

## **CHARACTERISTICS AND EFFECTS OF MOBILE TECHNOLOGY-INTEGRATED WORKSITE HEALTH PROMOTION PROGRAMS ON BODY WEIGHT AND COMPOSITION: A SYSTEMATIC REVIEW**

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**BACKGROUND:** Currently, among American working adults, non-communicable diseases such as cancer, diabetes, and cardiovascular diseases are highly prevalent health issues. Employers have become increasingly aware of the importance of workers' health and implemented worksite health promotion programs (WHPPs) to improve health-related behaviors and outcomes among employees. New platforms of WHPPs that can overcome the barriers and challenges of existing programs (e.g., inconvenient locations, scheduling or time limitations, ineffective marketing and engagement) are urgently needed. Mobile health technology (mHealth) has increasingly been recognized as a useful platform for health promotion programs but little is known about their adoption and effectiveness in changing body weight and composition.

**OBJECTIVE:** The purpose of this study was to summarize the features (theory and components of the intervention, targeted behaviors, types of mobile and non-mobile components, effectiveness) of mHealth integrated WHPPs on changes in body weight, Body Mass Index (BMI), waist circumference, body fat, and body muscle.

**METHODS:** A systematic search of mHealth-integrated WHPPs targeting changes in body weight and composition published in peer-reviewed journals between January 2010 and June 2018 was conducted. Medical subject heading terms and keywords in various combinations were used in an electronic search of the following databases: Pubmed, Embase, Business Source Premier, CINAHL, and Cochrane. The Cochrane Risk of Bias Assessment tool and Risk of Bias Assessment tool for Non-randomized Studies were used to evaluate the quality of the interventions.

**RESULTS:** Twelve articles were identified appropriate for this review. The majority of the WHPPs (9) implemented combined mobile and non-mobile based interventions, and three WHPPs used only a mHealth intervention. Four studies were randomized controlled trials (RCTs), four pre-post design, and two were prospective cohort studies. The most commonly used mobile-based components were data entry, providing information, and goal setting. Physical activity improvement was the most common targeted health behavior to achieve the health outcomes (n=12). Although, types of interventions and duration of the studies varied (3-12 months), the majority of studies showed a positive impact on reduction in body weight (n=10, -1.11kg ~ -3.5kg), BMI (n=5, -1.87kg/m<sup>2</sup> ~ -.04kg/m<sup>2</sup>), waist circumference (n=5, -3.25cm ~ -1.0cm), and body fat (n=4, -1.86% ~ -.08%). All studies had some risk of bias, however, over half of the studies showed good quality of evidence in every category; selection bias (58.3%), reporting bias (83.3%), performance bias (58.3%), detection bias (75.0%), and attrition bias (58.3%).

**CONCLUSION:** mHealth-integrated WHPPs have been applied in various worksite settings and have shown positive impacts on achievement of targeted health outcomes. However, further well-structured RCTs are needed to examine the effectiveness of mHealth-integrated WHPPs, accurately.