Correlation of Hand Grip Strength with Length, Breadth and Span of Dominant Hand in Patients with Type 2 Diabetes Mellitus: A Cross-sectional Study

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ABSTRACT

Introduction: The prevalence of hand disorders is 67% among patients with Type 2 diabetes mellitus (T2DM) in India (American Diabetes Association, 2013). Hand grip strength estimation is imperative in determining the efficacy of treatment strategies and hand rehabilitation. A study done in 2011 reported that Hand length and span affects grip force in healthy adults (Lee CG et al, 2011). From this knowledge available, these variables are generally used for predicting Hand grip strength in patients for musculoskeletal rehabilitation. Therefore, the information regarding Hand grip strength and hand anthropometric variables in patients with T2DM is important as it is implemented in designing of various objects dealing with human functions in activities of daily living.

Methodology: An institution based cross-sectional study was taken to examine the correlation of Hand grip strength with length, breadth and span of dominant hand in patients with Type 2 Diabetes Mellitus aged 40 to 60 years. Around 200 participants were assessed for the study, from which 165 participants who met the inclusion criteria were included in the study. Participants were assessed for Hand grip strength using Jamar handheld dynamometer where setting of dynamometer handle was adjusted according to the hand length of participant. Measuring tape was used to assess Hand length, breadth and span of the dominant hand.

Results: Data was analyzed using Pearson's correlation coefficient to find the correlation and significance was seen. In this study, a fair correlation was seen for hand grip strength with hand length (r value= 0.4821) and span (r value= 0.2619); whereas a weak correlation exists between hand grip strength and hand breadth (r value= 0.1571) in Diabetes patients.

Conclusion: The study concludes that hand length and span have a better correlation with hand grip strength in patients with type 2 diabetes mellitus than hand breadth.

Keywords: Diabetes, Hand disorders, Grip strength

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