

Perceived Barriers, Facilitators and Potential Technology Supported Strategies to Increase Physical Activity in Adolescents with Overweight and Obesity: A Qualitative Study Using the Theoretical Domains Framework and COM-B Model

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ABSTRACT

Many adolescents today do not meet the recommended guidelines on physical activity due to sedentary behaviour, which in turn leads to the increasing prevalence of obesity in this population. Obesity in youth will not only pose risk towards obesity in adulthood but also predisposes to many other non-communicable diseases and other adverse health outcomes. It is crucial to gain an understanding of the barriers faced by overweight and obese adolescents to engage in regular physical activity and reduce their sedentary behaviour, as their perceptions may differ from adolescents in general. Behavioural determinants can be explored using the Capability, Opportunity, Motivation, Behaviour (COM-B) model from the Behaviour Change Wheel (BCW), along with the application of Theoretical Domains Framework (TDF) to further explore the psychological determinants of behaviour. The identification of barriers and facilitators to increasing physical activity among adolescents with overweight and obesity will enable the tailoring of behaviour change interventions to encourage and sustain physical activity behaviour in this target population. This study aims to explore perceived barriers and facilitators to increase physical activity and reduce sedentary behaviour in adolescents with overweight and obesity using the TDF and COM-B model, as well as to ascertain their needs and preferences regarding implementable strategies with an emphasis on technology-supported interventions. Participants will be recruited using convenience sampling through social media advertisements. Interested participants will be screened for eligibility, which are: 1) aged 10-19, 2) overweight or obese (based on US Centres for Disease Control and Prevention (CDC) and the International Obesity Task Force (IOTF) criteria), 3) does not meet the minimum amount of physical activity by WHO, defined as at least 60 minutes of moderate to vigorous intensity of physical activity per day; following which participant information sheet will be given. A minimum of ten (10) adolescents will be recruited for this study. Before the interview, written informed consent will be acquired by both participants and their respective parents, and participants' demographics will be obtained. In-depth semi-structured interviews (IDIs) will be conducted online with all participants, using a topic guide that is informed by the COM-B and the TDF domains to explore perceived barriers and facilitators to increase physical activity and reduce sedentary behaviour. In addition, the participants will also be asked about their needs and preferences for a digital health intervention. All interviews will be digitally recorded, anonymized and transcribed verbatim. Further, IDIs will stop at the point of saturation. Descriptive statistics will be reported to summarise participant characteristics. Thematic analysis will be used to analyse the interview using ATLAS.ti software, first using an inductive approach, followed by a deductive mapping to link to the TDF which could then be mapped to the COM-B. Quotations from participant responses will be selected to illustrate key themes. The findings from this study will not only provide a detailed description of the perceived barriers and facilitators to increase physical activity among adolescents with overweight and obesity but will also inform the design and development of a theory-based digital behaviour

change intervention to address this target behaviour in this population, by matching identified determinants to appropriate behaviour change techniques in the intervention.

Keywords: Adolescent, obesity, behaviour change, physical activity, sedentary behaviour, health technology, digital intervention