Are mHealth Interventions to Prevent Diabetes Cost-Effective? A Systematic Review

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Background

- Type 2 diabetes mellitus (T2DM) has been increasing over the past few decades, putting pressure on health care systems to properly manage and prevent diabetes
- Prediabetes occurs in more than one-third of U.S. adults, and more than half of those with prediabetes will ultimately develop T2DM
- Mobile health (mHealth) interventions presents an opportunity to patients to modify lifestyle and improve medication adherence through a digital means
- With increasing ubiquity of broadband internet access and smartphones, mHealth interventions may offer a cost-effective way to manage diabetes while reducing inequities

Objective

- To synthesize evidence on the cost-effectiveness of mHealth interventions targeting prediabetes

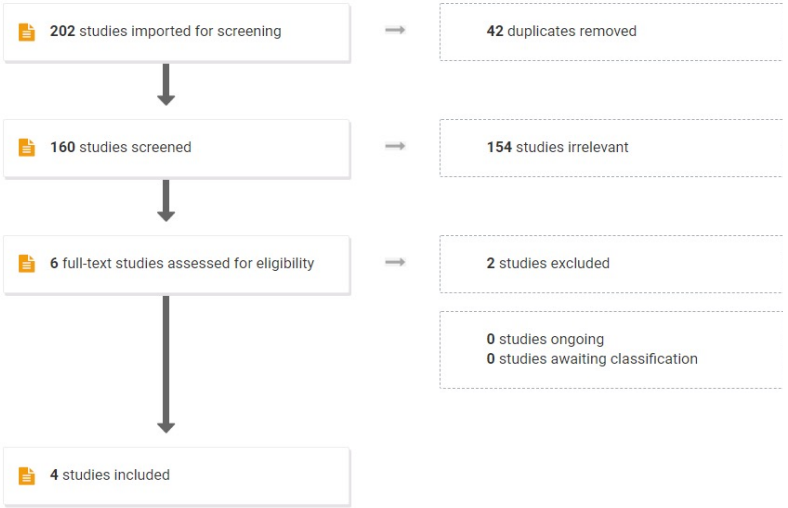
Conclusions

- Our results suggest there is limited evidence demonstrating the value of mHealth interventions for people with prediabetes.
- The growing popularity of mHealth interventions across chronic conditions including prediabetes should warrant additional economic evaluations to facilitate stakeholders' assessment of their value prior to widespread adoption.

Methods

- The study conducted a systematic review of economic evaluation studies evaluating mHealth interventions used to prevent the development of diabetes
- Studies meeting search criteria and published between January 2000 and December 2020 underwent a blinded review by two researchers using pre-specified criteria
- Studies meeting criteria were analyzed for key economic evaluation component including study setting and population, decision model, interventions, key outcomes, and results
- Results were categorized the strength of evidence for the cost effectiveness of mHealth interventions as strong, supportive, or uncertain.

Figure 1: PRISMA Diagram



Results

- 160 studies met initial search criteria and 4 studies qualified for inclusion. All of the studies were published after 2015, with 2 studies had non-United States settings and 3 studies applying the healthcare system perspective
- The types of mHealth interventions assessed:
  - Digital behavioral counseling program
  - Online diabetes prevention program
  - SMS messaging.
- We found two paper showing evidence for cost-effectiveness
  - Digital behavioral counseling programs showed supportive evidence for the cost-effectiveness of such intervention.
  - Online diabetes prevention program showed evidence of cost-effectiveness at a willingness to pay threshold of $20,000.
  - Study on SMS messaging resulted in a poor cost-effectiveness assessment of the mHealth intervention because the health effects of the mHealth arm were negative relative to the comparator with no significant effect on the prevalence of intermediate hyperglycemia and type 2 diabetes.

Acknowledgement & References

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