THE RELATIONSHIP BETWEEN BODY MASS INDEX (BMI) AND LEG MUSCLE STRENGTH WITH GAIT SPEED AND FALL RISK IN THE ELDERLY

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ABSTRACT

Background: *Aging causes progressive declines in musculoskeletal and neuromuscular function, leading to reduced lower limb muscle strength, slower gait speed, and an increased risk of falls among older adults. Body Mass Index (BMI), as an indicator of nutritional status, may also influence gait speed and fall risk.* ***Objective:*** *This study aimed to determine the relationship between BMI and lower limb muscle strength with gait speed and fall risk among older adults.* ***Methods:*** *This quantitative observational study used a cross-sectional design. A total of 55 older adults from the Parangkusumo Elderly Integrated Health Post, Serenan Village, Karanganyar, were selected using purposive sampling. BMI was calculated from body weight and height. Lower limb muscle strength was assessed using the Five Times Sit-to-Stand Test (FTSTS), gait speed using the 4-Meter Walk Test (4MWT), and fall risk using the Timed Up and Go Test (TUGT). Data were analyzed using the Chi-square test and multiple logistic regression.* ***Result:*** *BMI was significantly associated with gait speed (p=0.022; OR=3.636) and fall risk (p=0.008; OR=4.667). Lower limb muscle strength was significantly associated with gait speed (p=0.029; OR=3.422) and fall risk (p=0.019; OR=4.080). Multivariate analysis showed that BMI and lower limb muscle strength were simultaneously associated with gait speed (p=0.009) and fall risk (p=0.002).* ***Conclusion:*** *BMI and lower limb muscle strength are significantly associated with gait speed and fall risk among older adults.*

Keyword: *older adults; lower limb muscle strength; gait speed; fall risk*