arthritis in women.
 - Women with arthritis are more likely to use pain relievers than both women with other chronic conditions and men with arthritis.
 - Women with arthritis take more narcotic medications (codeine, Demerol or morphine) than women with other chronic conditions.

- From middle age onward more women use antidepressants than men. Women with arthritis also use more antidepressants than women with other chronic diseases.
- There has been a consistent increase in the number of women who have prescriptions for disease-modifying anti-rheumatic drugs (DMARDs) over time. Nevertheless, the overall rate of provision of these drugs falls short of the estimated prevalence of RA.
- Although the prescription of non-steroidal anti-inflammatory drugs (NSAIDs) for women has generally declined over the last decade, there was a notable increase from 2000 coinciding with the release of the Cox-2 inhibitors. More prescriptions for these drugs were given to women than men.
- Overall, there has been a slight increase in the number of corticosteroid prescriptions for women since 1992.
- There is notable variation in the usage rates of different kinds of **surgery** between women and men with arthritis, and between women of different age groups.
 - Although it varies across age groups, overall, women undergo slightly fewer same-day surgeries and have somewhat fewer inpatient admissions than men with arthritis, despite the fact that women are more likely to have arthritis.
 - On average women with arthritis have more same-day surgeries and in-patient admissions than women with other chronic diseases.
 - Women undergo fewer arthroscopic procedures than men, despite having a higher prevalence of arthritis. However, the difference between the number of procedures performed on women and men has been narrowing over the past ten years.
 - The rate of all arthritis-related knee arthroscopic procedures for women increases with age to the 55-64 year age group and then decreases.
 - There are discrepancies in the numbers of women *requiring* total joint replacements (TJR) and actual *usage* rates, which implies that many more women could receive surgical procedures than do so. Rates for both total knee replacements (TKRs) and total hip replacements (THRs) are higher for women than for men.
- Although the number of THR and TKR procedures performed has increased over the past ten years, so have **waiting times**.
 - Median wait times are equivalent for men and women.
- Older, female patients with other health conditions are more likely to receive **inpatient rehabilitation** following THRs and TKRs than younger women or men.

2.0 Impact of Arthritis on Women in Ontario

2.1 Introduction

Arthritis is currently one of the most prevalent chronic conditions and the leading cause of physical disability in developed countries (1-4). Arthritis and related disorders make up a large group of disorders affecting the joints, ligaments, tendons, bones and other components of the musculoskeletal system. Arthritis and related conditions are also one of the most prevalent chronic conditions in Canada, including Ontario, and have a major impact on individuals and on society (4).

Arthritis is a leading cause of pain, physical disability and health care utilization. Arthritis and related conditions are among the most frequent reasons for visits to primary care physicians for women in Ontario. Arthritis has a significant adverse impact on individuals with the disease, their families and the population as a whole (5). Arthritis-related pain and disability affect wide aspects of life, including travel, leisure and social and labour force participation.

Arthritis is characterized by pain, stiffness and inflammation in or around the joints (4;6). Currently, 17.5% of Ontarians report having arthritis as a long-term health condition, with nearly 20% of women reporting arthritis compared to only 11% of men (7).

The effects of arthritis are frequently underestimated. As it is not usually life threatening, physicians, the general public, and even those who have the condition, often dismiss it as “just aches and pains” and an inevitable part of aging (8). As a result, individuals with arthritis may fail to seek, or to receive, appropriate and adequate help and services aimed at helping them are not viewed as a priority (5).

Medication is the most frequent type of treatment for arthritis and related conditions. This includes non-steroidal anti-inflammatory drugs (NSAIDs), the newly developed COX-2 inhibitors, and corticosteroids and disease-modifying anti-rheumatic drugs (DMARDs). Although most people with arthritis are treated on an outpatient basis, some require admission to a hospital and/or surgical intervention, including arthroscopic (key hole) surgery and joint replacement procedures.

Rehabilitation following hip or knee replacement is a further component of arthritis care. Rehabilitation, including physical and occupational therapy, serves to prevent the loss of physical function and to restore function after surgery or severe episodes of inflammatory arthritis (9-16).

There is a high prevalence of arthritis in women, and there are differences in the way that arthritis affects men and women. For example, higher life expectancies; that is, women tend to live longer with the disease than men (17;18). Numerous reasons have been postulated to account for these gender differences. Some causes may include biological and social factors, differential reporting, access to healthcare and risk factors associated with exposure or behavior (19). Research has addressed the differential impact of arthritis on women compared to men, with the bulk of these studies focusing on older rather than younger women (20-24).

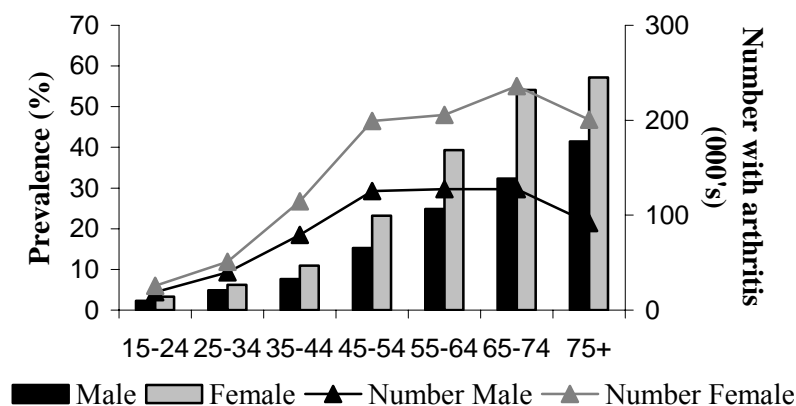
The first part of this paper presents information on the impact of arthritis on women in Ontario using data from the 2000/2001 Canadian Community Health Survey (CCHS) as reported in the

2004 *Arthritis and Related Conditions in Ontario: ICES Research Atlas* (25). It compares the impact of arthritis on women with the disease compared to women with other chronic conditions and with no chronic health problems. Gender-specific analyses of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas* were used to highlight differences of disease impact by sex. This paper also uses health care administrative data and links it to the responses to the 1996/1997 Ontario Health Survey (26), as reported in the 2004 ICES Atlas, to provide estimates of the use of health services by women as related to arthritis and related disorders in Ontario. Relevant information related to medication use, primary and specialist care, surgical procedures and patient discharge information was obtained from the Ontario Drug Benefit (ODB) program, Ontario Health Insurance Plan (OHIP), Canadian Institute for Health Information (CIHI), and the Ontario Home Care Administrative System (OHCAS) of the CIHI. Details on the various data sources are included in Appendix 1. Further information on data analysis is available in the 2004 *Arthritis and Related Conditions in Ontario: ICES Research Atlas* (25).

2.2 How common is arthritis?

Arthritis is more frequently reported by women than men, reflected by a prevalence of 21.4% and 13.2%, respectively. Women make up almost two-thirds of the over 1.6 million people with arthritis aged 15 years and over in Ontario (27). The prevalence of arthritis increases with age, and a higher proportion of women than men report having arthritis/rheumatism across all age groups (Exhibit 1). Appendix 2 describes the major types of arthritis. The exact type of arthritis reported by Ontario women is unknown. Osteoarthritis (OA) is the most common type of arthritis and affects more women than men, and is most prevalent in older age groups (28). Rheumatoid arthritis (RA) affects more women than men by two- to three-fold (29).

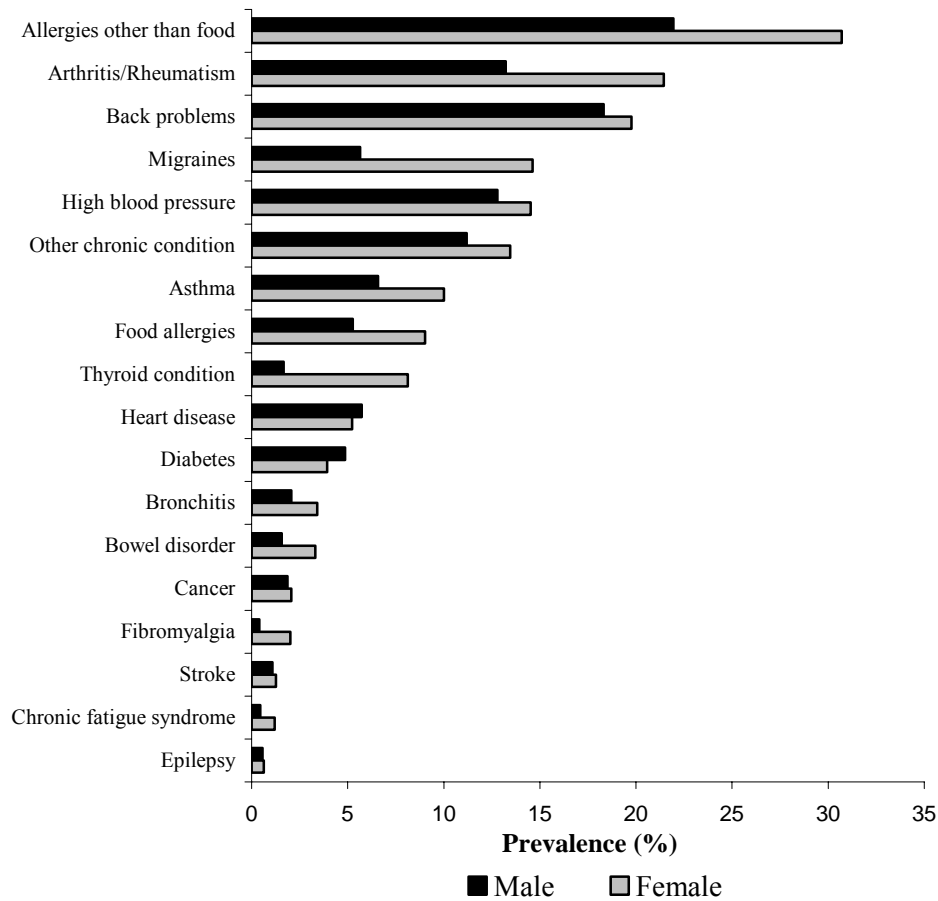
Exhibit 1: Prevalence and number of people with arthritis, by age group and sex, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

In Ontario, arthritis is the second most prevalent chronic condition in women, following allergies not related to food (Exhibit 2).

Exhibit 2: Prevalence of chronic conditions by sex in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

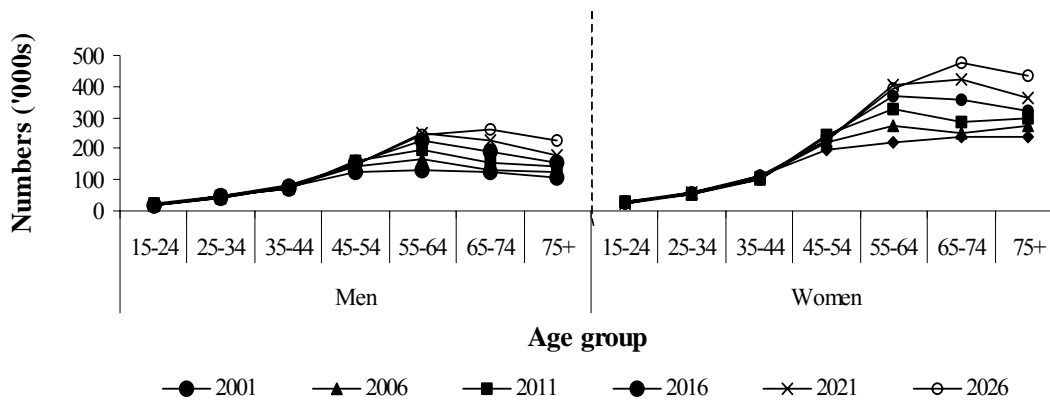
Population projections for the years 2001 to 2026 are based on the age- and sex-specific arthritis prevalence estimates from the 2000/01 CCHS from Statistics Canada (30), and are based on the assumption that these rates for arthritis will remain constant over time (Exhibits 3 and 4). Given that the prevalence of arthritis increases with age, the aging of the baby boomer population will likely affect future prevalence and numbers of people with arthritis, including women. Within 20 years an estimated 1.7 million women in Ontario 15 years of age and older will have the disease, with the largest increase among adults aged 55 years and older. The projected prevalence of arthritis among women will increase by approximately 1 percentage point every five years (compared to 0.5 percentage points for men) to 27% by the year 2026.

Exhibit 3: Projected number of people with arthritis and prevalence of arthritis overall by sex, year and age group, in Ontario, to 2026

Year	Male		Female		Overall	
	Number with Arthritis	Prevalence	Number with Arthritis	Prevalence	Number with Arthritis	Prevalence
2001	627,220	13.4%	1,081,783	22.2%	1,709,003	17.5%
2006	704,618	14.0%	1,210,017	23.0%	1,914,635	18.6%
2011	784,930	14.5%	1,341,824	23.8%	2,126,753	19.2%
2016	867,034	15.2%	1,476,788	24.9%	2,343,823	20.1%
2021	950,325	15.9%	1,609,734	26.0%	2,560,060	21.0%
2026	1,030,549	16.6%	1,733,174	27.0%	2,763,723	21.9%

*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Exhibit 4: Number of people projected to have arthritis by sex and age group in Ontario, 2001 to 2026



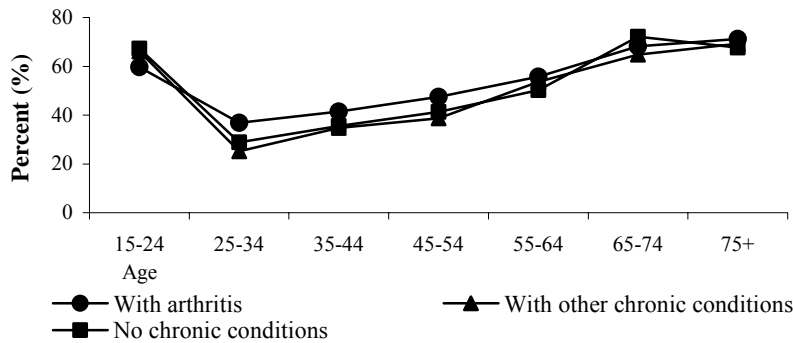
*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

2.3 Which women are affected?

Education and income are determinants of health and as such have implications for the impact of arthritis on women. Higher levels of education decreases the odds of reporting arthritis (31). For instance, the proportion of women in Ontario reporting a secondary school education or less is generally higher for individuals with arthritis compared to women with no or other chronic

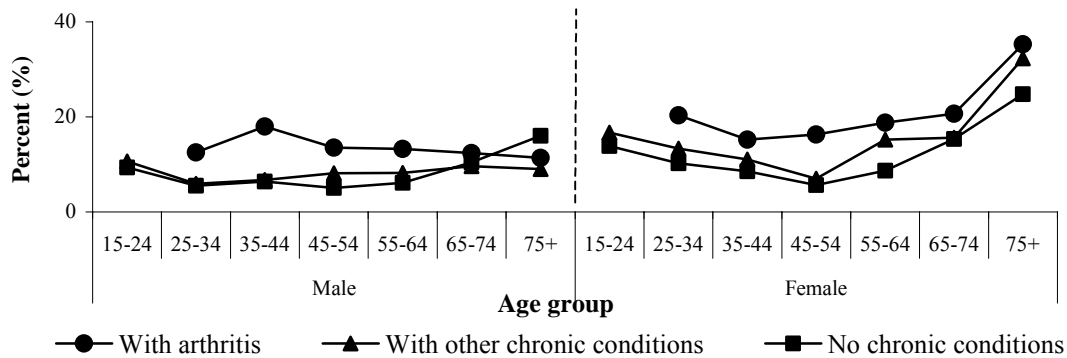
conditions and is most notable in women between 25 and 54 years of age (Exhibit 5). Similarly, when comparing women with arthritis to women with other chronic conditions, the proportion of women falling in the lowest/lower income category is generally greater for women with arthritis (15.5%) than for women with other chronic conditions (10.6%)(Exhibit 6). In general, women are more likely to fall into lower income categories (15.5%) than men (11.7%). Such disparities are important since research has shown that socio-demographic factors are important predictors of one's normal daily functions (32).

Exhibit 5: Proportion of women with secondary school education or less by age group in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Exhibit 6: Proportion of people in the low to low-middle income category, by age group, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

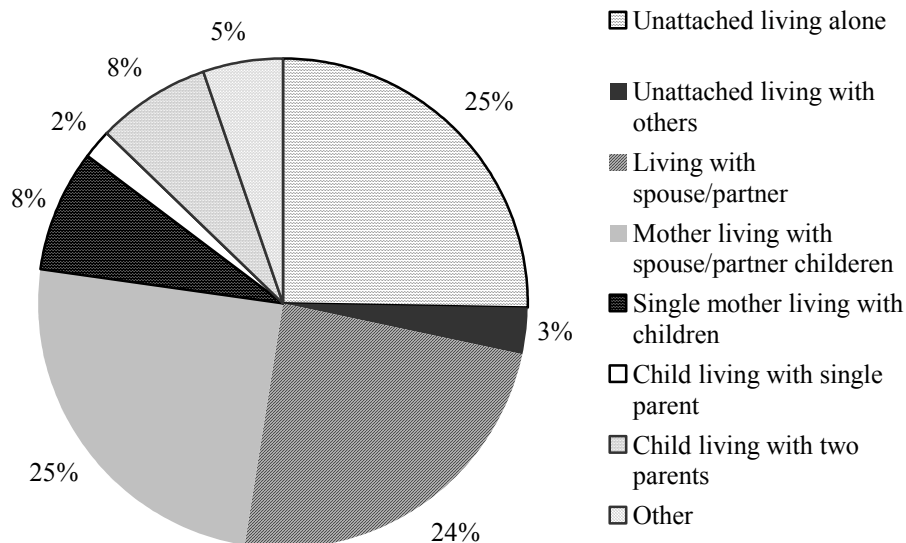
*Data for 15-24 years age group with arthritis not released due to small sample size.

2.4 Family Structure

Family structure can have both positive and negative effects. Familial support positively contributes to the well-being of people with arthritis, leading to increased physical function, decreased pain and improved familial relations (32-37). However, family life and the responsibility of being a mother, wife and employee increases a woman's risk for mental health problems (38). In addition to this, women that were formerly married tend to report arthritis/rheumatism and distress more often than men in the same situation (31).

Generally, physical health and the relationship between partners are related to marital satisfaction (39). Some studies that have looked at the impact of relationships on arthritis have shown that social support positively contributes to the well being of individuals, especially the elderly, in terms of increased physical function and decreased pain among patients with arthritis (32;33;35-37). Similarly, spousal support tends to help mothers deal with arthritis (34). CCHS data reveal that the majority of women between 25 and 64 years of age are married or in a common-law relationship. Family structure is further assessed by living arrangement (Exhibit 7) and reveals that the majority of women with arthritis report live with a spouse or partner with or without children (49%). However, a quarter live alone, and almost one in ten were single mothers living with children.

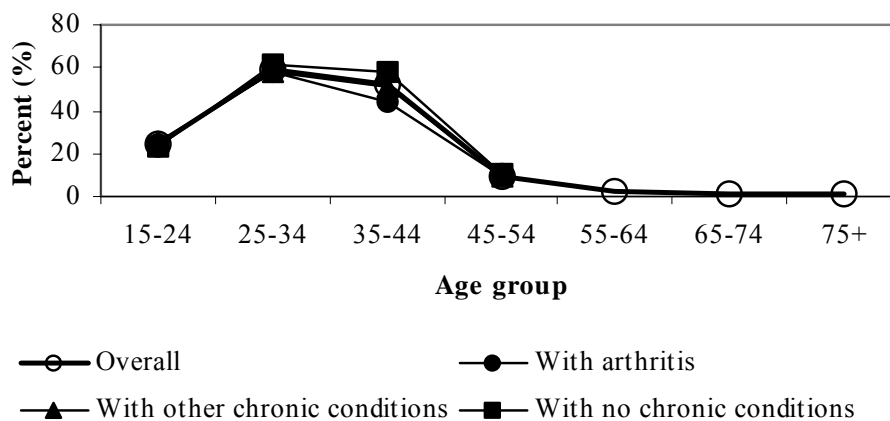
Exhibit 7: Family structure of women living with arthritis



*Source: Canadian Community Health Survey, Statistics Canada

The presence of a child under the age of 12 in the household is highest for women in the 25-44 year age range (Exhibit 8). While generally similar to women with no or other chronic conditions, a lower proportion of women with arthritis in the 35-44 year age group have young children than other women. Mothers with arthritis report trouble lifting, bathing and feeding their children (34). Being unable to fulfill these basic functions increases women's risk of depression, since taking an active part in a child's life is often linked with the perception of being a 'good mother' (40). Studies of chronic illness have generally found that psychological distress spreads to all family members, and treatments should therefore address the family as a whole (41-43). Although, one positive aspect in family life is that children of parents with arthritis seem to be more attentive to their parents' needs (41).

Exhibit 8: Proportion of women with one or more children under age 12 years in the household



*Source: Canadian Community Health Survey, Statistics Canada

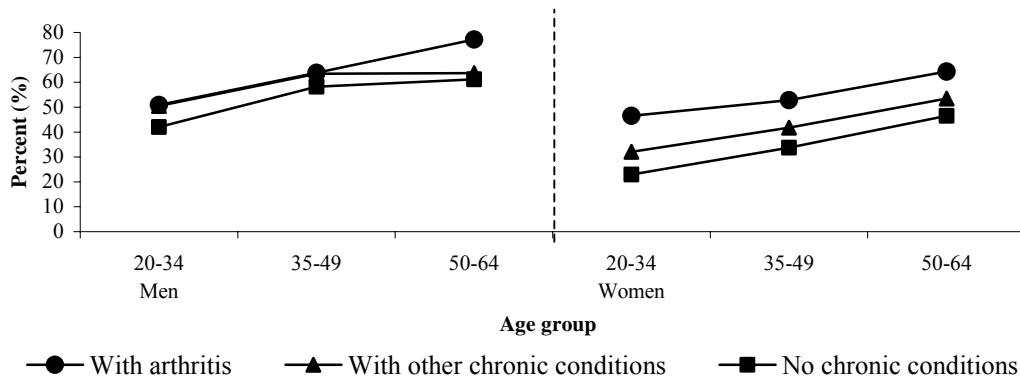
To accurately assess the impact of arthritis on women, a comprehensive approach is needed. The changing dynamic of family structure is an important aspect of arthritis research, since it has strong implications for mental well-being.

2.5 Overweight/Obesity as a Risk Factor

Being overweight has been found to be a contributing factor to the development of arthritis, particularly osteoarthritis of the knee (44-46). Being overweight/obese (defined as a body mass index (BMI) greater than or equal to 25.0) is only calculated in the CCHS for those people 20-64 years of age, excluding pregnant women. All of the groups (women with arthritis and women with no or other chronic conditions) follow the same trend, with an increasing proportion of women in the overweight/obese category based on age. For people with arthritis, the proportion of overweight/obese men was significantly greater than the proportion of overweight/obese women (Exhibit 9). In addition, the proportion of overweight/obese women is approximately

seven percentage points higher for those with arthritis compared to the other chronic conditions group and 17 percentage points higher than women with no chronic health problems. This suggests that excess weight is a risk factor for arthritis (47), although inactivity associated with the physical limitations of arthritis may also contribute to this finding. Studies have shown that nearly 60% of individuals with arthritis do not meet physical activity recommendations (48).

Exhibit 9: Proportion of people who are overweight/obese, by age group and sex, in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

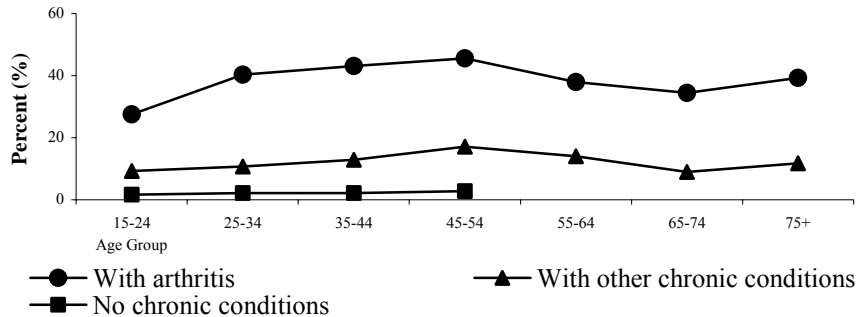
Differences between women with arthritis and women with other chronic conditions are statistically significant ($p < 0.05$) at all ages.

Differences between the proportion of overweight/obese women and overweight and obese men are statistically significant ($p < 0.05$).

2.6 Symptoms and Coping

Arthritis leads to joint pain, stiffness and inflammation (4;6). Compared with women with no or other chronic conditions, women with arthritis reported the highest levels of activities prevented by pain (Exhibit 10) and disability (based on a Health Utilities Index of 0.83 or less) (Exhibit 11). There is generally a small age gradient in reporting pain and disability. There are no differences by sex in the proportion of people with arthritis reporting pain that limits activity. Similarly there are no differences by sex in the proportion of people with arthritis reporting long-term disability. It appears that once a person has arthritis, the impact is similar regardless of age or sex (27).

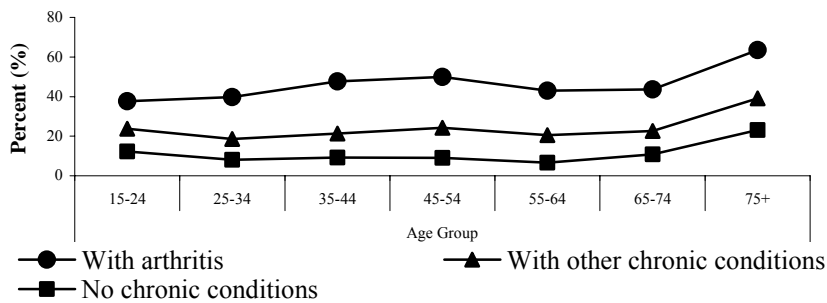
Exhibit 10: Proportion of women reporting pain that limits activities, by age group, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

*Data for age 55+ with no chronic conditions not released due to small sample size

Exhibit 11: Proportion of women reporting long-term disability, by age group, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

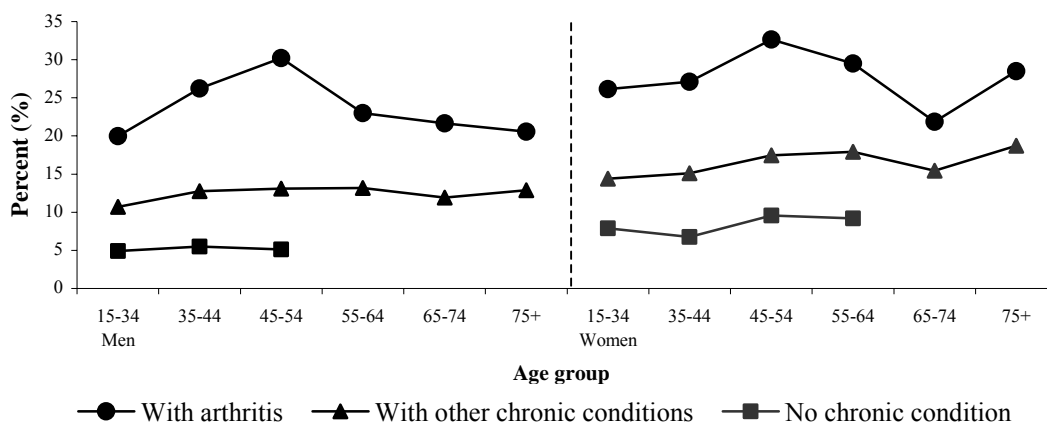
Differences between arthritis, other chronic conditions and no chronic conditions are statistically significant ($p < 0.05$)

2.7 Sleep Issues

Sleep is another key variable in addressing arthritis. Approximately 60% of individuals with arthritis report pain symptoms at night, while the majority experience sleep disturbances (49-52). Poor sleep quality has a negative impact on physical functions such as pain, fatigue and alertness, while psychological impacts include increased depression or anxiety (49;50).

As expected, the proportion of women reporting trouble with sleeping most of the time is highest for women with arthritis across all age groups (Exhibit 12). In the literature, difficulty sleeping is indicated by use of sleep medication among individuals with arthritis (53-55). The only significant differences between men and women with arthritis were for the 55-64 years and the 75 years and older age groups, with more women than men reporting difficulty sleeping most of the time (27).

Exhibit 12: Proportion of people reporting difficulty sleeping most of the time, by age group and sex, in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

*Data for age 55+ (men) and 65+ (women) not released due to small sample sizes

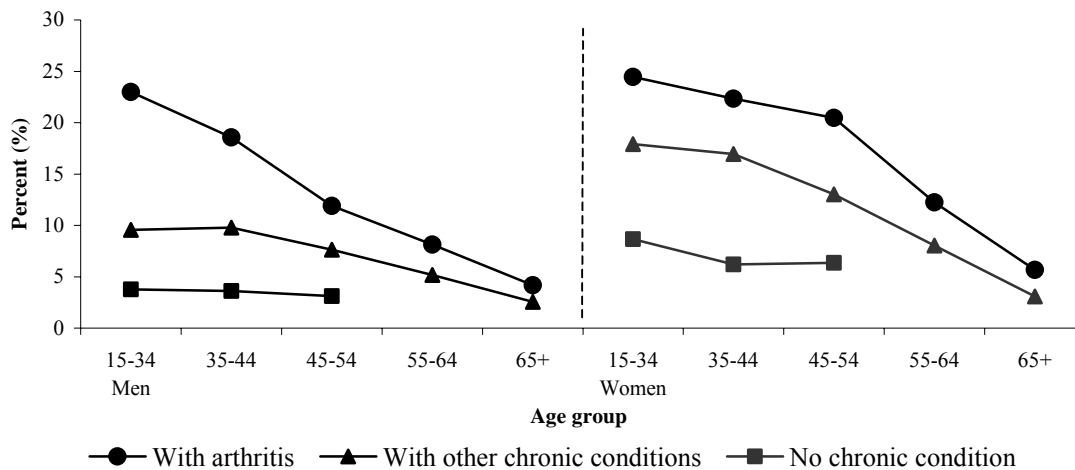
2.8 Mental Health and Stress

Chronic pain, including that caused by arthritis, increases an individual's risk of depression (56-59). Factors such as disease severity, duration and frequency of pain, and depression further exacerbate this association (56;57;60;61). In addition women have higher rates of depression compared to men (62).

Using the CCHS probability of caseness of depression scale, it has been found that women with arthritis have the highest proportion of depression (a score of at least 80%) of all women, which is most evident in the 15-34 year age group (Exhibit 13). Generally, the disparity between women with arthritis and women with no or other chronic conditions diminishes with age.

This finding is interesting in light of the current literature, which suggests depression rates decrease with age while arthritis rates increase. Studies have shown that arthritis and/or its symptoms are predictors of depression. Following this logic, it should be expected that depression rates be highest amongst the older age groups, which exhibit the highest rates of arthritis. However, this was not found. Other factors are known to influence depression rates such as social relations, familial structure, socioeconomic status, mood or stress levels and perception. For example, younger women with arthritis might experience added stresses, as arthritis is often perceived as a disease of 'old age', and is not usually associated with younger age brackets (4).

Exhibit 13: Proportion of people with predicted probability of at least 80% of having experienced a major depressive episode (MDE) in the past year, by age group and sex, in Ontario, 2000/01



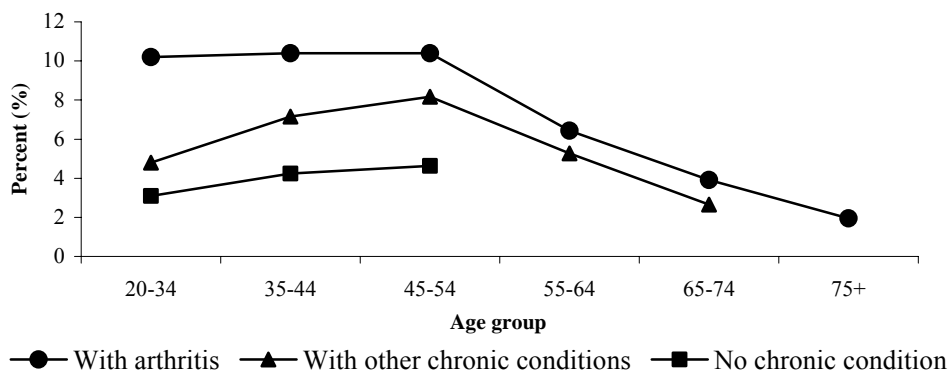
*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between women with arthritis and women with other chronic conditions are statistically significant ($p < 0.05$) at all ages.

*Data for people age 55+ with no chronic condition not released due to small sample sizes.

The CCHS also inquires about stress. Overall the proportion of women reporting that they find life to be extremely stressful declines with increasing age. A significantly higher proportion of women with arthritis aged 65 years or younger report life to be extremely stressful compared to women with other chronic conditions (27). Of all women, those with arthritis report the highest stress (Exhibit 14). The difference between women with arthritis and women with other chronic conditions is most pronounced for the 20-34 age group. This may be due to the physical limitations or negative mental perceptions of having arthritis at a younger age

Exhibit 14: Proportion of women reporting life to be extremely stressful, by age group, in Ontario, 2000/01

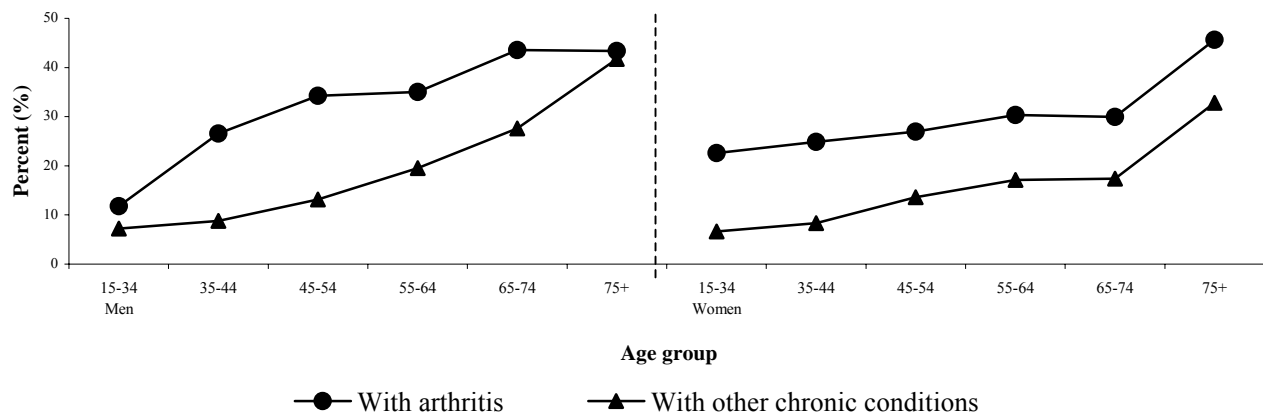


*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

2.9 Self Perceived Health

In addition to physical and mental health symptoms, attitudes and perceptions are equally important factors in assessing the impact of arthritis on the individual. For example, the relationship between chronic pain and depression is weakened by positive mood states (63). Women with arthritis report higher proportions of fair or poor health status and worse health status after a 1-year follow-up than women with other chronic conditions at all ages (Exhibits 15-16). Not surprisingly, the proportions increase steadily with age. For women with arthritis, the proportion reporting poor health increased from 23% in the 15-34 year age group to 46% in the 75 years and older age group. This is in contrast to the proportion of men reporting poor health, which increases from 12% to 44% (Exhibit 15). Thus, young women appear to be more likely to report poor health than young men. Poor self-perceived health has been associated with range of adverse health outcomes, including pain (64-67) and functional limitation(66;68).

Exhibit 15: Proportion of people reporting fair/poor self-rated health, by age and sex, Ontario, 2001

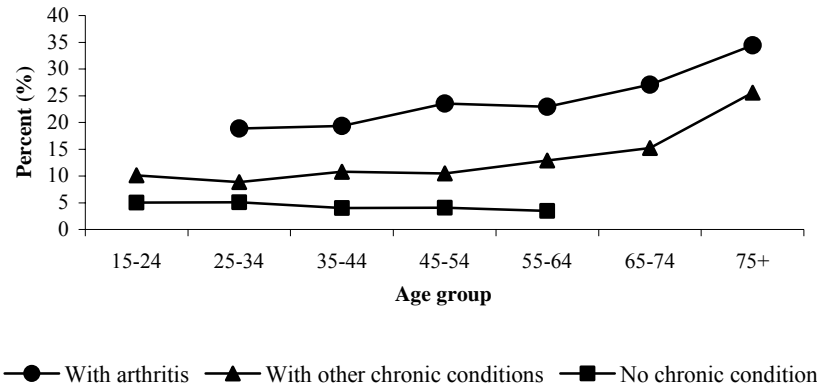


*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages.

*Data for people with no chronic condition not released due to small sample sizes.

Exhibit 16: Proportion of women reporting worse self-perceived health compared to one year before, by age group, in Ontario, 2000/01



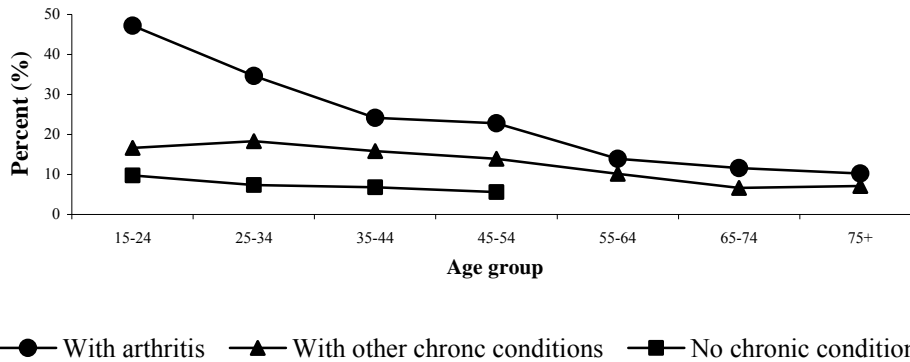
Data source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

2.10 Unmet Healthcare Needs

A number of treatment strategies are currently underutilized by individuals with arthritis (69), especially surgery (70). The CCHS asked respondents if in the previous 12 months they needed health care but did not receive it (for reasons such as service lack of availability in the area or the wait time being too long). In all age groups women with arthritis are more likely to report self-perceived unmet healthcare needs than women with no or other chronic conditions. However this decreases with age (Exhibit 17). Over 30% of women with arthritis in the 15-34 year age group reported unmet healthcare needs. Reasons for unmet healthcare needs may include lack of effective treatments and long wait times (71).

Overall, 18% of women with arthritis report not receiving health care when needed. For women with other chronic conditions this proportion was 16%, and under 9% for those with no chronic condition. The highest proportion that report these limitations in access were people with arthritis in the 15-34 years age group with approximately one-third reporting that they had not received necessary care. Within the youngest age group, the proportion among those with arthritis is more than one and a half times and more than three times as large as those with other and no chronic conditions, respectively. These proportions decrease with age.

Exhibit 17: Proportion of women reporting self-perceived unmet health care needs, by age group, in Ontario, 2000/01

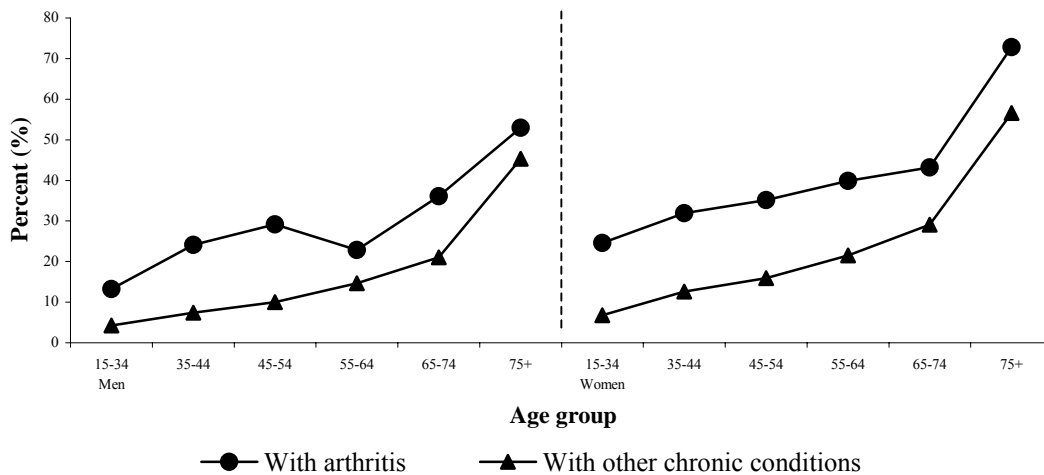


*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

2.11 Impact of Arthritis on Daily Life of Women with Arthritis in Ontario – Health Outcomes and Quality of Life

Women with arthritis are more likely than other women to need help with tasks such as heavy lifting, meal preparation, groceries and housework. Women with arthritis report the most difficulty with lifting, bending and stooping (72;73). The proportion of women in all age groups who require help is highest for women with arthritis (Exhibit 18). Overall, 44.1% of women with arthritis require help, compared to 15.4% for those with other chronic conditions. For almost every age group the proportion of women with arthritis requiring help is about ten percentage points higher than for men with arthritis.

Exhibit 18: Proportion of people needing help with daily activities, by age group and sex, Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between women with arthritis and women with other chronic conditions are statistically significant ($p < 0.05$) at all ages.

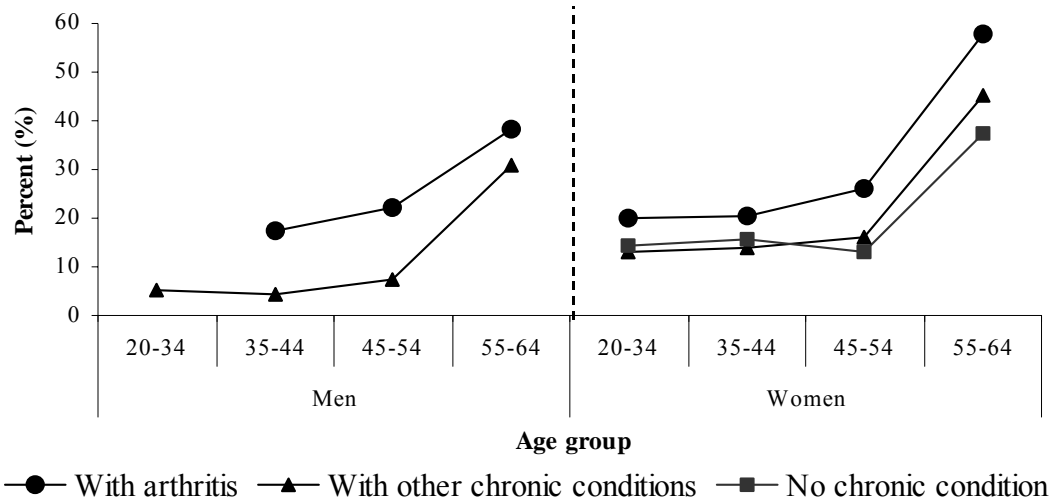
*Data for people with no chronic condition not released due to small sample sizes.

2.12 Work Status

In general, musculoskeletal diseases have a significant impact on participation in the labour market. Missed work days and lost wages account for 74% of the burden of disease (74). For example, RA is responsible for 14% and 26% of work disability within one and two years of symptom onset, respectively (75). Work disability is defined as the inability to continue working, to work in the same occupation or to work the same number of hours. Thus, another important measurement of the impact of arthritis is work status.

Women with arthritis at all age groups are more likely to report being without a job during part or all of the previous year, compared to women with no or other chronic conditions and men (Exhibit 19). Women with arthritis report being without a job in greater proportions within the 35-64 years age groups.

Exhibit 19: Proportion of people without a job throughout, or during part of, the previous year, by age group and sex, in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages except 20-34.

*Data for men 20-34 with arthritis and all men with no chronic condition not released due to small sample size.

3.0 Access to Health Care for Women with Arthritis in Ontario

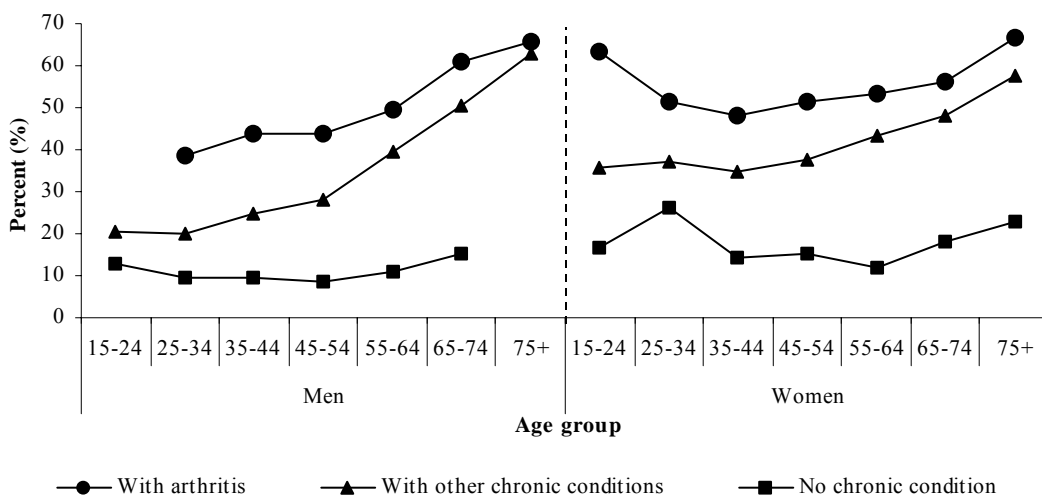
3.1 Health Care Utilization by Women with Arthritis in Ontario

The economic costs of musculoskeletal diseases including arthritis are second only to cardiovascular diseases, with arthritis accounting for \$C4.4 billion per year. The costs of arthritis include direct health care utilization costs and indirect costs pertaining to lost productivity amounting to C\$909 million and C\$3.5 billion per year, respectively (7).

Self-reported health care utilization data for women were available from the analyses of population survey data, including linked data from the 1996/1997 Ontario Health Survey and health care administrative databases, and health service databases, specifically the OHIP physician billing data, the ODB database, and the CIHI Discharge Abstract Data (DAD) on hospital admissions. Further information on data sources is provided in Appendix 1. It is hoped that linked data from the 2000/2001 CCHS will be available shortly.

Women with arthritis have higher proportions of health care utilization (HCU) than women with other chronic conditions. They are more likely to visit their family doctor four or more times per year (Exhibit 20). At all ages, a greater proportion of women with arthritis reported having four or more visits to primary care physician, family physician or general practitioner (FP/GP), in the 12 months prior to the survey, than did people with no or other chronic conditions. It should be noted that these visits are for various reasons. Overall, for women, almost 56% of those with arthritis, fewer than 40% of those with other chronic conditions, and fewer than 20% of those with no chronic condition reported making four or more FP/GP visits in the previous 12 months. These figures are somewhat higher for women than for men. In comparison, the proportion of men making such visits was almost 51% in those with arthritis, just under 30% for those with other chronic conditions, and just under 11% for those with no chronic condition.

Exhibit 20: Proportion of people visiting a family physician/general practitioner at least 4 times in previous 12 months, by age group and sex, in Ontario, 2000/01

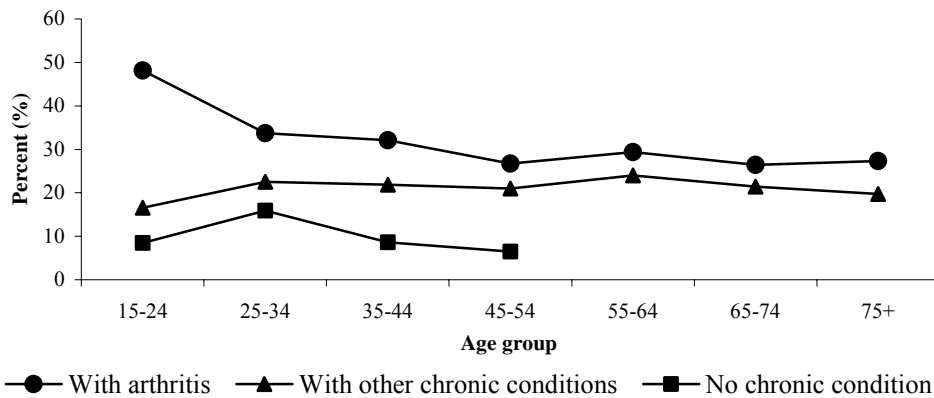


*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between women with arthritis, other and no chronic conditions are statistically significant ($p < 0.05$) at all ages

Although the differences in the proportion of women with arthritis and women with other chronic conditions making visits to specialists are not as pronounced as they are for visits to a family physician/general practitioner, the proportions making two or more visits to a specialist are nonetheless greatest for those with arthritis (Exhibit 21). Unfortunately the questionnaire does not ask about the type of specialist seen. Women with arthritis are more likely to visit a specialist at any age. Overall, almost 29% of women with arthritis have made such visits, compared to 21% and nearly 10% of women with other and no chronic conditions, respectively.

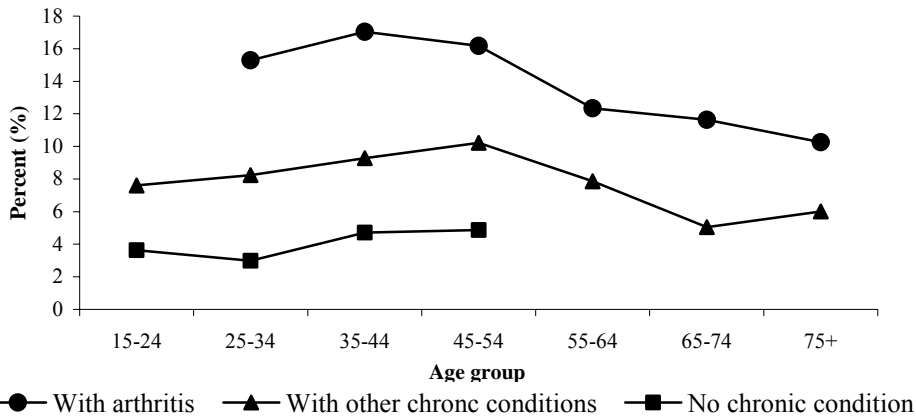
Exhibit 21: Proportion of women consulting a specialist at least twice in the previous 12 months, by age group, in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷
 Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages except 55-74.

Women with arthritis generally have more consultations with physiotherapists compared to women with other chronic conditions and women with no chronic health problems by about five and ten percentage points respectively (Exhibit 22).

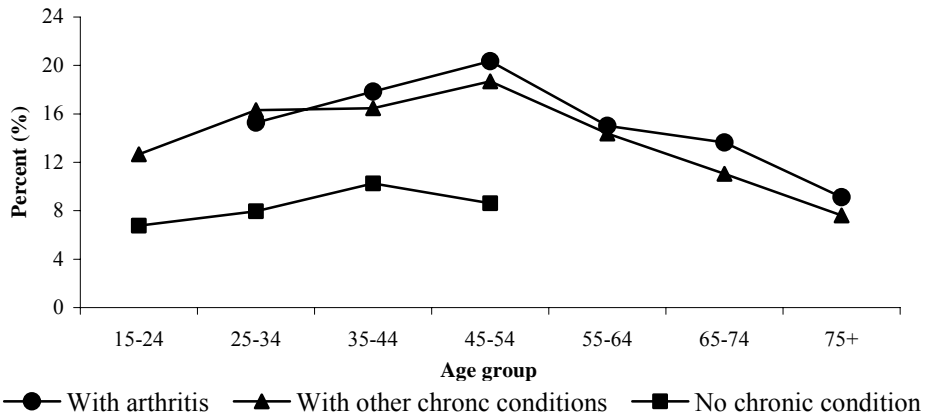
Exhibit 22: Proportion of women consulting with a physiotherapist at least once in past 12 months, by age group, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Women with arthritis have somewhat more consultations with a chiropractor compared to women with other chronic conditions and women with no chronic health problems. This difference is less than 1% between women with arthritis and women with other chronic conditions and almost 7% between women with arthritis and women with no chronic condition (Exhibit 23).

Exhibit 23: Proportion of women consulting with a chiropractor at least once in past 12 months, by age group, in Ontario, 2000/01

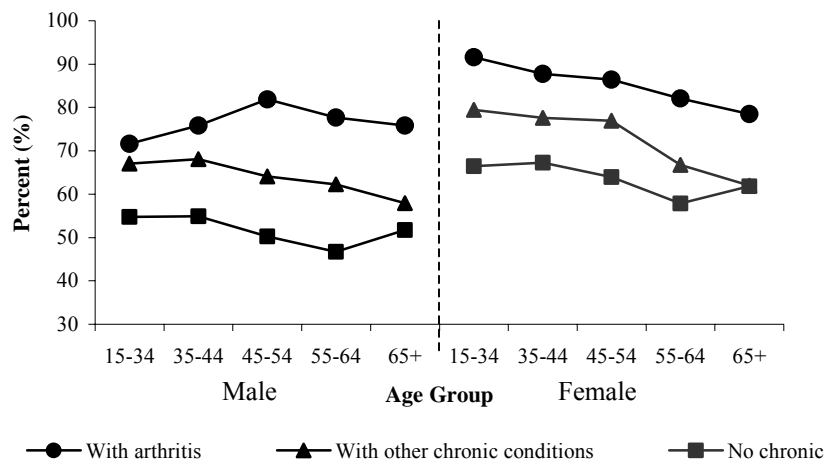


*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

3.2 Medication use

A greater proportion of women with arthritis than women with other chronic conditions report use of pain relievers in the month prior to the surgery. This is significant within all age groups except 35-44 years (Exhibit 24). Overall, the reported use of pain relievers was 83% in women with arthritis and 75% and 66%, in women with other and no chronic conditions, respectively, with the differences between these groups widening with age. Women also reported significantly higher use of pain relievers than men in the youngest age groups, 15-44 years. Similarly, more women than men with arthritis report use of pain relievers, (83% and 77%, respectively).

Exhibit 24: Proportion of people* reporting the use of pain relievers such as aspirin or Tylenol (including arthritis medicine and anti-inflammatories) in the past month; Ontario 2001

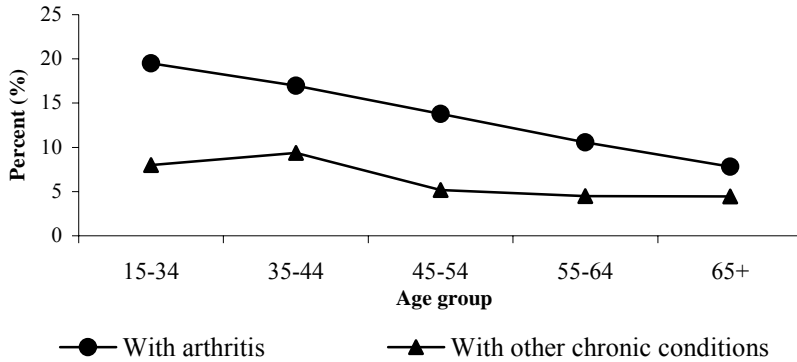


*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷
 Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages except 35-44.

The use of codeine, Demerol, and morphine are each higher in women with arthritis (Exhibit 25). Stomach remedies are also often taken to alleviate side effects from arthritis medications such as non-steroidal anti-inflammatory drugs (76).

The use of narcotic medications (codeine, Demerol or morphine) in the past month (Exhibit 25) is also higher among women with arthritis than women with other chronic conditions. While the reported use of these medications does not show any gradient with age for people with other chronic conditions, the use by women with arthritis was highest in the younger age groups, up to 20%. Overall, the proportion of women with arthritis who used narcotic medication was one and a half times greater than that of women with other chronic conditions.

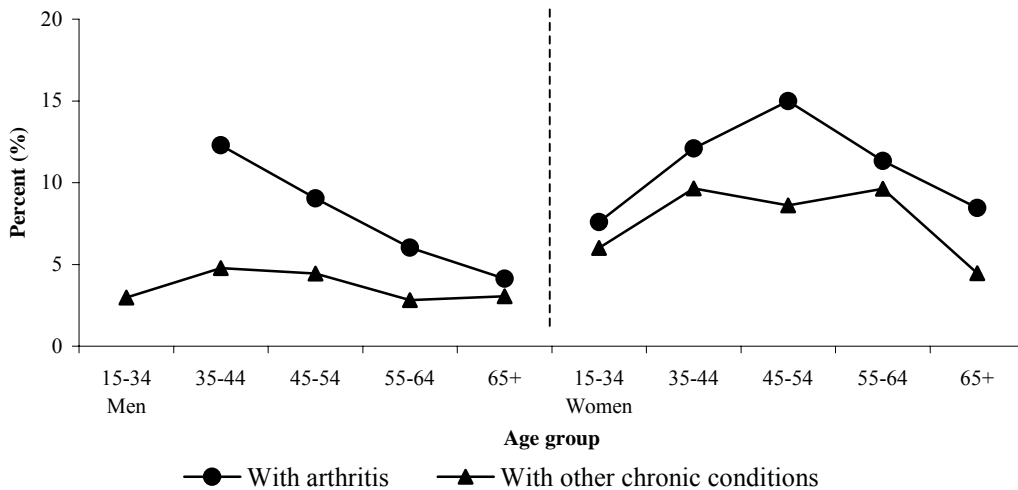
Exhibit 25: Proportion of women reporting use of narcotic medications (codeine, Demerol or morphine) in the previous month, by age group, in Ontario, 2000/01



*Source: Arthritis and Related Conditions in Ontario: ICES Research Atlas²⁷
 Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages.
 Data for women with no chronic condition not released due to small sample sizes.

The overall proportion of women reporting the use of anti-depressants in the previous month is higher for women with arthritis than it is for women with other chronic conditions. Antidepressant use is also higher for women than men, specifically those of middle age and older (Exhibit 26).

Exhibit 26: Proportion of people* reporting use of anti-depressants in the previous month, by age group and sex, in Ontario, 2000/01



*Source: Arthritis and Related Conditions in Ontario: ICES Research Atlas²⁷
 Differences between women with arthritis and women with other chronic diseases are statistically significant ($p < 0.05$) at all ages except 15-44 and 55-64.
 Data for women with no chronic condition not released due to small sample sizes

3.3 Visits to Physicians

Exhibit 27 displays physician visit rates by 10-year age groups and sex for all arthritis and related conditions, OA and RA. Physician visit rates are higher for women than men for each of the three condition groupings in every age group. Rates for women increase with age, with the exception of RA, where a slight decrease is evident for women in the oldest age group.

Exhibit 27: Number of men and women per 1,000 population visiting all physicians for arthritis and related conditions, for osteoarthritis, and rheumatoid arthritis, in Ontario, 2000/01

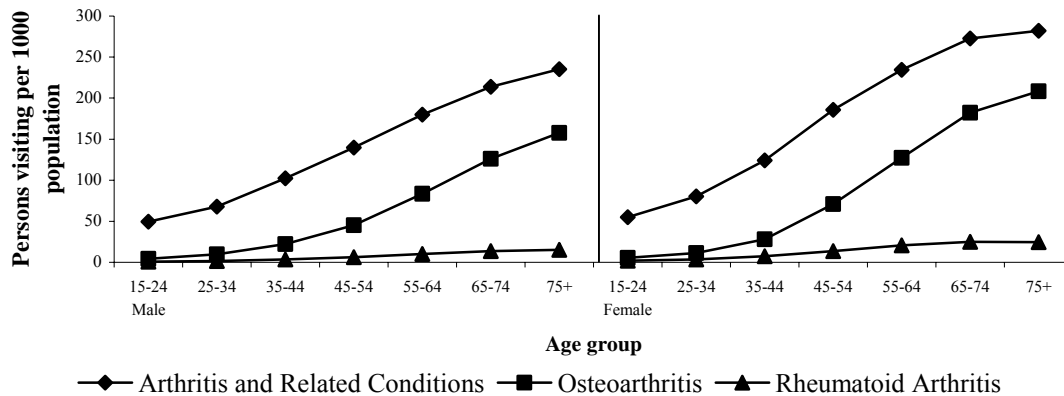


Exhibit 28 displays rates of physician visits by specialty. A high proportion of women manage their arthritis through visits to primary care physicians, particularly people with OA. Orthopaedic surgeons are the most commonly consulted type of specialist, particularly for joint derangement and Dupuytren’s contracture, and also for OA. Women with connective tissue disorders, ankylosing spondylitis and rheumatoid arthritis, are more likely to consult a medical specialist (particularly rheumatologists) than women with other types of arthritis, and are less likely to see primary care physicians.

Exhibit 28: Distribution of patients with visits for arthritis and related conditions by type of physician consulted, in Ontario, 2000/01

Condition	Type of Physician							
	All Physicians (n)	Primary Care (%)	All Specialists (%)	Medical Specialists			Surgical Specialists	
				All (%)	Rheumatologists (%)	Internists (%)	All (%)	Orthopaedic Surgeons (%)
Osteoarthritis	532617	84.5	25.0	10.8	6.1	2.3	15.9	15.0
Synovitis	393953	80.8	23.9	8.2	4.2	1.4	16.0	10.6
Other MSK Disorders	248921	67.4	37.2	21.9	6.5	1.8	17.2	9.4
Joint Derangement, Dupuytren's Contracture	132502	49.2	53.7	3.7	0.8	0.6	50.2	45.0
Fibrositis	81820	77.6	25.5	22.5	15.2	3.0	3.1	1.5
Rheumatoid Arthritis	79792	70.9	44.3	41.5	33.1	6.4	5.0	3.4
Gout	46882	91.9	11.4	9.9	6.2	2.3	1.6	0.6
Connective Tissue Disorders	16920	31.6	74.4	71.3	56.4	9.8	3.9	0.2
Traumatic Arthritis, Pyogenic Arthritis	16296	68.6	31.9	17.2	5.0	6.0	15.1	13.6
Ankylosing Spondylitis	8595	33.2	70.5	57.9	49.8	4.8	12.8	10.5
Arthritis And Related Conditions	1290059	81.3	32.4	15.5	8.4	2.5	19.3	15.2

*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*⁷⁸

In 2000/2001, more than 2.6 million women made visits to physicians for musculoskeletal (MSK) conditions in Ontario. Over 1.5 million women have made such visits for arthritis and related (A&R) conditions (Exhibit 29). Person-visit rates for MSK and A&R conditions are higher in women than men, with 1.4 times as many women making visits as men, for both condition groupings.

Exhibit 29: Ambulatory visits to all physicians for musculoskeletal disorders, Ontario, 2000/2001

Condition	Persons visiting physicians per 1,000 population					
	Sex		Number of persons (thousands)	Number of visits (thousands)	Mean number of visits per person	Ratio #Women: #Men
	Women	Men				
Osteoarthritis	69.0	43.6	533	1073	2.0	1.7
Synovitis	45.7	37.9	394	615	1.6	1.3
Other MSK Disorders	30.6	22.1	249	412	1.7	1.5
Joint Derangement, Dupuytren's Contracture	13.8	14.4	133	214	1.6	1.0
Fibrositis	11.5	5.8	82	144	1.8	2.1
Rheumatoid Arthritis	11.4	5.4	80	228	2.9	2.2
Gout	2.2	7.9	47	71	1.5	0.3
Connective Tissue Disorders	2.8	0.8	17	38	2.3	3.6
Traumatic Arthritis, Pyogenic Arthritis	1.8	1.6	16	28	1.7	1.2
Ankylosing Spondylitis	0.8	1.0	9	16	1.8	0.9
Arthritis and Related Conditions	155.0	118.4	1290	2839	2.2	1.4
Signs and Symptoms Not Yet Diagnosed	94.1	74.0	793	1365	1.7	1.3
Spine Disorders	62.7	56.9	563	1090	1.9	1.2
Bone Disorders	28.7	5.1	161	241	1.5	5.9
MSK Disorders	268.2	208.6	2249	5535	2.5	1.4

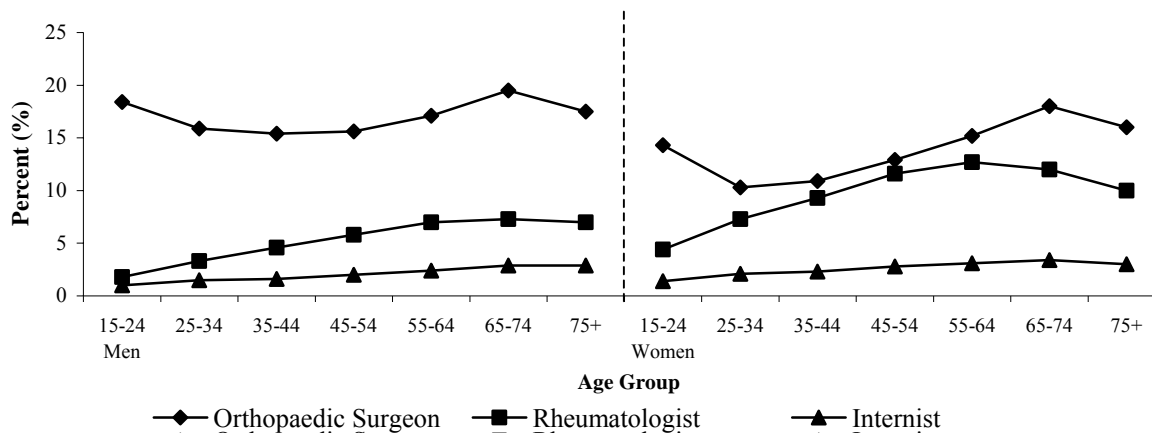
*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*⁷⁸

When an individual with arthritis has inflammatory conditions a number of situations arise indicating a need for specialist care. These situations include being unresponsive to first line therapy or when the diagnosis or treatment strategy is in doubt. Rheumatologists are often consulted for a variety of arthritis and related conditions. General internists sometimes serve in these roles, especially in settings where rheumatologists are not available or among internists who have developed special expertise in arthritis care. Unfortunately, lack of referral and late referral to rheumatologists for RA appears to be frequent in Ontario (77). In instances in which symptoms and/or disability cannot be controlled medically, orthopaedic surgery for joint replacement therapy is highly effective in restoring function and reducing pain. However, orthopaedic surgeons also deal with a wide variety of MSK conditions, as can be seen from Exhibits 30 to 32.

One-third of those with a physician visit for an arthritis and related condition see a specialist. Among specialists, orthopaedic surgeons are the most frequently seen, followed by rheumatologists (78). Only one-third of Ontarians with a physician visit for RA have seen a rheumatologist. This implies under-utilization and most likely inadequate care for people with RA.

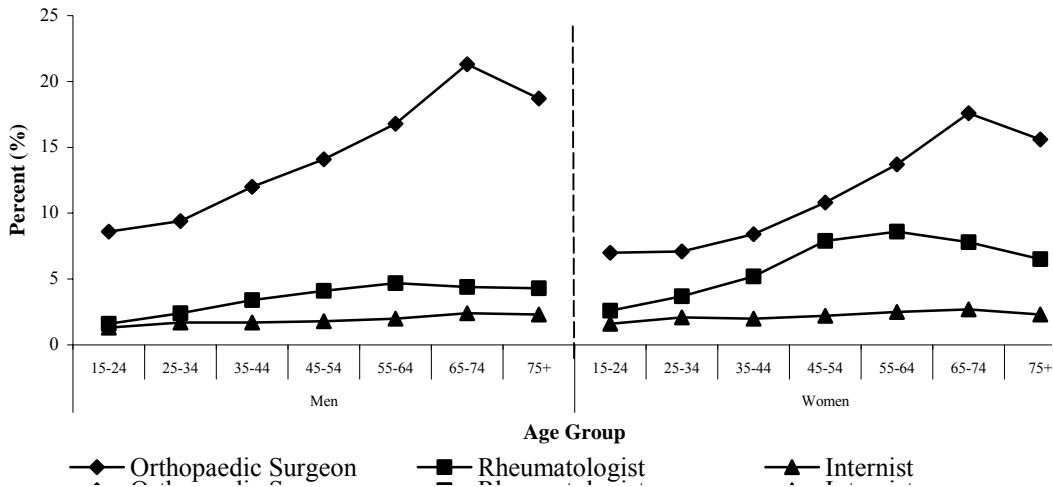
There are gender differences in the types of specialists consulted for arthritis and related conditions. Men with arthritis and related visits, as well as men with OA visits specifically, see orthopaedic surgeons in higher percentages than women in every age group (Exhibits 30-31). However, women with these conditions see rheumatologists and internists in higher percentages than men. Women with physician visits related to RA see specialists (rheumatologists, internists, orthopaedic surgeons) in higher percentages than men with visits for RA (Exhibit 32). However, there are exceptions to this, such as those aged 15 to 24 years, who see orthopaedic surgeons, and those aged 65-74 years and 75 or greater years, who see internists. This means that women 15 to 24 years with RA see orthopaedic surgeons in lower percentages (3.1%) than men 15 to 24 years with RA (4%). Similarly, women with RA aged 65-74 and 75+ consult internists in lower proportions than men with RA in the same age groups (65-74 : women = 6.4% vs. men = 7%; 75+: women = 5.8% and men = 6.1%). Physician visits for arthritis increase with age.

Exhibit 30: Percentage of men and women that consulted a specialist for arthritis and related conditions at least once, by age group and sex, in Ontario, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*⁷⁸

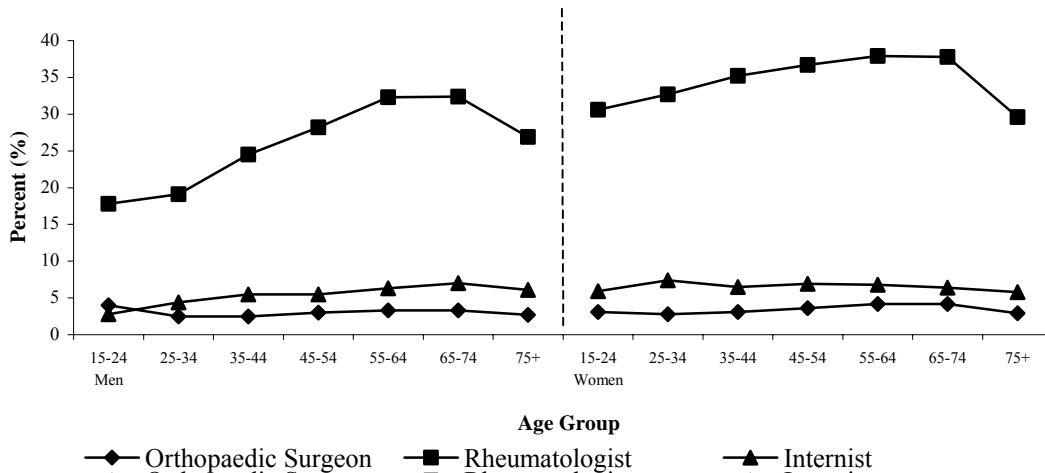
Exhibit 31: Percentage of men and women that consulted a specialist for osteoarthritis at least once, in Ontario, by age group, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*⁷⁸

For women with physician visits for any arthritis and related condition (Exhibit 30) or OA (Exhibit 31) or RA (Exhibit 32), the number of people who have seen orthopaedic surgeons, rheumatologists or internists generally increases with age. This percentage peaks for those aged 55-64 or 65-74 years, and then declines for those over 75 years. A relatively high proportion of men and women aged 15-24 years with physician visits for arthritis and related conditions have seen an orthopaedic surgeon, which may be related to trauma or sports injuries (78).

Exhibit 32: Percentage of men and women that consulted a specialist for rheumatoid arthritis at least once, in Ontario, by age group, 2000/01



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*⁷⁸

3.4 Drug Treatment for Arthritis

Pharmaceutical treatments for arthritis have changed considerably in the past century. Beyond pain management through analgesics, effective drugs to prevent and modify disease progression in women with OA and RA are currently available. Disease modifying anti-rheumatic drugs (DMARDs) are often prescribed to treat and manage RA. DMARDs manage rather than cure RA, and early and aggressive interventions improve radiologic outcome in patients (79;80). One disadvantage of certain DMARDs is their potential negative effects on fertility, pregnancy and lactation (81). For example DMARDs such as methotrexate and leflunomide are teratogenic and may lead to birth defects (82). Other, newer treatments such as biologic response modifiers, including tumor necrosis factor alpha (TNF- α) antagonists have been shown to be as effective as DMARDs (83). Although they do not affect nucleic acid synthesis, both teratogenicity (83) and other potential side effects of TNF- α need more rigorous study (84). Other treatments include cortisol injections to reduce swelling and inflammation. However, this option may lead to osteoporosis (29).

Those suffering from OA are prescribed non-steroidal anti-inflammatory drugs (NSAIDs) and cyclooxygenase (COX)-2 inhibitors. Despite pain relief, NSAIDs have adverse effects on the gastro-intestinal, renal and cardiovascular systems (76;85;86). Increased sodium retention, acute renal failure, ulcers and hypertension are a few examples (76;85;86). These adverse effects are often the reason behind patients' reluctance to take arthritis medications (87). Other pharmacologic options include the increased role of antidepressants in the effective treatment of pain in chronic musculoskeletal conditions (88;89).

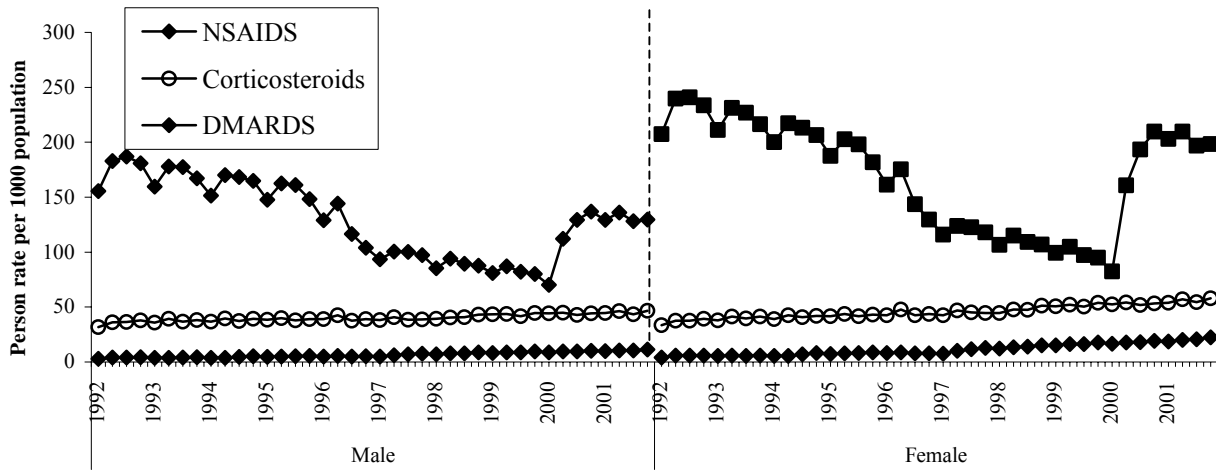
From Exhibit 33, it is clear that there has been a consistent increase over time in the number of women receiving prescriptions for DMARDs. Nevertheless, the overall rate of provision of these drugs falls short of the estimated prevalence of RA. The use of DMARDs is significantly associated with the use of specialist services by individuals with RA. Rheumatologists are more likely to prescribe DMARDs than non-rheumatologists. Shipton and colleagues examined the relationship of prescribing DMARDs and use of specialty services and showed that gender is not associated with prescribing of DMARDs in people with RA aged 65 years and over (90). Although gender is not a factor, there are still implications for women who comprise the larger proportion of individuals with RA.

The prescription of conventional NSAIDs for women was on a notable decline in the 1990s but has increased since 2000. Overall, there was a slight increase in the number of corticosteroid prescriptions for women since 1992. Of all arthritis prescription medication, there is only a difference in the amount of prescriptions by sex of NSAIDs – there is a higher number of women than men with prescriptions for NSAIDs, particularly since 2000. Variation in prescription usage for both men and women may be a result of changes in the provincial drug plan formularies over time and the introduction of COX-2 inhibitors, a type of non-steroidal anti-inflammatory onto the Canadian market in 1999.

From July 1996, there was a decrease in the use of medications to control arthritis. This occurred after the publication of American Rheumatological Association guidelines and after an Ontario government co-payment was implemented. Most of the decline in arthritis-related medications may be attributed to the drop in NSAID usage. The decrease in claims for NSAIDs after the co-payment was introduced may be due to a substitution of over-the-counter medications rather than

the discontinuation of therapy. Additionally, there may be more appropriate prescribing of protective agents following publications in the literature (91). Costs specifically related to medications are expected to continue to increase given the trend toward combination therapy with DMARDS and use of new biologic drugs (25).

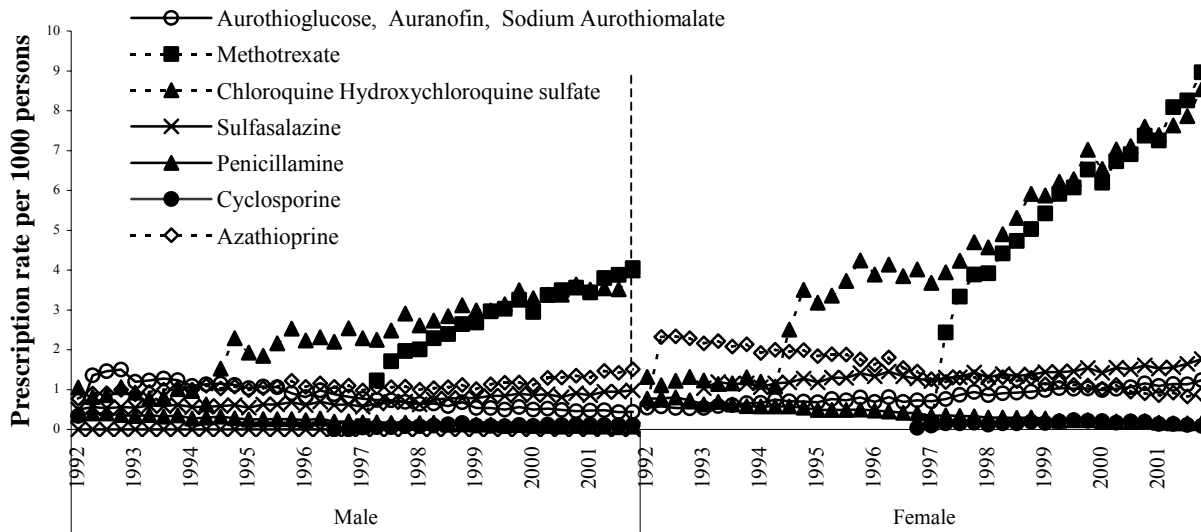
Exhibit 33: Number of women per 1,000 population with prescriptions for arthritis related medication, 1992/1993 to 2001/2002, quarter annually



*Source: Ontario Drug Benefit Program

Over the past ten years, the number of DMARD prescriptions has increased for women. The two most commonly prescribed DMARDS are antimalarial drugs and methotrexate (following 1996 when it was first included on the ODB formulary) (Exhibit 34).

Exhibit 34: Number of prescriptions written for overall and individual disease-modifying antirheumatic drugs (DMARDs) for Ontario residents aged 65 years and older, 1992-2001, quarter annually



*Source: Ontario Drug Benefit Program

As no data are available relating to diagnoses associated with each prescription, the data are somewhat limited. Therefore, the analyses may include prescriptions written for non-arthritis conditions. With regard to NSAIDs, the higher rates in women may reflect greater arthritis prevalence. However NSAIDs are prescribed for other complaints including menstrual pain, which may contribute to the higher rates in women. DMARDs are similarly prescribed for other autoimmune conditions and cancer (depending on the type).

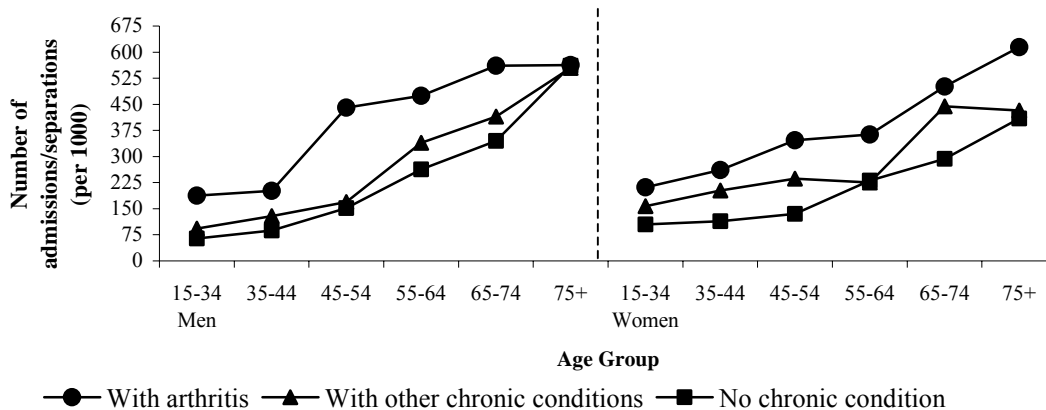
3.5 Surgery

There are a number of kinds of surgery that are carried out for arthritis and related disorders. The purpose of surgery is usually to control pain and/or repair damage to the joint, thereby reducing deformity and increasing stability and function. The two most frequent major types of surgery are arthroscopy (key hole surgery) of the knee and total joint replacement surgery of the knee or hip. Arthroscopy is a day surgery procedure, while the latter involves an inpatient stay in hospital and may or may not be followed by inpatient rehabilitation

Combining data from the 1996/1997 Ontario Health Survey with health service billing records shows that women with arthritis undergo fewer same-day surgeries and have fewer inpatient admissions than men with arthritis. However, women with arthritis undergo these procedures

more frequently than women with other chronic diseases. Compared to women with other chronic conditions, women with arthritis have a greater average number of same-day surgery admissions, with an average of 423.5 surgeries per 1,000 population, than women with other chronic conditions, who have an average of 223.5 surgeries per 1000 population in the two years following the Ontario Health Survey (Exhibit 35). In comparison, men with arthritis had a greater number of same-day surgery admissions, 452.4 surgeries per 1,000 persons.

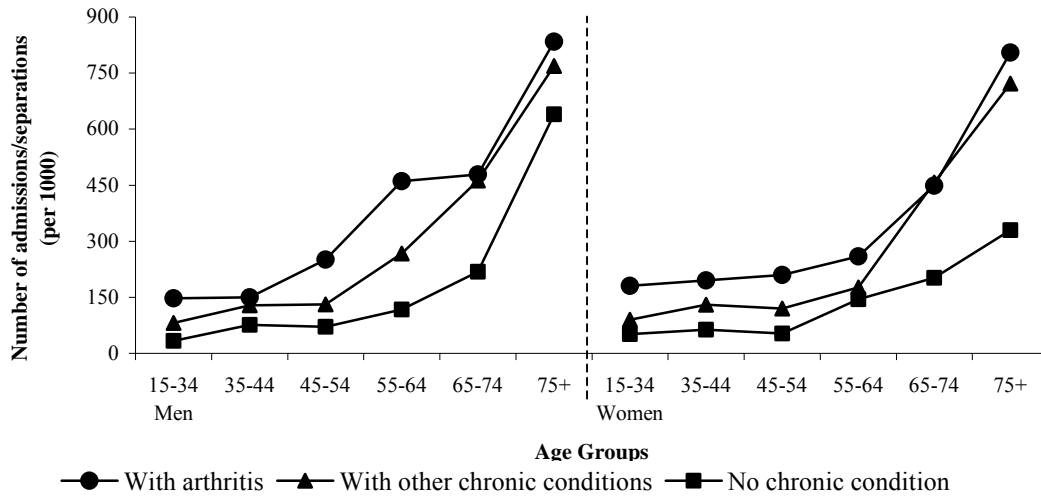
Exhibit 35: Same-day-surgery admission/discharges per 1,000 population by age group and sex, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷
 Differences between women with arthritis and other chronic conditions are statistically significant ($p < 0.05$) at ages 45-64 and 75+.

Similar results were found for inpatient admissions. Overall, women with arthritis, at all ages, had an average of 393.2 admissions per 1,000 persons compared to 171.2 admissions per person for women with other chronic conditions (Exhibit 36). Men with arthritis had 426.3 inpatient admissions per 1000 persons.

Exhibit 36: Inpatient admissions per 1,000 population, by age group and sex, in Ontario, 2000/01



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*²⁷

Differences between men with arthritis and other chronic conditions are statistically significant ($p < 0.05$) at ages 55-64.

Differences between women with arthritis and other chronic conditions are statistically significant ($p < 0.05$) at ages 45-64.

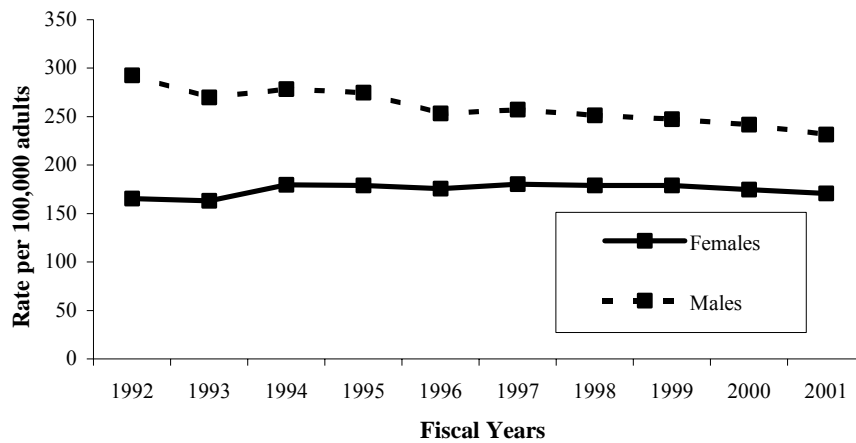
3.5.1 Arthroscopic knee procedures

Arthritis-relevant arthroscopic procedures have been categorized into three groups: a) meniscectomy with or without debridement, b) debridement without meniscectomy and c) other arthritis related arthroscopic procedures. Debridement refers to the trimming of flaps and tears in the articular cartilage and the removal of loose debris within the joint. Meniscectomy involves the removal of unstable tears of the meniscus of the knee. The most common type of knee arthroscopic procedure performed for women is debridement alone, followed by meniscectomy with or without debridement, and lastly other arthroscopic procedures. Debridement, including meniscectomy, is for treating damage caused by injury (92). The long-term benefits of debridement for individuals with degenerative damage of the knee remain unclear (93), with improvement demonstrated by some studies (94;95) but not others (96;97). Surgery has been less successful in patients with joint malalignment, joint instability, long duration of symptoms or patients with extensive knee arthritis(98-102). The exact role of arthroscopy in the management of osteoarthritis of the knee remains unclear.

Although the long-term benefits of debridement and the other arthroscopic procedures of the knee are not clear, many surgeons consider arthroscopic knee procedures to provide the short-term benefits necessary to delay the need for knee replacement surgery (103-105). Delaying knee replacement surgery is particularly appropriate when knee replacement surgery poses significant functional limitations for an individual or when revision surgery is likely to be required within an individual's lifetime. For example, those under 50 years of age would fall under this description (106).

In Ontario the rates for arthroscopic procedures in the past ten years has remained stable. Although rates for men in 2001 were approximately 35% higher than the rates for women, the gender difference has narrowed since 1992 as a result of a 35% decrease in rates for males and a 3% increase in the rates for females (Exhibit 37).

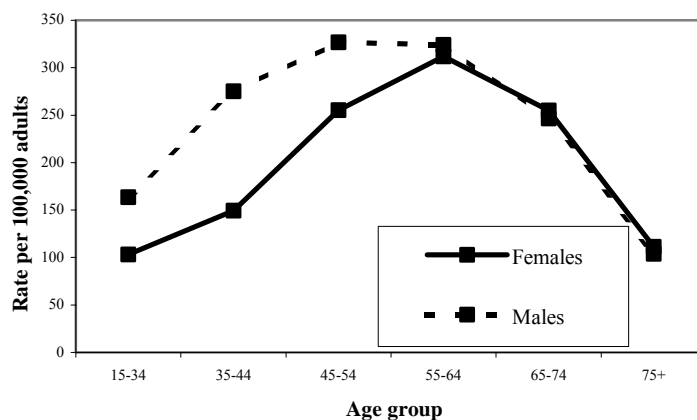
Exhibit 37: Age standardized rate of all arthroscopic procedures per 100,000 adults in Ontario, 1992-2001



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

Examining the age and sex distribution of the different types of arthroscopic procedures can help inform us about the patient population on which the procedure is commonly performed. Overall, the rate of arthroscopic procedures increases with age for both men and women, peaking in the middle age groups and falling in the elderly. In general, the rates for men are higher than women in the younger age groups but are more equitable in the older age groups. The rate of all arthritis-related knee arthroscopic procedures for both men and women increased with age to the 55-64 age group for women and the 45-64 age group for men, and then, in both cases, decreased. The rate for men is considerably higher than for women in the under 55 years of age groups, after which there is little or no difference in the rates between the sexes (Exhibit 38).

Exhibit 38: Age and sex specific rate of all arthroscopic procedures per 100,000 population (15+) in Ontario, 2001



*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

3.5.2 Total joint (hip and knee) replacements

In severe cases of arthritis, that no longer respond to medications, total joint replacement (TJR), such as that of the knee or hip, is the next option (107). The procedure may greatly improve patients' quality of life (QOL) by reducing pain symptoms and is also cost effective (108-111). Total joint replacements (TJR) of hips and knees are among the most commonly performed surgical procedures in Ontario. The majority of TJRs are for OA.

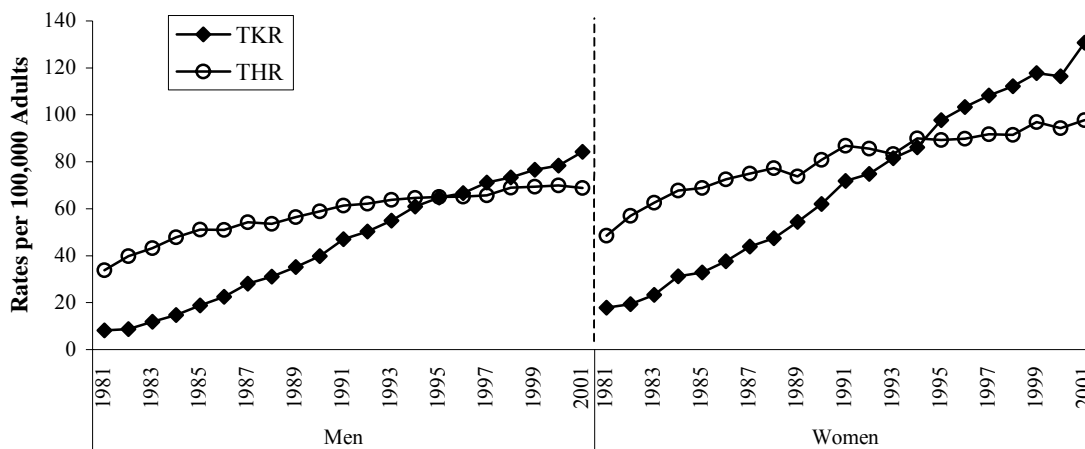
Despite its benefits, TJR is underutilized, especially in women (70). For example, women with OA exhibit worse disease manifestation and progression compared to men. This may be due to delayed surgery times or physiological factors or a combination of both (112-116). Numerous reasons have been suggested for the lower TJR rates in women. For example, social factors such as familial responsibility and low socioeconomic status may contribute to low TJR rates (23;70;117). Women from low income households appear to be reluctant to undergo TJR due to incurred costs such as missed work days, extra medical and rehabilitation costs and intangible costs such as family burden (118). On the other hand, personal preferences for surgery were not accurate predictors of TJR rates (70;119).

Other reasons for these lower rates target healthcare professionals. Physicians often perceive physical complaints from women as being more psycho-somatic compared to those made by men (62;120;121). Hawker and colleagues found that women are less likely to have discussed TJR with their physicians and are referred to specialists later and/or when their symptoms are more severe compared to men (70). Furthermore, a significantly higher percentage of women are prescribed NSAIDs, compared to men, with longer durations, thereby delaying surgery times (122).

The Institute for Clinical Evaluative Sciences (ICES) has been tracking the provision of TJRs for the past ten years (123-128). The rates of TJRs continue to increase over time, as do the waiting times for the procedures. As a result of the aging of the population the potential demand for TJRs over the next 15 years is anticipated to increase.

Procedures for total hip replacements (THRs) were established by 1980 and for total knee replacements (TKRs) by 1985. Exhibit 39 shows the age-standardized rates for TJRs by sex. The age-standardized rates for both THRs and TKRs are higher for women than for men. That is, overall, women are more likely than men to receive THRs and TKRs. For example, in 2001/2002, 61.5% of primary TKRs were performed on women. From 1981/1982 to 2001/2002, the rates for TKR increased per 100,000 population from 17.8 to 130.7 for women. For THR, rates for women increased from 48.5 in 1981 to 97.8 in 2001. The rates for TKR have surpassed the rates for THR in 1995 and the difference in rates has increased since then.

Exhibit 39: Total joint replacement rates: Ontario 1981-2001



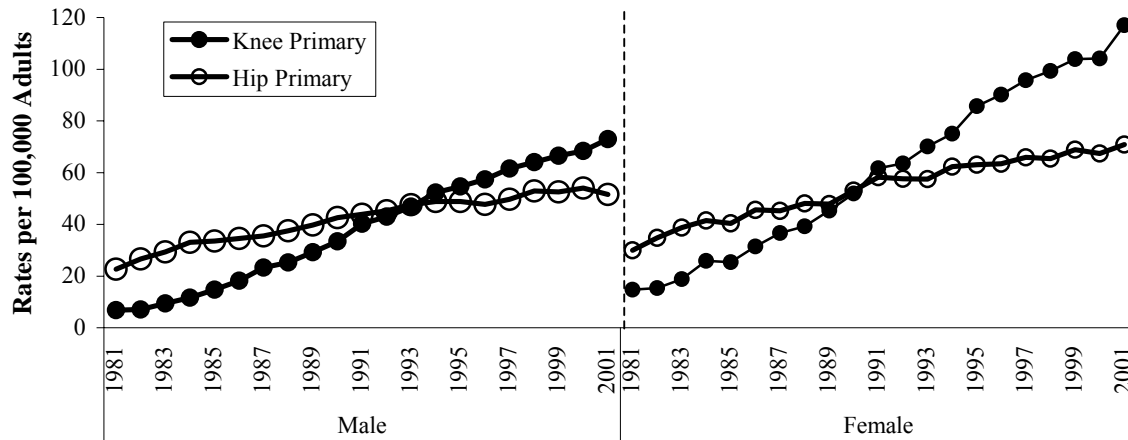
*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

Total joint replacements are separated into “primary” procedures and “revisions”. Trend lines are displayed Exhibits 40 and 41. In 2001 19% of the THRs in women and 8.4% of the TKRs in women were for revisions, and these percentages have not changed over the past decade. These rates are similar for men, 18.4% for hip revisions and a slightly higher rate of 10.7% for knee revisions compared to the rates for women. As noted in the ICES Research Atlas (106), there are three possible explanations as to why percentages of revision surgeries are higher for hips than for knees:

1. As 90% of prostheses survive at least ten years, the lag time between changes in primary rates and revision rates should be 10 to 15 years.
2. Knee patients are older than hip patients. The younger and more active patients have more wear and tear on their hips, which shortens the survival time of prostheses.
3. Moreover, older patients may have life expectancies that are shorter than the survival times of the prostheses.

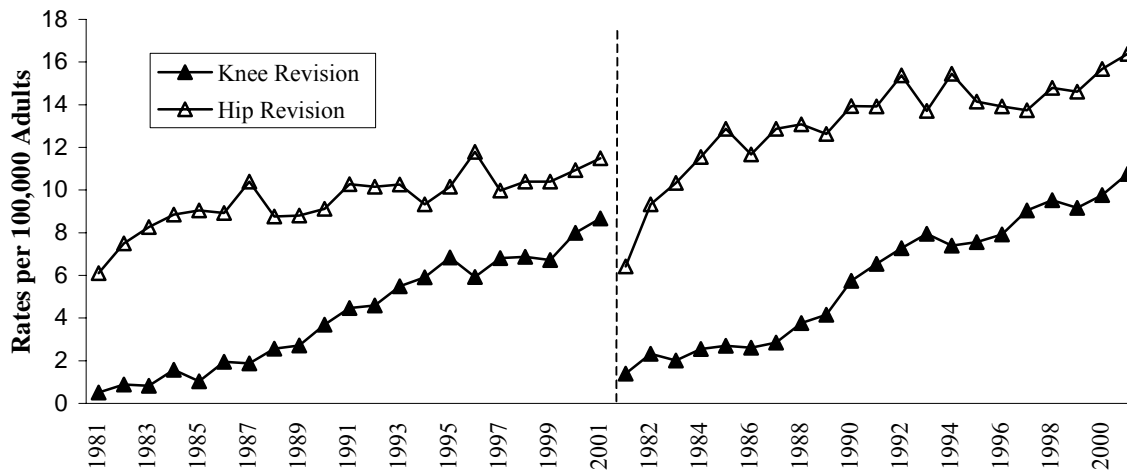
Given the cumulative numbers of primary THRs and primary TKRs over the past 20 years, the number of revisions, if not the rates of revision, should continue to increase into the foreseeable future, which will contribute to the economic burden of arthritis.

Exhibit 40: Primary rates for Total Joint Arthroplasty in Ontario, 1982-2001



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

Exhibit 41: Revision Rates for Total Joint Arthroplasty in Ontario, 1981-2001



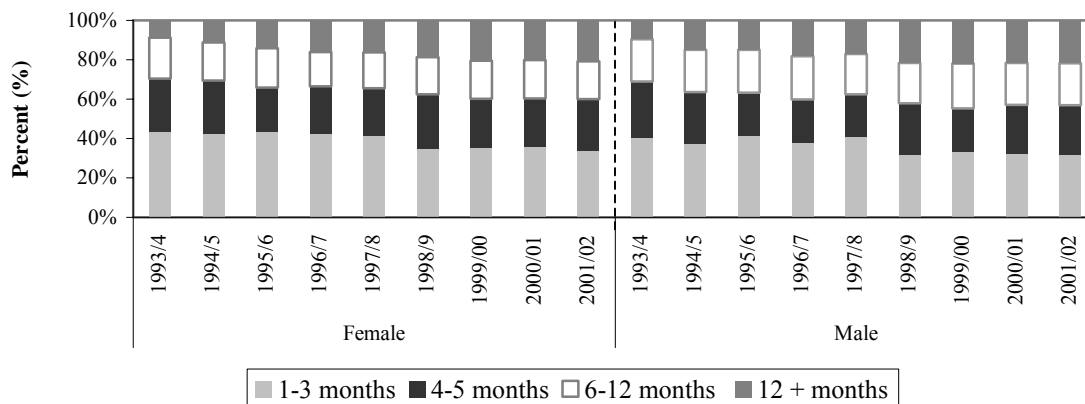
*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

3.6 Wait Times

Although the numbers of procedures have increased over the past ten years, so have waiting times for THRs and TKRs (Exhibits 42-43). From 1993/1994 to 2001/2002, the median wait times increased from 20 weeks to 28 weeks for primary TKR and from 16 weeks to 20 weeks for primary THR. For women, these figures were from 19 weeks to 28 weeks and 16 weeks to 19 weeks, respectively.

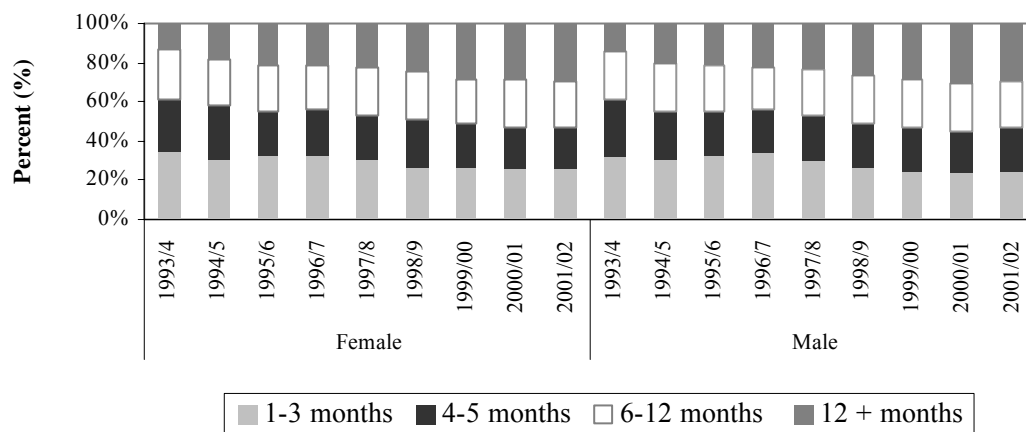
There is consensus that procedures should ideally be performed within three months of the decision to proceed with surgery, or within six months at the outside. As can be seen in Exhibits 40 and 41, in 1993, over two-thirds of patients receiving primary THR and 60% of those with primary TKR had surgery within 6 months of consultation. In 2001, 59% of primary THR and 47% of primary TKR are performed within preferred waiting times. At the same time, one-fifth of the hip patients and 29% of knee patients wait over 12 months for surgery. Generally, median wait times decline with age. The median wait times are equivalent for men and women.

Exhibit 42: Wait times for primary total hip arthroplasty by year



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

Exhibit 43: Wait times for primary total knee arthroplasty by year



*Source: Expanded gender-specific analysis of data from *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹⁰⁶

These surgical procedures have been shown to be valuable in the management of end-stage arthritis. In addition, as mentioned previously, a number of studies have indicated they are cost effective (108-110). Research has also suggested that for many patients, TJR may also be cost-saving (110). As the number of people living with arthritis continues to grow, it is likely that the wait times will as well. As waiting times lengthen, improving access to surgical procedures is an

important component of any strategy for improving health and reducing disability for women with arthritis.

3.7 Joint replacement procedure by discharge destination

After total joint replacement, rehabilitation is essential to minimizing disability (129). Patients with primary total hip or knee replacements discharged to inpatient rehabilitation tend to have a shorter acute care length of stay (LOS) compared to patients discharged directly home (130). Patients requiring more home care services are more likely to be older women with higher levels of comorbidity (Exhibit 44). This group also requires longer inpatient stays in acute care and rehabilitation than men. Of the patients transferred to inpatient rehabilitation following surgery, 64.9% were women. In contrast, only 59.0% of patients discharged directly home were women.

Exhibit 44: Age and gender of patients by surgical procedure and discharge destination, Ontario, 2001/02

Discharge Destination	Age and Gender	Surgical Procedure			
		Total Knee Replacement Primary	Total Knee Replacement Revision	Total Hip Replacement Primary	Total Hip Replacement Revision
<i>Home from Acute Care</i>	Mean Age (years)	68.4	69.4	65.9	66.6
	% Female	59.0%	50.3%	54.3%	52.5%
<i>Inpatient Rehabilitation</i>	Mean Age (years)	69.3	70.7	68.6	70.6
	% Female	64.9%	63.5%	62.1%	63.4%

*Source: *Arthritis and Related Conditions in Ontario: ICES Research Atlas*¹³⁰

4.0 Commentary

This report has highlighted some important topics regarding women and arthritis. In sum, the prevalence of arthritis increases with age and twice as many women as men report arthritis. A higher proportion of women with arthritis than with other chronic conditions report pain, disability, poor self-rated health, low labour force participation and higher use of medications. Women also undergo fewer surgical procedures than men with arthritis. Although wait times have increased over the years, women experience similar wait times to men.

Compared to women with other chronic conditions and no conditions, women with arthritis have lower education and income levels, and are more likely to report being overweight and having disrupted sleep. Women with arthritis experience higher proportions of disability and thus require help with everyday, household tasks. Younger women in particular report more unmet health care needs, stress and depression.

4.1 Understanding Hormonal, Biological and Genetic factors

More women have arthritis than men. The biologic basis of this is not well understood. Possible explanations for the gender gap in the disease incidence include hormonal (131-143), biological and genetic factors (144-147). Women also exhibit more articular destruction than men (83;148;149). For example, RA results in more severe joint damage in women than men (149). The reasons for this observation may be due to a combination of genetic or hormonal differences, differences in bone structure or muscle composition, and/or functional differences pertaining to the use of joints in men and women (83). Acquiring better understanding of these factors may lead to earlier diagnosis and more individualized treatments in women.

4.2 A Holistic Targeted Approach

Although arthritis is ubiquitous, certain populations are more at risk for arthritis – women with less education, women with lower income and older women. There is a strong association between socioeconomic status of individuals and resulting health outcomes, including arthritis (150-152). Lower socioeconomic status is associated with poorer health and shorter life expectancy (31). Poverty and discrimination, such as ageism, in society mediates health in a number of ways. These include: exposure to and likelihood of developing health problems, disadvantage with respect to accessing health services, such as diagnosis and treatment, lowered effectiveness of treatments, and diminished ability to adhere to treatment regimens (153). Adverse health conditions interact with health threatening social conditions. In addition to these broader determinants, individual factors including lifestyle choices such as smoking and diet may affect the levels of pain and physical disability experienced (152;154).

As there is an association between low income and poor health in rural areas, rural-dwelling residents is another sub-group population to be considered. For instance, rural-dwelling women with arthritis are likely to have a lower quality of well-being than urban residents, including

worse mobility, less physical activity and diminished social activity. The limited infrastructure in rural areas is a barrier to accessing health services and contributes to social isolation (155).

Aboriginals represent another population at greater risk. Aboriginal women are more likely than aboriginal men and non-aboriginal women to have arthritis across all age groups. Rates of arthritis in aboriginal populations increases with age (4).

Young women are also a group of concern. Despite adequate pharmacological, surgical, complementary and self-management strategies to mitigate and even halt the negative effects of arthritis, women, especially young women, seem to be vastly affected by their arthritis. Major negative impacts of musculoskeletal diseases include: decreased mobility, disability, living with uncertainty, pain, fatigue, difficulties with self-care, decreased self-esteem and independence, lower energy, decreased family involvement and socioeconomic burdens (4;6;29;156-162). As such, young women with arthritis have unique experiences in relation to family life (household tasks, parenting), the labour market and mental health.

Targeted strategies for specific groups of women with arthritis may be indicated at both individual and population levels with a recognition of the influence of life contexts. Targeting such populations includes addressing access issues to care once afflicted with the disease and also working with women who are thus far disease-free but at risk for developing arthritis by virtue of their membership in such groups.

4.3 Community Programs and Self-Management

A response to arthritis in women requires a holistic multifaceted and evidence-based approach. Various interconnected elements to consider in such an approach include community exercise programs, self-management education, medication use, surgery, and rehabilitation, including physiotherapy. Community exercise programs and self-management education have been shown to be effective in reducing pain, improving function and delaying disability but remain underutilized (149;163;164). Women with arthritis are more likely than men to participate in such programs (165). Similarly, with respect to physiotherapy and rehabilitation, despite the fact that arthritis is a public health issue that disproportionately affects women compared to men, only a small percent of women use such services (166).

4.4 Complementary Health Care

A further strategy for improving health is alternative or complementary health care approaches. Increasingly, people with arthritis, especially women, are turning to alternative medicine for symptom management (167-169). Such treatments include acupuncture, herbal medicine, massage therapy and spinal manipulation (168). Evidence is lacking on the effectiveness of these strategies in managing musculoskeletal diseases and the factors associated with choosing such treatments (167;169). As traditional therapies continue to be challenging to access, and as we continue to expand our knowledge base on these approaches, women will increasingly turn to complementary or alternative health strategies.

4.5 Underutilization of Arthritis Health Services

Despite a universal health care system, Canadian women continue to report barriers. This is especially pertinent to women living with arthritis. One barrier, underutilization, currently exists in both medicinal and self-management treatments (69). Arthritis care generally falls below the recommended guidelines (149;163;164). Barriers limiting access to specialty services, such as rheumatology, include lack of locally available services and low rates of referral by primary care physicians (29).

It is unclear to what extent underutilization is a result of an absence of services, inadequate physician recommendations or follow-up, and patients' attitudes and beliefs towards treatments. Success of treatment strategies is dependent on the availability of timely and efficacious services and education of health care providers to treat patients. Enhancing the efficiency of the health system should be a priority. For example, although the rate of hip and knee replacement is increasing, the long wait time for these procedures indicates that the capacity is insufficient to meet either current or future needs. There is also a need to provide continuing educational opportunities for professionals, emphasizing women-specific issues, and attending to the issue of low student enrollment in Canadian rheumatology programs.

Access to effective arthritis medications is an additional issue for women. Despite an increase in prescriptions for DMARDS for women with RA over the past years, these rates are not consistent with the prevalence of RA. Access to the new biologics is important, as well as information to make informed decisions.

4.6 Understanding the Economic Burden of Arthritis

Arthritis and related conditions are costly. Arthritis is a member of the larger family of musculoskeletal conditions. For women in Canada, specifically, musculoskeletal diseases represent the second most costly disease group (\$8.2 billion in 1998) compared to the third most costly disease group for men (\$8.1 billion). All direct cost components are slightly higher for women than for men. Among indirect cost components, however, men's costs for morbidity due to long- and short-term disability are higher than women's (29). This may be because indirect costs are calculated based on average wages. Women tend to have lower average wages than men and are more likely to work part-time. Therefore, indirect costs are likely to be underestimated for women.

The direct and indirect costs of arthritis in Canada amount to C\$909 million and C\$3.5 billion per year respectively (29). However, estimating a true monetary value of costs is complex (170). Currently, there is a lack of standardization and agreement in measuring direct and indirect costs. The inclusion criteria for assessing direct and indirect costs of arthritis lack guidelines, particularly in terms of hidden costs associated with treating side effects from medications. Also, although potential costs related to arthritis may include difficulty performing household tasks, poor work productivity, reduced quality of life, low self esteem and depressive symptoms, these are not generally translated into monetary value for a true picture of disease burden (76).

Traditional methods of assessing the economic burden of arthritis do not always capture the types of work that women do or the changing gender roles with respect to labour force participation.

Relatively high health care utilization by women with arthritis is important in the light of the demographic changes in the population. It is projected that due to an aging population, by the year 2026, nearly 1.7 million women in Ontario 15 years of age or older will suffer from arthritis (4;27). This is likely to have implications on health care demand and costs to the system. Meeting these increasing needs will be an important consideration for the policy agenda. As the population continues to age, and in light of the overrepresentation of women living with arthritis compared to men, it is important to accurately measure the economic burden of arthritis.

5.0 Conclusion

Prevention and management of arthritis in women is a priority and needs to be integrated within the framework of chronic disease management in Ontario. On a positive note, although there continues to be a care gap for women with arthritis, women's health issues are receiving more attention than in the past. Researchers, policy-makers, community groups and communities in general must continue to work together to address the burden of arthritis in a comprehensive manner.

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Appendix 1: Data Sources

Canadian Community Health Survey (CCHS) CYCLE 1.1, 2000-2001 – Statistics Canada

The CCHS is a cross-sectional general population health survey that collects information related to health status, health care utilization and health determinants for the Canadian population. This survey was conducted by Statistics Canada between September 2000 and November 2001 (30). The CCHS (Cycle 1.1) has a large sample and was designed to provide reliable estimates at the health region level. The target population of the CCHS was persons aged 12 years or older who were living in private dwellings in the ten provinces and the three territories. Persons living on Indian Reserves or Crown lands, clientele of institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded. The overall response rate was 84.7%, and 130,827 individuals participated. Data for people aged 15 years and over have been included. All analyses performed on the CCHS data were weighted in order to ensure that derived estimates were meaningful or representative of the entire targeted Canadian population 15 years of age and older.

1996/97 Ontario Health Survey, part of the 1996/97 National Population Health Survey (NPHS) – Statistics Canada

Statistics Canada conducts the NPHS, a cross-sectional and longitudinal household-based survey, every two years. Designed to collect information about the health status of Canadians, the NPHS expands our knowledge of the determinants of health, including health behaviour, use of health services and socio-demographic information. The 1996/97 Ontario Health Survey is part of the 1996/97 National Population Health Survey and has an extra large sample for Ontario (26). The methods for the 1996/97 NPHS are very similar to those of the CCHS. To compile information about health care use by people with arthritis, data were linked from the 1996/97 Ontario Health Survey to health care administrative data. These data included; prescription drug claims (for responders age 65 years and older) from the Ontario Drug Benefit program (ODB); claims data for professional and laboratory services from the Ontario Health Insurance Plan (OHIP); and the Discharge Abstract Data for hospital inpatients and same-day surgery patients obtained from the Canadian Institute for Health Information (CIHI).

Ontario Drug Benefit (ODB) program administrative database, 1992-2001

The ODB provides access to all drugs on the program's formulary to Ontario residents who are over the age of 65. The ODB contains information on the date a prescription is filled, the quantity of drug dispensed, the total cost of the prescription, the professional fees included in the total cost; and the unique identifiers for the beneficiary, prescriber and dispenser. Drug costs for seniors who reside in chronic care institutions, rehabilitation facilities, or acute-care hospitals are paid out of the budget for these institutions. As such, these data have not been included in this analysis.

Ontario Health Insurance Plan (OHIP)

OHIP is the provincial government-funded insurance plan that covers all Ontario residents for a variety of healthcare services. The OHIP database contains approximately 94% of all physician and surgeon visits in Ontario. A small minority of physicians and surgeons operate under alternate payment arrangements. Age and sex for each claimant was derived by linking with Ontario's Registered Persons Database (RPDB). Linkage with the Physician File was used to obtain physician characteristics. Physician specialty was determined using information from the Corporate Provider Database (CPDB) of the Ministry of Health and Long Term Care and verified against information in the Ontario Physician Human Resource Data Centre. These databases were linked to the OHIP physician claims file.

Data for the arthroscopic procedures section were obtained from the Institute for Clinical Evaluative Sciences (ICES), which collects data from OHIP physician claims database, for the fiscal years of 1992/1993 to 2001/2002. OHIP includes data on all necessary surgical procedures. The following are included in, or can be linked to, each claim: surgical procedure code, relevant diagnosis, date of procedure, age, sex and postal code of the patient.

The Discharge Abstract Database (DAD) of the Canadian Institute for Health Information (CIHI)

The DAD contains data on hospital discharges (inpatient acute, chronic and rehabilitation) and day surgeries for a given fiscal year. Data for the total joint replacement section of this report (surgery and rehabilitation) were obtained from the Discharge Abstract Database (DAD), provided by the Canadian Institute of Health Information (CIHI) for the fiscal years 1981/1982 through 1999/2000. Data were also obtained from the OHIP billing claims for the fiscal years 1993/1994 through 1999/2000.

Ontario Home Care Administrative System (OHCAS) of the Canadian Institute for Health Information (CIHI)

This database contains demographic, diagnostic and treatment information about patients in the Ontario Home Care Program. Linkages to the OHCAS using patients' unique identifying numbers were made to determine who received home care services.

Appendix 2: Major Types of Arthritis

	OSTEOARTHRITIS (OA)	RHEUMATOID ARTHRITIS (RA)	SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)	ANKYLOSING SPONDYLITIS (AS)	GOUT
Background	OA results from the deterioration of the cartilage in one or more joints. Leads to joint damage, pain, and stiffness. Typically affects the hands, feet, knees, spine and hips.	RA is caused by the body's immune system attacking the body's joints (primarily hands and feet). This leads to pain, inflammation and joint damage. RA may also have involvement of other organ systems such as eyes, heart, and lungs.	SLE is a connective tissue disorder causing skin rashes and joint and muscle swelling and pain. There may also be organ involvement. This disease, as with RA, fluctuates over time, with flare-ups and periods of remission.	AS is inflammatory arthritis of the spine. Causes pain and stiffness in the back and bent posture. In most cases the disease is characterized by acute painful episodes and remissions. Disease severity varies widely among individuals.	Gout is a type of arthritis caused by too much uric acid in the body which is normally flushed out by the kidneys. Most often affects the big toe but can also affect the ankle, knee, foot, hand, wrist or elbow.
Prevalence	The most common type of arthritis, affecting an estimated <i>10% of Canadian adults</i> .	RA affects approximately <i>1% of Canadian adults</i> , and at least twice as many women as men.	SLE affects <i>0.05% of Canadian adults</i> . Women develop lupus up to 10 times more often than men.	AS affects as many as <i>1% of Canadian adults</i> . Men develop AS 3 times more often than women.	Gout affects up to <i>3% of Canadian adults</i> . Men are 4 times more likely than women to develop gout.
Possible Risk Factors	Old age, heredity, obesity, previous joint injury.	Sex hormones, heredity, race (high disease prevalence is seen among Aboriginal Peoples)	Heredity, hormones and a variety of environmental factors	Heredity and, possibly, gastro-intestinal or genitourinary infections	Heredity, certain medications (e.g. diuretics), alcohol and certain foods
Disease Management	<i>There is no cure for OA.</i> Treatments exist to decrease pain and improve joint mobility include medication (e.g. analgesics, anti-inflammatory drugs), exercise, physiotherapy and weight loss. In severe cases, the entire joint – particularly the hip or knee – may be replaced through surgery.	<i>There is no cure for RA.</i> Early, aggressive treatment by a rheumatologist can prevent joint damage. Drugs used for treatment include non-steroidal anti-inflammatory drugs, corticosteroids, disease-modifying anti-rheumatic drugs, and biologic response modifiers.	<i>There is no cure for SLE.</i> The aim of treatment is to control symptoms, reduce the number of flare-ups and prevent damage. Commonly used medications include analgesics, anti-inflammatory drugs, cortisone and disease-modifying anti-rheumatic drugs. Diet and exercise are also important in the management of lupus.	<i>There is no cure for AS.</i> Medications similar to those used for other types of arthritis are often prescribed to treat AS. Exercise is the cornerstone of AS management. If damage is severe, surgery may be considered.	<i>There is no cure for gout.</i> Non-steroidal anti-inflammatory drugs are often used to help reduce the pain and swelling of joints and decrease stiffness. Cortisone may also be used for this purpose. Drugs such as Allopurinol can be used on a long-term basis to reduce uric acid levels and prevent future attacks. Other methods for controlling gout include dietary changes, weight loss and exercise.
Data source: www.arthritis.ca [Arthritis in Canada (4)]					

