

Effect of Body Mass Index (BMI) on quality of life, quadriceps and hamstring muscle strength among female older adults with knee osteoarthritis

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Knee osteoarthritis (KOA) is the most common form of osteoarthritis. This is influenced by factors such as muscular strength, body composition, quality of life (QoL). This study aims to determine the impact of Body Mass Index (BMI) on quadriceps and hamstring muscle strength and QoL among female adults with KOA attending physiotherapy units of rheumatology clinics at outpatient department (OPD) in the National Hospital of Sri Lanka (NHSL). This descriptive cross-sectional study was conducted at the physiotherapy unit of rheumatology clinics at OPD in NHSL from August to September 2024, involving female participants aged between 50 and 70 years with a confirmed medical diagnosis of grades 3 and 4 bilateral KOA. Demographic data was gathered using a semi-structured interviewer-administered questionnaire. The hand-held dynamometer was used to measure quadriceps and hamstring muscle strength, and the 36-item short form health survey questionnaire was used to measure the QoL. Data were analysed using one-way Analysis of Variance (ANOVA) test from SPSS version 22 software. This study recruited 114 KOA female patients with a mean \pm SD age of 60.15 \pm 4.94 years. There was a statistically significant relationship ($p < 0.01$) between BMI and quadriceps muscle strength of both right leg (mean \pm SD; 38.55 \pm 9.28), and left leg (mean \pm SD 35.21 \pm 8.84). Furthermore, BMI also showed a significant relationship ($p < 0.01$) with hamstring muscle strength in both left leg (mean \pm SD; 34.08 \pm 19.98) and right leg (mean \pm SD 35.21 \pm 8.95). Moreover, BMI demonstrated a statistically significant association ($p < 0.01$) with QoL (mean \pm SD 73.48 \pm 19.73) among KOA patients attending clinics. This study found a significant association between BMI and quadriceps and hamstring muscle strength in knee osteoarthritis patients, potentially affecting physical function. These findings emphasize the importance of incorporating weight management and lower limb muscle strengthening into the treatment strategies.

Keywords: *BMI, Quadriceps and hamstring muscle strength, Female adults, QoL, Knee osteoarthritis*