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### HAND OSTEOARTHRITIS SEVERITY AND SEVERE HIP OA COMBINE WITH BMI AS MAJOR RISK FACTORS FOR TOTAL KNEE JOINT REPLACEMENT. THE AGES-REYKJAVIK STUDY

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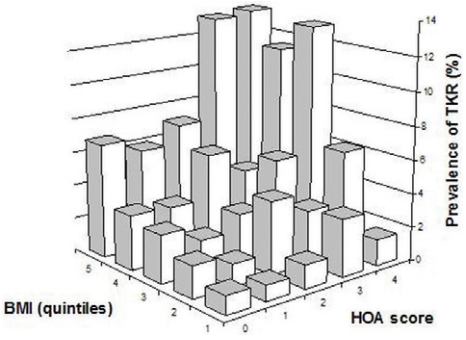
**Purpose:** To analyse risk factors associated with having total knee replacement due to osteoarthritis (OA) in a large population based study of elderly Icelanders.
**Methods:** Knee and hip joint replacements (TKR,THR) were recorded on CT scout scans and were presumed to be due to OA in the absence of history or evidence of fractures or inflammatory arthritis. Hand OA severity (HOA score) was scored from digital photographs on a 0-4 scale. All AGES-Reykjavik Study participants with this osteoarthritis information were included in the current analysis (n=5170, 2195 males and 2975 females, mean age 76±6 years). The prevalence of TKR was 223 (4.3%) and that of THR 316 (6.1%).
**Results:** We performed a backwards binary logistic regression analysis of possible risk factors for TKR including age, gender, abdominal circumference, BMI, hs-CRP, cholesterol, statin use, bone mineral density of the spine, education and smoking history as well as HOA severity and the presence of THR. Age and gender stayed in the model. Only three factors showed significant associations; BMI ($p=3.5\times10^{-17}$), HOA severity ($p=2.9\times10^{-8}$) and THR (p=0.0002). The highest quintile of BMI was associated with a fivefold risk compared with the lowest (8% vs 1.6%), and severe HOA had a 2.4 fold risk compared with those with no HOA (8% vs 3.3%). There was no significant interaction between BMI and HOA. Crosstabulations of BMI (quintiles) and HOA severity (0-4) in relationship with the prevalence of TKR are shown in the figure below.




Thus, slim individuals (BMI≤23.5) with no evidence of HOA had a prevalence of TKR of 1.1%, while obese individuals (BMI>30.4) with severe HOA had a prevalence of 13.4% indicating a twelwefold risk of having TKR in the latter group. To investigate the influence of THR (n=321) on TKR prevalence, it was included in a model as one of three major risk factors for TKR along with highest quintile BMI (n=1033) and severe hand OA (HOAscore 4, n=672). Subjects with none of the three risk factors (n=3381) had a TKR prevalence of 2.5%, with one risk factor (n=1559) the prevalence was 6.9% and two or three risk factors (n=226) meant a prevalence of 13.3%.
**Conclusions:** This study shows that osteoarthritis at the hand and hip combine strongly with BMI as risk factors for total knee replacements due to osteoarthritis. Together, BMI and hand OA severity may contribute to over 70% of the total TKR prevalence. While BMI has long been recognized as the major risk factor for TKR, the influence of osteoarthritis at other sites may have been underestimated, particularly that of hand osteoarthritis severity which seems to have a linear relationship with the risk for TKR.

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### PREOPERATIVE PAIN CATASTROPHIZING PREDICTS PAIN OUTCOME FOLLOWING KNEE ARTHROPLASTY

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**Purpose:** Psychological status is associated with poor outcome after knee arthroplasty yet little is known about which specific psychological disorders or pain-related beliefs contribute to poor outcome. To enhance the therapeutic effect of a psychological intervention, the specific disorders or pain-related beliefs that contributed to poor outcome should be identified. We therefore determined whether specific psychological disorders (ie, depression, generalized anxiety disorder, panic disorder) or health-related beliefs (ie, self-efficacy, pain catastrophizing, fear of movement) are associated with poor outcome after knee arthroplasty.
**Methods:** We conducted a cohort study of 140 patients undergoing knee arthroplasty at two hospitals. Patients completed a series of psychological measures provided a variety of sociodemographic data and were followed for 6 months. Patients were dichotomized to groups with either a favorable or a poor outcome using WOMAC pain and function scores and evidence-based approaches. We used generalized linear mixed effects to model the dichotomized 6-month followup WOMAC pain and function scores. Specifically, the logistic regression models were used to model the logit of an event (for example, change by less than 50% of 6-month WOMAC pain scores) as a linear function of the clinically important covariates, including age, gender, BMI, having rheumatoid arthritis, race, comorbidity score, and psychologic variables.
**Results:** After adjusting for confounding variables, we found pain catastrophizing was the only consistent psychological predictor of poor WOMAC pain outcome (odds ratio = 2.67; 95% confidence interval, 1.2-6.1). No psychological predictors were consistently associated with poor WOMAC function outcome.

Table 1. Logistic regression models predicting poor outcome in WOMAC Pain scores

| Model | n | F value | P value | Odds Ratio (95% CI) |
|---|---|---|---|---|
| Model #1: | | | | |
| Change by <50% in WOMAC Pain | 136 | | | |
| Pain Catastrphizing Score >15 | | 5.47 | 0.02 | 2.7 (1.2, 6.1) |
| Model #2: | | | | |
| Change <5 WOMAC Pain points | 126 | | | |
| Self Efficacy Score | | 2.96 | 0.09 | 0.8 (0.62, 1.03) |
| Fear of Movement Score | | 3.19 | 0.08 | 0.92 (0.85, 1.01) |
| Pain Catastrophizing Score >15 | | 8.29 | 0.005 | 6.0 (1.8, 20.8) |

Table 2. Logistic regression models for predicting poor outcome in WOMAC Function

| Model | n | F value | P value | Odds Ratio (95% CI) |
|---|---|---|---|---|
| Model #1: | | | | |
| Change by <50% in WOMAC Function | 136 | | | |
| Pain Catastrophizing Score >15 | | 3.12 | 0.08 | 2.2 (0.91, 5.2) |
| Model #2: | | | | |
| Change <16 WOMAC Function points | 136 | – | – | – |

**Conclusions:** An intervention focusing on pain catastrophizing and pain coping appears to have potential for improving pain outcome in patients prone to catastrophizing pain.