ORIGINAL RESEARCH

08. Mobile Phone Use and Hand Grip and Pinch Strength in the SCAMP Study

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https://www.youtube.com/watch?v=hJIcIJ1w8oM&list=PLhqNq3xJClbafO0Y5bvBcgMmXpgzJxd44&index=5&t=13550s

Background: Use of smartphones demands small, repetitive movements of the thumb and digits on small screens with prolonged hand grip and awkward wrist movement, which may result in fatigue, discomfort, weakness or musculoskeletal impairment. The relationship between phone use and grip and pinch strength in adolescents is poorly understood. Existing research is limited to small, cross-sectional studies predominantly in young adults with little adjustment for confounders, limiting causal inference. Yet hand and wrist injuries pose a huge economic burden to the NHS, costing c£1.3 billion annually with an average 2.8 days of workdays lost. High quality, longitudinal research with appropriate adjustment of confounders is required to resolve this research question, given the high levels of smartphone use in UK adolescents.

Methods: The aim of this study is to investigate the longitudinal association between smartphone use and hand grip and pinch strength, and to explore if any observed associations differ between dominant and non-dominant hands, or between biological sexes, in the Study of Cognition, Adolescents and Mobile Phones (SCAMP), a prospective school-based cohort in Greater London, UK. 647 SCAMP participants with baseline (11-12 years) and follow-up (13-15 years) data were included in the analysis. Hand grip strength was measured for both hands, using standardised technique, with a hand-held Jamar dynamometer (kg), and tip pinch, key pinch and palmar pinch with a Jamar pinch gauge (kg). Mobile phone use variables were daily duration of calls, daily duration of social network use, daily duration of internet use, daily frequency of text messaging and daily frequency of instant messaging. Self-reporting via questionnaire at baseline and follow-up were undertaken. Analyses were adjusted a priori for potential confounders (age, sex, socioeconomic status, ethnicity, other device use, time difference between baseline and follow-up, and school cluster effects).

Results: Preliminary results showed no evidence of a relationship between any mobile phone use activity at baseline and hand grip or pinch strength in either hand at follow-up. However, when examining change over time in mobile phone use, preliminary results indicated that increases in instant messaging, text messaging, and social network site use on a mobile phone between baseline and follow-up were associated with stronger hand grip, key pinch and palmar pinch measures at follow-up. For example, an IQR increase in instant messaging frequency over the two-year follow-up period was associated with a 0.72kg (95% CI: 0.06,1.39) increase in grip strength in the dominant hand at follow-up.

Conclusions: This is the first longitudinal study to examine the relationship between mobile phone use and hand grip or pinch strength. Our preliminary results oppose previous small-scale cross-sectional research findings, as we find no evidence of any negative impacts of mobile phone use on grip or pinch strength in adolescents, with some specific activities e.g., messaging, actually associated with stronger grip and pinch strength.

ISSN 2076-6327

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