Efficacy of Smartphones in Weight Loss Fairuz Despujos, Husna Najand, Evelyn Ochoa University of Nevada School of Medicine

Introduction

Obesity is currently a major epidemic with long term public health and economic implications. Overweight and obesity impair overall health; a raised BMI score is linked to numerous conditions including

cardiovascular diseases, diabetes, musculoskeletal disorders, and cancer.¹ Risk factors include genetics and environmental factors such as physical inactivity and diet.²



Individuals are classified as overweight or obese using Body Mass Index (BMI) values, weight circumference, and body fat percentage. The following classifications were established by the WHO and CDC³:

BMI:

Overweight: A BMI greater than or equal to 25 Obese: A BMI greater than or equal to 30

Waist Circumference:

A male whose waist circumference is more than 40 inches

A non-pregnant woman whose waist circumference is more than 35 inches

Body Fat Percentage: Obese: 32+ for women, 25+ for men.

Overweight and obesity are preventable conditions and several interventions are currently being explored to facilitate weight loss and lower BMI values. Among these Interventions, smartphone apps and text messages have emerged as a potential weight loss tool. This project is aimed to explore the influence of smartphone interventions among overweight and obese individuals.

PICO

Is the use of smartphones in overweight and obese adults effective for weight loss when compared to non-mobile device weight loss interventions?

Methods

A literature search was performed with the NCBI PubMed database regarding the use of smartphones, their effect on weight loss and their effectiveness when compared to non mobile weight loss interventions. PubMed was searched for studies limited to English, and those involving overweight/obese adults. Search terms included: smartphones, mobile devices, apps, weight loss, adherence, dietary self-monitoring and obesity.

Results

Author	Study Design	Methods	Key Findings
Allen and Stephens	Systematic review	7 studies n = 36 – 927	Text messaging and smartphone application interventions showed statistically significant outcomes in three categories: weight, waist circumference, and BMI.
Lyzwinski	Systematic review and meta-analysis	 17 studies (RCT): 12 primary trials 5 secondary analyses n = 52 - 210 	Mobile interventions showed greater efficacy when compared to no weight loss intervention as well as other non mobile weight loss interventions.
Burley, et al.	Pilot RCT	n = 128	The "My Meal Map" smartphone app showed greater changes in weight loss as compared to the diary and website approaches.
Burke, et al.	RCT	n = 210	Statistically significant weight loss was found in the smartphone and feedback intervention group. Adherence to self- monitoring was found to be the strongest predictor for weight loss.

^{. &}quot;Obesity and Overweight." WHO. N.p., Jan. 2015. Web. 27 Apr. 2015

2. "Other Factors in Weight Gain." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 13 Sept. 2011. Web. 27 Apr. 2015 3. "Assessing Your Weight." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 01 July 2014. Web. 27 Apr. 2015 Allen. "Mobile Phone Interventions to Increase Physical Activity and Reduce Weight: A Systematic Review." The Journal of Cardiovascular Nursing. U.S. National Library of Medicine, n.d. Web. 27 Apr. 2015. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3681804/>

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Obesity continues to be a leading public health issue, and novel approaches to weight loss, such as the use of smartphone applications, are increasingly being utilized as an intervention. Studies have found that smartphones are effective in inducing weight loss when compared to control groups of no intervention or non-smartphone intervention. Outcomes measured included BMI, weight circumference and body fat percentage. In addition, the use of weight loss apps resulted in improved diet/eating habits as well as increased levels of physical activity.

One of the theories for this success in weight loss is the integration of smartphones into behavioral change technique; this posits that interventions tend to be more successful when combined with methods of self-monitoring, setting goals, and instant feedback.⁵ Adherence to self-monitoring was found to be a critical component in sustained weight loss in both the intervention and nonintervention groups; however, the component of instant/automatic feedback made adherence more likely (thus accounting for the greater weight loss in the intervention groups).⁷

However, this is still an emerging topic for research and limitations of the studies include: variability in terms of smartphone applications and the outcomes measured; short duration of trials; variability of study design; lack of evidence of the effectiveness of smartphones with children and the elderly. Furthermore, clinically significant weight loss (threshold of 5%) with the intervention group was not found in all of the studies.

Recommendations for Action

- weight loss.

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Conclusion

• Future trials with larger sample sizes, more subpopulations, and longer durations.

• Future trials that study the roles of self-

monitoring method and automatic feedback in

Integrate behavioral change techniques into weight loss regimens involving smartphones.