



Weight Loss and Electronic Devices

Wenhsing Yang* and Chieh Lin Yang

Department of Nursing, New York City College of Technology, USA

***Corresponding author:** Wenhsing Yang, Department of Nursing, New York City College of Technology, USA

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Abstract

One out of five children are overweight or obese (Stanford Childrens' Health, 2017). This is very scary due to the complications. There are many diets and exercises programs and equipment trends to manage their body weight. Electronic devices and apps are becoming many popular tools in managing weight, following an exercise routine, and keeping to a diet plan to enhance better results. There are many tools one can download and use in conjunction with the activity of daily living. Apple watch, Fitbit, wearable tracker, diet hero, iPhone health app are examples. Some advanced apps will show the number of calories you burn. Many adolescents use technology to manage their body weight. However, these tools can be challenging, and incorrect use might lead to ineffective results. Faithfulness to the diet plan, daily physical activity, continuous monitoring, and food records are the keys to make weight loss success. Mobile devices can be useful in weight management if health care providers use appropriate tools on their patients and monitor their progression. Additionally, group support can be an additional benefit to any person trying to start and stick to a new diet, exercise and/or lifestyle. These popular tools can be introduced into nursing education so learners will be able to choose the most appropriate tools for their patients based on their individual needs.

Obesity is defined as a body mass index larger than 30. It is a very common disease in many countries, which leads to cardiovascular disease, type two diabetes and possibly cancer, among others. More than a third of American adults are overweight, this lead to increase the cost of medical expense. The medical expense was estimated to cost \$148 billion in 2008; also, for obese people the medical expense is \$1429 higher than people with normal weight [1]. Since obesity is such a costly and serious disease, effective weight loss can reduce health complications and decrease medical expenses. Technology is a very common tool in our daily lives. Many electronic devices are being used in weight management/loss, for instance iPhone with different kind of weight loss apps. However, there is no "gold standard" [2] to tell patients which apps are the most beneficial to them. So, it is hard to implement the methods to people who need them on a regular basis without profiling the patient first. A holistic approach needs to be used because successful weight loss requires diet, exercise, and lifestyle adjustments to be successful. Wearable trackers, iPhone health apps, among others, are common tools in weight loss. People use them in the gym when they are doing exercise to measure their heart rate, record their dietary intake, and measure their calories burn as they exercise. All this information helps the dieter make informed choices when it comes to eating. In addition to being a camera, recording device, internet connection and messaging service, the cell phone has now become a diet guru device (and may subject the user to cell phone overload and/or co-dependency).

Literature Review/Methods

This literature review includes CDC, WHO, The Obesity Society, Biomedical Centre, American Journal of Epidemiology and Obesity Science and Practice to evaluate the effectiveness of electronic devices in weight loss. Additionally, how health care providers can in cooperative these tools into their practice and monitor the progression. What are the possibilities and effective ways to helping obese people in choosing appropriate tools for them, to illustrate

for people who have hard time in controlling diet, diet hero can be a helpful tool to them. So, it requires multiple approaches to achieve the goals and meet the individual needs.

Because the topic of apps for weight control is so new and the apps are developing and being released so quickly, current research, if any, quickly goes out of date and can be wasted on apps that are not well composed. Additionally, weight loss strategies

that have been proven to change behavior are not always included in the development of many of these apps [3], losing possible patients along the way. There is a wide range of approaches to these apps, and they include as many ways of tracking food intake and calorie burn as well as coaching and providing support, even though very little clinical evidence exists to display which ones are more effective at changing behavior. Ideally, since every patient is different, the app, or combination of apps, may need to be tailored to his/her particular personality. Not everyone will find the same support from a text message as from the voice of a human coach, nor will everyone have the same effective weight loss response to diet plans. (If all diet plans worked the same way for all participants, everyone would be skinny; but we are all unique and our bodies do not all work the same way). Additionally, weigh-ins that occur on weekly diet group support meetings (like Weight Watchers) may have much more impact and show group-support than having your weight emailed to you over your cell phone via an app.

As our culture speeds up and our cell phone use increases, at a certain point, there may be cell phone burnout. But you would not know that from the increased sales of Smartphones and the apps in the area of weight loss are expanding as well, though it is difficult to choose a “trustworthy, effective and evidence-based app” [3]. While so many things seem to have been taken into account in this survey of Smartphone apps, including coaching interfaces, instantaneous feedback over food choices, behavior monitoring, what Pelegrini [3], finds lacking among most of the apps are evidence based behavioral change techniques. Although there are no long term (greater than 2 years) studies here, in a meta-analysis of 6 recent studies [4], there was wide-spread positive support among the use of cellphones to aid with weight loss, even though there was a recognized need for more extended research. In only one of the studies [4] was the control group’s weight loss greater than the experimental group, but there are factors here that the researchers don’t seem to be considering. This study used PDA with diet pro software for self-monitoring for the experimental group and the control group used a Paper diary with a nutritional reference book. We point this out to demonstrate that not all patients may have the ability to self-monitor and/or master software; possible shortcomings like this one should be identified prior to inclusion in using these kinds of techniques. (Younger generations may have no problem with cell phone use, but older generations may not have it so easy.) The fact remains that the patient should be profiled as to what he or she can or will do faced with self-monitoring choices and the ability to track and control one’s behavior. The entire study of weight control is one of eating behavior, and the inability to control that eating behavior, but what we see in these studies is behavior change without behavior understanding, and that behavior understanding must begin prior to inclusion in these studies. One cannot be totally dependent upon one’s cell phone as to what to do next. When does the brain get put to use?

“Do physical activity and dietary smartphone applications incorporate evidence-based behavior change techniques?” addresses the correlation between mobile apps and weight loss. The article used four independent users to cross rate 20 free and 20 paid applications. It was found that behavior management apps

have a direct effect on weight loss. The evidence showed that the paid applications resulted in the user practicing more behavior change techniques (BCT) [5]. Krippendorff’s alpha on 26 BCTs were used to evaluate the validity of the app [5]. Using this validity tool compared with the other articles used provides a direct correlation between mobile apps and weight loss. Like Pelegrini et al., [3], Direito [5], found more reliable evidence-based management with the paid apps compared to the free. A meta-analysis of randomized controlled trials was used to prove mobile phone interventions can be a useful tool in promoting weight loss [6]. Fourteen trials were conducted and reviewed by two independent investigators which found an average result of net body weight changes. Compared to the other studies Liu et al. cross exam the exact kg in body weight changes to conclude their findings. The study was purely based on statistical information that would conclude that mobile phone apps can lead to weight loss. They did not take into consideration other behavior modifications.

Ultimately, with more research and an app that possibly profiles the patient as to his ability to follow directions, keep a diary, respond to technology, maintain adherence to a program, as well as if the patient is suffering from undiagnosed stresses and/or disorders that are at the root cause of the obesity. Obesity is not just overeating but overeating with a reason. A psychological profile would be a great assistance in determining what kind of combination of apps and human support could best suit each patient.

Goals and Implementation

The objective for reviewing the literature regarding mobile apps is to promote healthy living and weight loss with modern technology. The main generation that the mobile apps industry targets is the millennials and younger. With the encouragement of mobile apps at their fingertips, this generation can focus on encouraging weight loss and prevent obesity. Health care industries can start implementing the use of mobile apps during orientation. The educator can hold a class on health management using mobile apps. This is vital to create an understanding of the mobile app and usage for all new nurses. Then, these apps can become part of daily patient teaching and care. “Super-user” or expert trainer programs can be implemented to cover incumbent staff [7].

Another main implication of using mobile apps and devices that promote weight loss and health management is to incorporate the actual nurse as the user. Specifically for graduate nurses. This population is vulnerable to high stress levels which make them a greater risk for engaging in unhealthy lifestyles. Higher BMIs and obesity are directly related to depression and anxiety. Exercise and a balanced diet directly relate to increased positive moods and high energy levels. Therefore, the patients will have positive experiences when in contact with healthy nurses. When a nurse uses the apps themselves, it becomes easy to teach patients. Healthy nurses can lead with example when teaching patients. The budget for implementing a mobile app program for staff would need to include a minimal amount of overtime pay, approximately 2 hours. The price of the mobile app is dependent on the individual app, which can be purchased by the nurse or the institution. If the institution

wants healthy and positive nurses, the cost of the app is minimal from \$1-\$2.99 initially followed by monthly subscriptions. Group sessions, seminars, and contests can encourage competition while using the mobile app. Both the nurse and the patient can benefit from using this technology for weight loss.

Acknowledgement

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Conflict of Interest

No conflict of interest.

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