

Sigma's VIRTUAL 31st International Nursing Research Congress (Wednesday, 22 July - Friday, 24 July)

Can Mobile Technology Improve Weight Loss in Overweight Adults? A Systematic Review

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Purpose:

Obesity is a growing epidemic in the US with grave health and economic implications not only for the individual, but also society as a whole. One strategy to address this issue is implementing digital health technology that empowers consumers to make informed decisions about their own health. Smartphone apps and wearables are two types of mobile technology with the capacity to deliver cost-effective and personalized weight loss interventions. However, research is needed to determine if they have the potential to impact the obesity epidemic by raising health awareness and motivating users to increase activity. The reliability of this technology as a medium for weight loss is not well-documented and has not yet informed recommendations made in clinical practice. The purpose of this systematic review was to identify evidence concerning the effectiveness of mobile applications and wearable devices for weight loss in overweight and obese adults.

Methods:

Database searches of PubMed and CINAHL were conducted to locate pertinent literature. Inclusion criteria consisted of studies primarily pertaining to obesity, inclusion of adult population only, use of experimental study designs, use of mobile apps or wearables as intervention(s), and primary outcome of weight loss. Articles were excluded if they pertained to comorbidities besides obesity, included persons under 18 years old, used interventions other than mobile apps or wearables, measured primary outcomes other than weight loss, or employed a non-experimental study design. Study findings were synthesized to determine if there was sufficient evidence to justify the integration of technology into primary care as a tool to combat obesity.

Results:

The literature search yielded 12 eligible articles following application of inclusion and exclusion criteria using PRISMA guidelines. All 12 study designs were experimental. Nine studies conducted randomized controlled trials, while the other three studies used quasi-experimental designs. Ten out of 12 studies examined mobile applications, while five out of 12 studies incorporated wearables into their intervention(s). Out of 11 studies that discussed weight loss differences between comparison and intervention groups, six studies found that intervention subjects sustained greater weight loss than those in the control groups. All six studies that examined weight loss over time found that intervention participants experienced statistically significant weight loss over the course of the study period. Four studies also examined sustained, long-term weight loss and

found that weight loss differences between groups did not persist beyond the study period.

Conclusion:

The research evidence suggests that mobile apps and wearables are effective self-regulating tools for behavior modification and weight loss in overweight and obese adults. Mobile apps and wearables may be used as low-cost, efficacious adjuncts to medical care due to their self-regulating features. Wearables work better as a supplement for self-monitoring compared to when used alone. Although study design concerns, such as the lack of non-intervention comparator groups, prevent a definitive conclusion regarding the relative power of mobile apps and wearables over other self-monitoring methods, the evidence indicates that mobile technology can be used as integral tools within holistic and overarching weight loss strategies recommended in the primary care setting.

Title:

Can Mobile Technology Improve Weight Loss in Overweight Adults? A Systematic Review

Keywords:

mobile apps, obesity and weight loss

Abstract Summary:

The purpose of this systematic review was to determine the impact of mobile applications and wearable devices on weight loss in overweight adults, as their reliability is not well-documented. Evidence indicates that mobile technology can be used as integral tools within overarching weight loss strategies recommended in primary care settings.

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Author Summary: Elizabeth is a registered nurse with 2 years of bedside experience in the ER. She is a published author who has written and presented research on the topics of digital health, obesity, and weight loss at local and regional conferences. She is finishing up her last year in the BSN-DNP program at Purdue University on the FNP track.

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Author Summary: I am a registered nurse with 11 years of bedside care experience. I am also a sociologist with extensive experience carrying out funded studies, publishing, and presenting to national audiences in the area of long term care quality.

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Author Summary: Dr. Liu conducts applied research around elder justice issues, covering topics on elder abuse, neglect, and exploitation. She works with Adult Protective Services, and has been funded by the Administration for Community Living to measure services outcomes. Her ultimate goal is to empower older adults to live in a society with social justice. Prior to joining Purdue University, Dr. Liu was an Assistant Professor at University of California, San Francisco.

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