Factors associated with risk of falling in adults with knee osteoarthritis: a cross-sectional study

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Background: There is evidence of increasing number of falls in adults with knee osteoarthritis (OA). However, the contributing factors for falling in adults with knee OA has not been substantially investigated.

Objectives: This cross-sectional study aimed to explore the relationship between falling in adults with knee OA and clinical characteristics of knee OA such as balance, pain, instability, muscle strength, and physical function.

Methods: Participants with knee OA were recruited from the community (Dunedin, New Zealand). The protocol of the study was registered in Australia New Zealand Clinical Trial Registry (ACTRN 12617001543003). Falls characteristics in the preceding year were collected to distinguish between those with and without history of falling. All participants completed the following measures: Sensory Organization Test (SOT) using NeuroCom SMART Equilist system, version 8.4.0 which produced Composite Score; Knee injury and Osteoarthritis Outcome Score for knee OA related symptoms; Knee outcome survey for self-reported knee instability (buckling); Nicholas MMT hand-held dynamometer for quadriceps and hamstring isometric muscle strength measured at 20 and 70 degrees; and Timed-Up-and-Down (TUG) test for physical function.

Results: Sixty-three participants with knee OA (30 female, 33 male), with a mean age (SD) of 53.78 (16.17) years were included in the study. Thirty-nine (49%) participants reported at least one fall in the previous 12 months. The independent t-test suggested that the Composite Score in fallers was significantly less (mean ±SD: faller - 76.16±3.26, non-faller - 74.84±4.77, p=0.012) and the TUG test was significantly longer (mean ± SD: faller - 7.64±1.29, non-faller - 6.74±0.78, p=0.001) when compared with the non-faller group. Also, lower muscle strength of knee flexors and extensors were significantly less in the faller group (p<0.05). Falling in the previous 12 months was associated with Composite Score (OR 0.85, 95% CI 0.74–0.97, p=0.017), knee extensors strength (20 degrees (OR 0.76, 95% CI 0.66–0.82, p=0.025) and 70 degrees (OR 0.71, 95% CI 0.55–0.91, p=0.008), and TUG test (OR 2.65, 95% CI 1.32–5.31, p=0.006) using univariate logistic regression analysis. There were no changes in these results with multivariable analyses adjusting for age, gender, and body mass index.

Conclusions: This study suggests that muscle strength, and performance of physical function significantly differed between those with and without the history of falling. An understanding of these risk factors may help in implementing an appropriate evaluation and intervention strategy to reduce falls in this patient population. Given the prevalence of falls in knee OA, this study suggests that falls assessment should be part of the clinical practice routine when evaluating patients with knee OA.

Disclosure of Interest: None declared