**TITLE PAGE**

**Manuscript title:**

Body mass index is not a clinically meaningful predictor of patient reported outcomes of primary hip replacement surgery: prospective cohort study

**Running head:**

BMI and outcomes of hip replacement

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**ABSTRACT**

**Objectives** To describe whether body mass index (BMI) is a clinically meaningful predictor of patient reported outcomes following primary total hip replacement (THR) surgery

**Design** Combined data from prospective cohort studies**.** We obtained information from four cohorts of patients receiving primary THR for osteoarthritis: Exeter Primary Outcomes Study (n=1431); EUROHIP (n=1327); Elective Orthopaedic Centre (n=2832); and St. Helier (n=787). The exposure of interest was pre-operative BMI. Confounding variables included: age, sex, SF-36 mental health, comorbidities, fixed flexion, analgesic use, college education, OA in other joints, expectation of less pain, radiographic K&L grade, ASA grade, years of hip pain.The primary outcome was the Oxford Hip Score (OHS). Regression models describe the association of BMI on outcome adjusting for all confounders.

**Results** For a 5-unit increase in BMI, the attained 12-month OHS decreases by 0.78 points 95%CI (0.27 to 1.28), p-value 0.001. Compared to people of normal BMI (20 to 25), those in the obese class II (BMI 35 to 40) would have a 12-month OHS that is 2.34 points lower. Although statistically significant this effect is small and not clinically meaningful in contrast to the substantial change in OHS seen across all BMI groupings. In obese class II patients achieved a 22.2 point change in OHS following surgery.

**Conclusions** Patients achieved substantial change in OHS after THR across all BMI categories, which greatly outweighs the small difference in attained post-operative score. The findings suggest BMI should not present a barrier to access THR in terms of PROMs.

**Key words:** Epidemiology, Osteoarthritis, Hip replacement, Patient reported outcome, body mass index, decision making