faster in working men 1.4(0.2) m/s and women 1.3(0.2) m/s compared to NWH men 1.17(0.2)m/s and women 1.08(0.2)m/s, respectively. Univariate analysis found that demographic (race, age), socioeconomic (income, level of education, marital status, obesity, number of people living in home), comorbidities and WS were significantly associated with NWH. Compared to their own gender walking at normal speeds(WS≥1.30 m/s), women and men considered to be slow walkers (WS<1.10 m/s) were 12 times and 6 times more likely to be NWH (Women: Odds Ratio [OR] 12.4, 95% Confidence Interval [CI] 6.0 -25.6; p<0.001; Men: OR 6.43, CI 2.21-18.69; p<0.001) after controlling for age, gender, race, education, obesity, income, marital status and comorbidities.

**Conclusions:** Walking speed was an independent predictor of NWH status among community dwelling women and men. It may be a useful and easily implemented way to identify health related job loss. Further evaluation of the longitudinal predictive capability of WS is warranted.

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**DIFFERENCES IN TOTAL KNEE ARTHROPLASTY GOALS BY AGE GROUP IN OSTEOARTHRITIS PATIENTS REFERRED TO ORTHOPAEDIC SURGERY**

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**Purpose:** In North America, the greatest increase in total knee arthroplasty (TKA) rates is occurring in the youngest age groups (20-60 years). Potential explanations include an increased prevalence of end-stage OA in this age group (greater need) and secular trends in peoples' motivations for surgery (preferences for surgery). Compared with older individuals, it has been hypothesized that aging baby boomers have a greater desire to maintain their ability to participate in vigorous activities like sport and are less willing to wait for debilitating symptoms before seeking TKA.

**Methods:** In consecutive OA patients referred to orthopaedic surgery for consideration regarding TKA, a standardized questionnaire assessed socio-demographics, prior joint replacement, knee OA severity (WOMAC pain/20, KOOS-PF/100; higher scores worse), acceptability of current knee state (PASS - acceptable/unacceptable) and top 3 goals for TKA (open-ended text). Each TKA goal was coded as relating to: a) symptom relief, e.g. pain or sleep; b) activity limitations, e.g. walking or stair climbing; or c) participation restrictions, e.g. work, travel, overall quality of life. T tests and chi-square statistics were used to compare OA severity and TKA goals of younger versus older patients (≤60 versus >60 years).

**Results:** Of 83 knee OA patients referred for TKA, 26 (31.3%) were ≤60 years; younger participants were similar to older participants in sex, level of education, living circumstances, and history of previous joint replacement, but were more likely to be working (65.4% vs 16.4%, p<0.0001). Younger patients were significantly heavier (mean BMI 39.4 vs 32.8, p=0.0004; obese 88.5% vs 59.7%, p=0.009), had more OA pain and disability (WOMAC pain 12.9 versus 10.9, p=0.03 and KOOS-PS 63.0 versus 48.6, p=0.0002, respectively), rated their knee-related quality of life as lower (mean KOOS QOL 88.9 vs 72.0, p<0.0001) and were more likely to indicate their symptom state as unacceptable (80.0% vs 56.1%, p=0.04). 79 participants (95.2%) provided one or more TKA goals. Although most indicated that 'reduced pain' was their primary TKA goal, younger individuals were more likely to indicate improved ability to participate in social and recreational activities, e.g., running, golf and

travel, as their primary TKA goal (p=0.004), and as one of their top 3 goals(p=0.02)(Table).

**Conclusions:** Compared with older individuals seeking TKA, those that were younger were far more obese and had greater self-reported symptoms and disability, suggesting more severe knee OA. Younger individuals were also more likely to be seeking TKA to maintain or improve their ability to participate in leisure activities like sport.

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**PROGNOSTIC FACTORS FOR RADIOGRAPHIC PROGRESSION OF OSTEOARTHRITIS OF THE KNEE: AN UPDATED SYSTEMATIC REVIEW OF OBSERVATIONAL STUDIES**

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**Purpose:** To update a systematic review on prognostic factors for the radiographic progression of knee osteoarthritis (OA).

**Methods:** We searched for observational studies up to February 2013 in Medline and Embase following a specified search strategy. Studies fulfilling the initial inclusion criteria were assessed for methodological quality. Data were extracted and results were pooled if homogeneity was assumed or summarized according to a best evidence synthesis.

**Results:** 1,912 additional articles were identified; 43 met our inclusion criteria. The previous review contained 36 articles, totalling 79 articles. The pooled OR of two determinants showed association with knee OA progression: baseline knee pain (OR 2.38) and Heberden nodes (OR 2.66). Our best evidence synthesis showed strong evidence that varus alignment and high levels of serum hyaluronic acid and TNFα are associated with knee OA progression. There is strong evidence that gender, former knee injury, quadriceps strength, smoking, running and regular performance of sports are not associated with knee OA progression. Evidence for the majority of determined associations however was limited (including MRI detected cartilage loss); conflicting (including age and body mass index); or inconclusive.

**Conclusions:** Baseline knee pain, presence of Heberden nodes, varus alignment and high levels of serum markers hyaluronic acid and TNFα predict knee OA progression. Gender, knee injury and quadriceps strength, amongst others, do not predict knee OA progression. Large variation remains in definitions of knee OA and knee OA progression. Future reviewers would be enabled to summarize determined risk factors through meta-analyses if homogeneity would exist amongst these definitions.

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**PATIENT-PREFERENCE DISABILITY ASSESSMENT FOR DISABLING KNEE OSTEOARTHRITIS: VALIDITY AND RESPONSIVENESS OF THE MCMASTER-TORONTO ARTHRITIS PATIENT PREFERENCE DISABILITY QUESTIONNAIRE**

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**Purpose:** To evaluate validity and responsiveness of the McMaster Toronto Arthritis Patient Preference Disability Questionnaire (MACTAR) to assess priorities in disability and restriction in participation in patients with disabling knee osteoarthritis (OA).

**Methods:** We evaluated 127 in- and out-patients with knee OA in two tertiary care teaching hospitals between August 2010 and July 2012 by using the MACTAR, the Western Ontario and McMaster Universities Osteoarthritis Index, Lequesne scale, Fear Avoidance Beliefs Questionnaire, a life satisfaction score, pain, global assessment of disease activity and functional impairment. Validity was assessed by Pearson correlation, and responsiveness, by the standardized response mean (SRM) and the effect size (ES).

**Results:** The MACTAR score was best correlated with global assessment of functional impairment (r=0.5). Convergent and divergent validities were as expected. In all, 108 patients completed a 6-month follow-up evaluation. The SMR (0.64) and ES (0.92) values for MACTAR without shifts were the highest among the outcome measures tested; for patients considering their condition improved, the values were 0.85 and 1.17, respectively. 27 patients shifted their priorities at 6 months, for a decrease in SMR and ES. Patients ranked 35 different activities; the 3 domains of the International Classification of Functioning, Disability

| Primary TKA Goal by Age Group | | | |
|---|---|---|---|
| Primary TKA Goal | ≤ 60 yrs (n=26) | > 60 yrs (n=52) | P value 0.004 |
| ↓ Pain / other symptoms | 53.8% | 51.9% | |
| ↓ Activity limitations | 23.1% | 46.2% | |
| ↓ Participation restrictions | 23.1% | 1.9% | |
| ≥ 1 goal is ↓ participation restrictions | 88.5% | 61.4% | 0.01 |

and Health most often identified were: mobility (cited 233 times, 52.3%); community, social and civic life (cited 122 times, 27.4%) and domestic life (cited 64 times, 14.4%).

**Conclusions:** For assessing priorities in disability and restriction in participation among patients with knee OA, the MACTAR has acceptable validity and responsiveness.

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## ASSOCIATION BETWEEN OBESITY AND INPATIENT ADVERSE EVENTS FOLLOWING PRIMARY HIP OR KNEE ARTHROPLASTY

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**Purpose:** Obesity is a significant risk factor in the development and progression of osteoarthritis in weight-bearing joints. Obese people (body mass index (BMI) of 30 or greater) make up the majority of hip and knee arthroplasty patients. Nevertheless, there is inconclusive evidence on the association between obesity and outcomes following elective hip or knee arthroplasty. We examined patient data in Alberta to quantify the association between obesity and inpatient adverse events.

**Methods:** We reviewed 9,265 records of patients who had elective primary hip or knee arthroplasty by 68 orthopaedic surgeons during the period from September 2010 to April 2014 in Alberta, Canada. Patient characteristics such as age, gender, procedure type, BMI, co-morbidities and in-hospital adverse events were collected from electronic medical records, operating room information systems, the discharge abstract database, provincial clinical risk grouper data, and provincial surgical site infection surveillance data. We evaluated 12 in-hospital adverse events, which were classified as either Medical Adverse Events (myocardial infarction, pulmonary embolism (PE), deep vein thrombosis, cerebro-vascular accident, illeus, gastro-intestinal bleeding, pneumonia, and complex infection), or Mechanical Adverse Events (fracture, dislocation, fracture after insertion, and other mechanical complications). Deep incisional and organ/space infections were grouped with complex infection.

We used logistic regression analyses to compare adverse events for obese (BMI $\geq$ 30) and non-obese patients, and risk-adjusted for age, gender, procedure type, and co-morbidities. The significance level was set at 0.05.

**Results:** Of the 9,265 patients, 59.2% had total knee arthroplasty, 35.3% had total hip arthroplasty, 5.5% had hip resurfacing or partial knee arthroplasty, and 56.2% were obese (BMI $\geq$ 30). Mean age was 66.3 years, 57.7% were female, and mean baseline WOMAC score was 42.3. After controlling for age, gender, procedure type, and co-morbidities, the odds of Medical Adverse Events were 1.4 times higher for obese patients compared to non-obese patients (adjusted odds ratio [OR]=1.4, 95% confidence interval [CI] [1.1-1.9], p=0.016). The odds of complex infection were 2.7 times higher for obese patients compared to non-obese patients (adjusted OR=2.7, 95% CI [1.4-5.2], p=0.003). Among patients with no history of thromboembolic disease, the odds of PE were 1.7 times higher in the obese cohort (adjusted OR=1.7, 95% CI [1.2-2.4], p=0.007). There were no statistically significant differences between the cohorts in Mechanical Adverse Events (adjusted OR=0.9, 95% CI [0.5-1.7], p=0.742) during the hospital stay.

**Conclusions:** Obese patients are at significantly elevated risk of inpatient Medical Adverse Events, especially PE and complex infection, but we were unable to detect increased risk of Mechanical Adverse Events. This finding, based on preliminary data in Alberta, suggests continued research is warranted to identify modifiable risk factors within the growing population of obese lower limb arthroplasty patients. The results will provide clinicians with evidence to support the development and implementation of risk-reduction protocols tailored to obese patients. These findings may also reinforce the importance of pre-surgical weight management for patients considering elective hip or knee arthroplasty.

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## OSTEOARTHRITIS RELATED ABSENTEEISM AND ACTIVITY LIMITATIONS

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**Purpose:** Osteoarthritis is the most common form of arthritis, affecting millions of individuals in the United States. Due to aging and increasing life expectancy, osteoarthritis is expected to become the world's fourth-leading cause of disability by 2020. This study assessed the incremental workplace absenteeism and incremental activity limitation associated with osteoarthritis over one year.

**Methods:** Data source for this study was the 2011 household component of Medical Expenditure Panel Survey (MEPS), a United States nationally representative survey maintained by the Agency for Healthcare Research and Quality (AHRQ). Inclusion criteria for analyses were all working, employed people eighteen years of age or older. Using the system of International Classification of Diseases, 9th Revision, Clinical Modification(ICD-9-CM),employees with osteoarthritis were identified. Individuals suffering from osteoarthritis were linked in a 1:1 ratio to individuals without osteoarthritis on age, sex, hypertension, hyperlipidemia, diabetes, obesity, anxiety, and asthma. Exclusion criteria for analysis assessing absenteeism were individuals missing any information on number of days missed at work. Exclusion criteria for analysis assessing activity limitations were individuals missing any information on limitations to activity. Individuals, who could not find work, took maternity or paternity work, took some time off from working for reasons not related to health problems, waited to start a new job, individuals going to school, or retired individuals were also excluded for both analyses. In order to assess association of osteoarthritis on number of working days lost, a zero-inflated negative binomial model was employed. Annual days missed at work, a count variable, was employed as response variable. The predictor variable was a binary variable indicating the presence or absence of osteoarthritis. Covariates for the model included age, sex, education, race, marital status, occupation, region, health insurance type, and comorbid conditions including hypertension and hyperlipidemia. Charlson comorbidity index was calculated and was also included as a covariate in the analysis. To assess associations between osteoarthritis and activity limitations, a binary logistic model was employed. A binary variable indicating whether or not an individual's activities' were limited was employed as response variable. Predictor variable was a binary variable indicating the presence or absence of osteoarthritis. Covariates for the model included age, sex, education, race, region, marital status,-occupation, health insurance type, charlson comorbidity index and comorbid conditions for osteoarthritis including hypertension, and hyperlipidemia.

Data management and analysis was carried out using SAS for UNIX version 9.3 and STATA for UNIX version 12.1. An a priori alpha level of 0.05 was used for the analyses.

**Results:** Out of the total sample of 26,992 individuals, 351 individuals with osteoarthritis reported zero or more days of absence from their workplaces, and were linked to a comparison group. Individuals younger than sixty years of age comprised 51% of the sample, 67% of the sample were females, 75% of the sample were Caucasians, and 42% had high school diploma. Individuals with osteoarthritis were more likely to miss work days annually(1.40 days, p=0.042) as compared to individuals without osteoarthritis. Using MEPS sampling weights to produce population estimates, mean annual work days missed was 9.72 days for individuals with osteoarthritis, while mean annual work days missed for individuals without osteoarthritis was 7.44 days, with an unadjusted mean difference of 2.28 days.

Out of a total sample of 26,992 individuals, 418 individuals with osteoarthritis reported either limitation to activity or not, and were linked to a comparison group. Individuals younger than sixty years of age were 47% of the sample, 66% were females, 77% were Caucasians, and 41% had high school diploma. For individuals with osteoarthritis, the odds of having limitations in their activities increased by a factor of 3.68 (p=0.000) as compared to individuals without osteoarthritis, holding all other variables constant.

**Conclusions:** Individuals suffering from osteoarthritis have significantly more limitations in their activities and missed more workdays than individuals who do not have osteoarthritis.

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## RELIABILITY OF THE OSTEOARTHRITIS RESEARCH SOCIETY INTERNATIONAL RECOMMENDED PERFORMANCE-BASED TESTS OF PHYSICAL FUNCTION IN PEOPLE WITH HIP AND KNEE OSTEOARTHRITIS

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