The Efficacy of Mobile Applications as Weight Loss and Exercise Interventions for Overweight Individuals and Obese Individuals in the United States

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Background

Obesity in the United States:
- Over 300,000 people die due to obesity or an obesity-related health condition per year in the United States
- Obesity affects approximately 94 million people
- Increases risk for coronary artery disease, type 2 diabetes, cancer, gallstones

Use of Technology and Applications in Health:
- 81% of American adults own smartphones
- 318,000 mHealth applications available in major app stores
- Over 60% of people have downloaded an mHealth app

Previous Studies:
- Medium quality studies
- Not enough randomized control trials
- Not enough information to support if smartphone interventions were successful at individual or group level
- Wearables and mobile apps increase physical activity
- Very few studies focusing on efficacy in health outcomes
- Almost no studies on how devices are perceived by users (satisfaction, adherence)
- Many studies show that apps promoting behavioral changes are useful

Purpose/Research Question

mHealth has yielded promising results in many cases in terms of efficacy with regards to promoting healthy diets and exercise in an effort to lose weight. Therefore, there could be a great potential in using mobile health applications to change behaviors that exacerbate obesity.

Research Question:
To what extent have mobile based applications (mHealth) been successful at promoting behavioral changes such as healthier diets and regular exercise in obese and overweight American adults with the goal of weight loss?

Methods

Databases: PubMed and Scopus

Key terms: (((((Obesity OR "Obesity"[Mesh]) OR Adult obesity) OR Obesity (Overweight)) AND (((mHealth) OR (Mobile applications) OR (Mobile Applications)[Mesh]) OR "Telemedicine"[Mesh]) OR "Telemedicine")) AND (((Weight loss OR dietary changes) OR Exercise promotion) OR exercise obesity rate)

Inclusion Criteria:
- United States-based study
- Smartphone only as intervention
- 2010 and after
- Wearables (i.e. FitBit)

Exclusion Criteria:
- Comorbidities associated with obesity
- Before 2010
- Adolescents/children

Results

Author & Year, Study Type, Sample Size, Intervention, Outcomes

Key findings:
- The counseling plus self-monitoring smartphone technology achieved greater weight loss than those in the counseling or smartphone only groups
- Dietary intake decreased and healthier eating habits increased in all groups except SP only
- Smartphone applications enhanced weight loss and physical activity goals
- Apps promote self-efficacy and increase motivation, which could yield positive long term results
- Real time feedback and personalized app features resulted in higher adherence rates
- Wearables such as wrist bands are a useful additional accessory for these apps
- Smartphone apps could be more effective than education and counseling interventions

Limitations:
- Screening of articles by only one independent researcher
- Search was conducted using only two databases
- Inclusion criteria may have been too specific (ex: excluding international studies), yielding only 5 final articles
- Of the included studies, ½ had very small sample sizes
- ½ studies only presented preliminary data and is an ongoing RCT

Discussion

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Conclusions and Future Considerations

The United States should conduct more research on mHealth as an intervention for obesity, using models that have been successfully implemented in international trials on this topic.

The sample sizes used in these studies should be significantly increased in order to render the results more generalizable.

In future trials, control groups should be more clearly defined for better comparison.

Studies should be designed to test the efficacy of mobile apps over the long term, as many previous results have only focused on several months at a time.

Smartphone apps for weight loss should use personalized features and real-time feedback for optimal results.