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Association of Body Mass Index (BMI) and Maximum Hand Grip Strength with Upper Extremity Functional Disability Among Healthy Adults

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ABSTRACT

Background and Objectives: Upper extremity function is essential for daily activities and functional performance; however, it may be affected by handgrip strength and body mass index (BMI). Grip strength is directly associated with upper extremity functional capacity, and BMI can negatively affect physical performance. Limited evidence exists regarding the combined influence of BMI and handgrip strength on upper extremity function. This study aims to determine whether BMI and handgrip strength independently predict upper limb functional status. **Methods:** A cross-sectional study was conducted among 97 healthy Malaysian adults aged 18 – 57 years, recruited via convenience sampling. Demographic and anthropometric data, including age, gender, and BMI, were recorded. Upper limb functional status was measured using the Quick Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire. **Results:** Spearman's correlation analysis showed no statistically significant relationship between BMI and Quick DASH scores ($p = 0.968$), and a weak statistically significant correlation was observed between maximum handgrip strength and Quick DASH score ($p = 0.047$). Multiple linear regression analysis demonstrated a weak positive linear relationship between BMI and maximum grip strength, with the Quick DASH score as the predictor ($r = 0.213$). **Conclusion:** This study demonstrated that handgrip strength, rather than BMI, is a significant predictor of upper extremity function. While the impact of maximum grip strength on Quick DASH scores was statistically significant, it remained relatively weak, and BMI showed no association with functional status. **Future direction:** Further research incorporating physical, occupational, and lifestyle variables is needed to provide a more robust explanation of the functional variance.

Keywords: Upper limb extremity/limb function; BMI; hand grip strength; DASH; Malaysia.

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