**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

**Author names:**

Andy Judge1,2 (AJ), Departmental Lecturer in Musculoskeletal Epidemiology; [andrew.judge@ndorms.ox.ac.uk](mailto:andrew.judge@ndorms.ox.ac.uk)

Rajbir N Batra1 (RNB), Medical Statistician; [rajbir.batra@ndorms.ox.ac.uk](mailto:rajbir.batra@ndorms.ox.ac.uk)

Geraint Thomas1 (GT), Clinical Research Fellow; [geraint.thomas@ndorms.ox.ac.uk](mailto:geraint.thomas@ndorms.ox.ac.uk)

David Beard1 (DB), Professor of Musculoskeletal Sciences; [david.beard@ndorms.ox.ac.uk](mailto:david.beard@ndorms.ox.ac.uk)

M Kassim Javaid1,2 (MKJ), Lecturer in Metabolic Bone Disease; [kassim.javaid@ndorms.ox.ac.uk](mailto:kassim.javaid@ndorms.ox.ac.uk)

David Murray1 (DM), Professor of Orthopaedic Surgery and Consultant Orthopaedic Surgeon; [david.murray@ndorms.ox.ac.uk](mailto:david.murray@ndorms.ox.ac.uk)

Paul A Dieppe3 (PAD), Professor in Clinical Education Research; [p.dieppe@exeter.ac.uk](mailto:p.dieppe@exeter.ac.uk)

Karsten Dreinhoefer4,5 (KD), Professor for Orthopaedics and Traumatology; [karsten.dreinhoefer@charite.de](mailto:karsten.dreinhoefer@charite.de)

Klaus Peter-Guenther6 (KP-G), Professor of Orthopaedic Surgery; [klaus-peter.guenther@uniklinikum-dresden.de](mailto:klaus-peter.guenther@uniklinikum-dresden.de)

Richard Field7 (RF), Consultant Orthopaedic Surgeon; [richard.field@eoc.nhs.uk](mailto:richard.field@eoc.nhs.uk)

Cyrus Cooper1,2 (CC), Director and Professor of Rheumatology; [cc@mrc.soton.ac.uk](mailto:cc@mrc.soton.ac.uk)

Nigel K Arden1,2 (NKA), Professor in Rheumatic Diseases and Consultant Rheumatologist; [nigel.arden@ndorms.ox.ac.uk](mailto:nigel.arden@ndorms.ox.ac.uk)

1 Oxford NIHR Musculoskeletal Biomedical Research Unit, Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Windmill Road, Headington, Oxford, OX3 7LD, UK

2 MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton, SO16 6YD, UK

3 Peninsula College of Medicine and Dentistry, C420, Portland Square, University of Plymouth Campus, Drake Circus, Plymouth, PL4 8AA, UK

4 Institute for muskuloskeletal Rehabilitation, Prevention and Health Service Research, Center for Sport Science and Sport Medicine (CSSB), Center for Musculoskeletal Sugery (CMSC), Charité Universitätsmedizin Berlin, Philippstraße 13, 10115 Berlin, Germany

5 Dept. of Orthopaedics, Traumatology and Sports Medicine, Medical Park Berlin Humboldtmühle, An der Mühle 2-9, D-13507 Berlin

6 Department of Orthopaedic Surgery, University Hospital Carl Gustav Carus, Medical Faculty of the Technical University of Dresden, Germany

7 Elective Orthopaedic Centre, Dorking Road, Epsom, Surrey KT18 7EG, UK

*\* AJ and RNB are joint first authors*

Corresponding Author: Andrew Judge

NIHR Musculoskeletal Biomedical Research Unit,

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences,

University of Oxford,

Windmill Road, Headington,

Oxford, OX3 7LD, UK.

Tel: +44 (0) 1865 737 837

Fax: +44 (0) 1865 227 966

Email: Andrew.Judge@ndorms.ox.ac.uk

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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