

Hospitalization for Elective Joint Replacements in Canada

Shaheena Mukhi and Mihaela Marin

One in 10 Canadians is affected by osteoarthritis (OA), a degenerative disorder affecting the joints, ligaments, tendons, bones and other components of the musculoskeletal system (Arthritis Society 2008; Badley and Glazier 2004). Hip and knee replacement procedures are undertaken as a treatment when patients are experiencing severe pain and limited mobility, usually associated with arthritis or another disorder.

Over a period of a decade, beginning 1994–1995, Canadians increasingly accessed healthcare services for joint replacement. During this time, an increase of 87% was observed in hospitalizations for hip and knee replacements (CIHI 2006). The age standardized rate almost doubled for knee replacement surgery over the 10-year period from 50.1 in 1994–1995 to 90.8 in 2004–2005 (CIHI 2006). For hip replacement surgery, the age standardized rate increased by one fifth (CIHI 2006). Some of this growth may be attributed to an increase in life expectancy as well as an increasing prevalence of arthritis, which is anticipated as the population ages (Perruccio 2004).

Joint replacement procedures are one of the five priority areas identified by the federal government for increased efforts towards access to care for Canadians. The increasing number of procedures being performed motivated the implementation of a study to gain better understanding about the profile of joint replacement patients. As part of our objective we sought to characterize elective joint replacement surgical rates in Canada and their demographic makeup

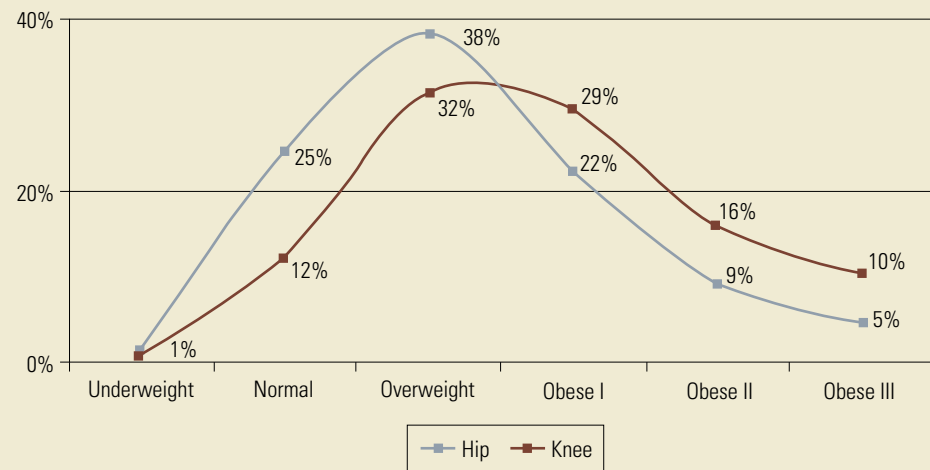
Joint replacement procedures are one of the five priority areas identified by the federal government for increased efforts towards access to care for Canadians.

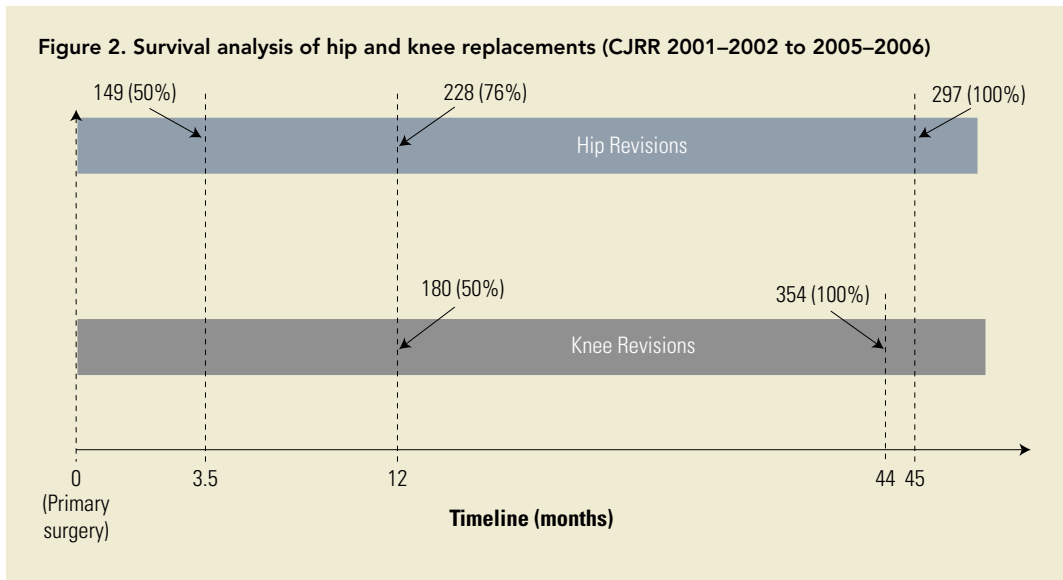
and their post-surgical outcomes (complications leading to joint replacement revisions).

Data Sources and Methods

Data for this analysis were obtained from the Canadian Institute for Health Information’s (CIHI) Canadian Joint Replacement Registry (CJRR) and Hospital Morbidity Database (HMDB). (CJRR data from 2001–2002 through 2005–2006 and the HMDB data from 1995–1996 through 2005–2006 were studied. For this study, all hip and knee procedures performed

Figure 1. Body Mass Index distribution of hip and knee replacement recipients (CJRR, 2005–2006)





counterparts who were undergoing knee replacement surgery.

Overall knee replacement recipients were significantly heavier than hip replacement recipients.

Outcomes: Joint Replacement Surgery

Hip and knee replacements are an effective means to improving quality of life by reducing chronic pain and

in Canada were included with the exception of a relatively small number of unreported cases performed in private clinics.)

Patients who underwent a revision subsequent to their primary joint replacement were studied over the course of five years, beginning 2001–2002, to determine rates for early revisions and associated complications.

Admission: Elective Joint Replacement Surgery

The number of joint replacement hospitalizations in Canada has significantly increased (101%) since 1995–1996; while the hospital length of stay has decreased by 33% and 45% (for hip and knee, respectively).

In 2005–2006, the majority of Canadian recipients of joint replacement surgery were 65 years of age and older (63% for hip and 66% for knee). During this period, regardless of age there were 45% more knee surgeries done in comparison to hip surgeries in Canada.

Studies have shown that obesity is one of the influencing factors associated with OA (de Guia 2006; SKAR 2004). In 2005–2006, degenerative OA was the most common responsible diagnosis indicated for elective joint replacement surgery. Patients with body mass index (BMI) classification of obese class I (BMI ≥ 30.0 and ≥ 34.9) represented the highest proportion of recipients for hip (22%) and knee (29%) replacements in 2005–2006.

In terms of gender distribution among the recipients of joint replacement surgery, significantly more males than females were classified as either overweight (BMI ≥ 25 and < 30) or obese class I (BMI ≥ 30.0 and ≥ 34.9). However, in the obese class II (BMI ≥ 35 and < 40) and obese class III (BMI ≥ 40) categories, female recipients had a higher representation than their male

increasing the ability to function independently (Badley and Glazier 2004; Miller 2002). While most joint replacements are performed without complication, like with any surgical intervention there are some potential risks. In 2005–2006, of the joint replacements reported in the CJRR, 12% involved revisions of a hip replacement and 5% were knee replacement revisions.

Within the first five years from the time of the original joint replacement surgery, beginning 2001–2002, of the patients who needed their first revision due to complication from primary joint replacement procedure, 50% required a hip revision in the first four months and 50% required a knee revision in the first 12 months.

From the cases reported in the CJRR, revisions to primary hip replacements were required earlier than revisions to primary knee replacements. However, over the five-year period, the total number of knee replacement revisions (354) was greater than the total number of hip replacement revisions (297).

Aseptic loosening (one of the potential complications of prosthetic joint replacement devices) was the leading reason for patients being readmitted for joint replacement revision (48% for hip revision and 33% for knee revision). Infection associated with the prosthesis accounted for 10% of hip revisions and 15% of knee revisions. When patients require joint revisions, the estimated cost (accrued) to the healthcare system can range from \$11,000 to \$18,000 per procedure (representing additional 5.7 hospital days per patient) (The Arthritis Society 2008).

Summary

Responding to the healthcare needs of Canadians is a priority for clinicians and managers of healthcare services. In Canada, hospi-

talization for joint replacements has doubled since 1995–1996. In 2005–2006, there were 45% more elective knee surgeries performed in comparison to elective hip surgeries in Canada.

While joint replacements are generally seen to improve the quality of life of patients, the procedure also has some associated risks, which can influence the need for hospital readmission and/or the need for more health services–related care for these patients. In CJRR, complications resulting from either the prosthetic devices or the procedure itself were the main reasons indicated for revisions.

When considering opportunities for planning for the provision of care for joint replacement patients, clinicians, healthcare managers and policy makers can benefit from examining evidence about the volume throughput, potential risk of complications resulting from procedures and possible influencing factors from both a patient and health system perspective. **HQ**

References

Arthritis Society. 2008. *Home Page*. Toronto: Author. Retrieved January 25, 2008. <http://www.arthritis.ca.Toronto>.
Badley, E.M. and R.H. Glazier, eds. 2004. *Patterns of Health Care in Ontario: Arthritis and Related Conditions: An ICES Practice Atlas* (2nd ed.). Toronto: Institute for Clinical and Evaluative Science.
Canadian Institute for Health Information (CIHI). 2006. *2006 CJRR Report: Total Hip and Total Knee Replacements in Canada*. Ottawa: Author.

Retrieved March 18, 2008. <http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=PG_387_E&cw_topic=387&cw_rel=AR_30_E>.

de Guia, N., N. Zhu, M. Keresteci and J. Ellen Shi. 2006. “Obesity and Joint Replacement Surgery in Canada: Findings from the Canadian Joint Replacement Registry.” *Healthcare Policy* 1: 3.

Millar, J.W. 2002. “Hip and Knee Replacement.” *Health Reports* 14: 37–50.

Perruccio, A.V., E.M. Badley and J. Guan. 2004. “Burden of Disease.” In E.M. Badley, R.H. Glazier, eds. *Arthritis and Related Conditions in Ontario. ICES Research Atlas* (2nd ed.). Toronto: Institute for Clinical Evaluative Sciences.

Swedish Knee Arthroplasty Register (SKAR). 2004. *2004 Annual Report, Part I*. Retrieved March 19, 2008. <www.ort.lu.se/knee/pdf/skar2004engl.pdf>.

About the Authors

Shaheena Mukhi, MHA, BScN, is a program lead of Canadian Joint Replacement Registry at CIHI in Toronto. In this role, she is involved with facilitating the development and production of analytical reports, and stakeholder engagement. She has previously worked in various capacities along the continuum of the health system.

Mihaela Marin, MD, MSc, is a senior analyst for Canadian Joint Replacement Registry at CIHI in Toronto. In this role, she participates in designing and performing analyses of the CJRR data for studies and reports aimed at improving the quality of care and clinical outcomes of joint replacement recipients.

Award of Excellence in Nursing Leadership

2008 LEADERSHIP AWARD NOMINATION

The Ontario Hospital Association is pleased to announce the 6th annual *Award of Excellence in Nursing Leadership*.

The OHA *Award of Excellence in Nursing Leadership* is designed to acknowledge outstanding leadership of an individual nurse in a senior leadership position (VP, Director, etc), who is employed in a member organization (hospitals, associates and affiliates) of the OHA.

Nomination Deadline: June 30, 2008

Nomination Form available at www.longwoods.com/awards

