Mobile technology: a synopsis and comment on “mobile phone-based interventions for smoking cessation”

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INTRODUCTION

Mobile phone use in healthcare continues to expand as technology becomes a ubiquitous component of everyday life. Thirty-one percent of cell phone owners have used their phone to look up health information [1]. Internet and mobile phone-based interventions are increasingly used by healthcare providers to assist patients in healthy lifestyle behavior interventions [2]. Specifically, smoking cessation programs have begun to adopt mobile phone interventions as a treatment delivery option as part of internet-based or in-person coaching programs. Mobile phones offer benefits such as: ease of administration of the program to a large population, low cost, ability to tailor interventions to individuals, and the ability to send just-in-time messages. This article summarizes the findings of a recent systematic review of the efficacy of using mobile technology interventions in the pursuit of smoking cessation.

KEY QUESTION

Are mobile-based interventions effective at helping people who smoke to quit?

SEARCH STRATEGY

The authors searched the Cochrane Tobacco Addiction Group Specialised Register in May 2010, the UK Clinical Research Network Portfolio for current projects, and the Clinical Trials register for ongoing or recently completed studies. Searches of the Cochrane Central Register of Controlled trials (2012), MEDLINE (2012), EMBASE (2012) were also included. There were no restrictions placed on language or publication date. Search criteria included mobile phone, cell phone, txt, pxt, sms, or mms in the title, abstract, or keywords. Studies were limited to randomized and quasi-randomized trials. Participants were of any age and wanted to quit smoking. Studies were examining any mobile phone-based intervention. Trials were excluded if mobile phones were used as an adjunct to face-to-face or internet-based programs. For example, pro-

grams that used text messaging to remind participants to attend appointments were not used.

RESULTS

Five trials were included in this systematic review with a pooled sample size of over 9000 participants. Three interventions included text messages only [3–5]. One intervention included text messages and a web-based quit coach [6], while the last used text messages with links to internet videos [7]. Primary outcomes included sustained smoking abstinence at 6 months or longer following the start of the intervention.

Rodgers et al. [3] required participants to set a quit date and receive text messages on their phones at different frequencies. Text messages were sent up to their quit date, five to six messages per day for 1 month afterwards, and then a maintenance phase of one text message every 2 weeks. Messages consisted of advice, motivational anecdotes, and distracting general information. Participants also took polls, quizzes, and could request additional messages. Social support was given through a Quit Buddy that participants could text upon request. The control group received one text message every 2 weeks about general information of the study. Free et al. adapted the intervention developed by Rodgers and colleagues (2009) to be delivered in the UK as a pilot study (2009) [4] and then as a full trial (2011) [5]. The findings from the small pilot study by Free et al. [4] did not have significant results; however, the results from the full trial [5] demonstrated improvements in abstinence rates at the 6-month time point. Rodgers et al. [3] found the same results in New Zealand.

Borland et al. [6] developed an intervention that included a web-based Quit Coach and texting program. Participants were randomized to one of five possible conditions—a personalized internet intervention only, texting intervention only, internet and texting intervention, the ability to choose their condition from the first three options, and the control condition of minimal treatment consisting of brief information on phone- and web-based support. Text messages were comprised of strategy and motivational messages. Participants could re-

quest additional messages if they felt they needed further support. The authors decided to use data from the texting-only condition and the control condition to be more directly analogous to the other studies. However, it is noted that all four of the intervention conditions exhibited more effective smoking cessation results than the control condition.

The final study the authors included was by Whittaker et al. [7]. Participants were randomized to one of two possible conditions, intervention or control. In the intervention condition, participants received text messages that included links to videos online. These videos consisted of a “video diary” presentation by different models discussing their own struggles and strategies to quit smoking. Participants received daily messages leading up to their quit date, two messages per day afterwards, and the frequency reducing over a 6-month period. The control condition included participants setting a quit date and receiving general health video messages every 2 weeks on their phone. In this study, the intervention and control conditions resulted in similar abstinence rates. However, the authors noted that the lack of effect may have been due to the smaller sample size ($N=226$). The trials by Rodgers [3], Free [5], and Borland [6] which produced significant results had sample sizes greater than 1,000.

Pooled statistical results were found to be heterogeneous when referring to outcomes as three studies favored the intervention while two studies favored the control program. However, the studies had similar definitions of smoking status. They were similar in design, intervention, and primary outcomes. Smoking abstinence was defined as participants not smoking for six months allowing for up to three lapses or up to five cigarettes. Although, results were varied, Whittaker et al. [8] conclude that mobile phone interventions that include text messaging can assist with smoking cessation.

CONCLUSIONS

The authors concluded that programs that use phone texting interventions to assist with smoking cessation are found to be effective when long-term abstinence is defined as not smoking for 6 months allowing up to three lapses or up to five cigarettes smoked in that time period. They noted that two studies resulting in ambiguous findings had small effect sizes and a high risk of statistical variance leading the authors to consider the larger, well-conducted studies to outweigh the results from the aforementioned studies.

Mobile phone-based interventions have shown long-term success in smoking cessation programs. Further research can be explored to expand our understanding of the efficacy and cost-effectiveness of mobile phone interventions.

COMMENT

The findings in this systematic review by Whittaker and colleagues suggest that mobile phone interventions show potential to increase quit rates for smoking. The studies in this systematic review focused on text messaging based interventions, and identified that the reviewed studies highlighted gaps in this literature. First, there is little research exploring other smartphone technologies to assist smoking cessation programs. More research should be conducted using different features of smartphone technology such as software applications and web browser capabilities. Second, included studies of this systematic review used a time frame of 6 months as “long term.” Studies should extend follow-up to determine if interventions affect abstinence over a longer period of time. Lastly, our understanding of why and how mobile phone technology facilitates smoking cessation is incomplete. Research should delve into the mediators and moderators of mobile technology outcomes pertaining to smoking cessation. Such research will equip clinicians and policy makers with the most effective ways to help smokers quit.

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