

mHealth can potentially reduce heart disease risk



There is increasing evidence showing that mobile health interventions can improve overall heart disease risk, although many questions still need to be answered through clinical trials, according a review published in the *Canadian Journal of Cardiology*.

"mHealth has great potential to prevent heart disease, but there are unanswered questions about how to optimise it and maintain engagement with patients," says lead author Harry Klimis, MBBS, University of Sydney, Department of Cardiology, Westmead Hospital, and The George Institute for Global Health, Sydney, NSW, Australia.

Mobile health (mHealth) technology has gained wider acceptance as a means to improve the delivery of cardiovascular prevention targeting a combination of modifiable risk factors -- which account for the majority of global risk factors for cardiovascular disease -- in a scalable and affordable way.

"There are already an overwhelming number of cardiovascular mHealth options available to consumers. However, the utility of applications to improve health outcomes has been poorly evaluated. There is limited research evidence for their effectiveness in modifying objective measures of health, and app development and provision are largely unregulated," notes lead investigator Clara Chow, MBBS, FRACP, PhD, Professor of Medicine, University of Sydney, Programme Director, Community Based Cardiac Services, Westmead Hospital, and Professorial Fellow, The George Institute for Global Health.

In this study, investigators review the evidence on mHealth interventions for simultaneous multiple risk factor reduction in both primary and secondary prevention settings, using smartphone applications (apps) and text messaging (short messaging service or SMS).

In the primary setting investigators found only a few randomised controlled trials (RCTs) that assessed mHealth approaches using text messaging and could not identify any RCTs assessing the effect of mHealth smartphone apps on total cardiovascular risk.

The largest primary prevention text messaging study was an RCT conducted in China of a 12-month intervention comprising text messaging and phone calls performed among 589 Chinese workers. The intervention group received personalised text messages targeting lifestyle measures to reduce cardiovascular disease risk (frequency determined by risk assessment) in addition to a computerised risk evaluation, an initial 15-minute face-to-face risk counselling session, follow-up phone calls, an educational handbook, and a medical examination.

At 12 months, there was a significantly lower mean 10-year cardiovascular disease (CVD) risk score in the intervention group compared to the control group. However, there was no significant reduction in the mean cardiovascular disease risk at 12 months compared to baseline for the intervention group. The investigators concluded that the study was underpowered to detect differences in overall 10-year CVD risk, despite showing significant differences in the individual components of the risk score.

There have been several mHealth interventions designed to deliver secondary prevention to patients with cardiovascular disease and which target multiple risk factors simultaneously. Investigators evaluated the approach and the results of trials using text messages: TEXT ME and Text4Heart.

- The TEXT ME trial provided objective evidence that text message support for heart attack survivors could improve key health risk factors of cholesterol, blood pressure, weight, exercise, diet, and smoking. The TEXT ME messages provided advice, motivation, and support on diet, quitting smoking, exercise, and general heart health.
- The intervention group in the Text4Heart trial received one message per day that decreased to five messages each week from week 13. The study identified positive effects of adherence to healthy lifestyle behaviours at three months but not at six months, raising the question about the durability of mHealth interventions, as well as the optimal frequency of text messages.

In addition, the investigators evaluated the results of three RCTs for secondary prevention using smartphone apps. They generally found no or small improvements in CVD risk factors but concluded that the small trial sizes meant they were unlikely to be powered to detect small improvements in CVD risk factors. They suggest that there is potential for reducing health service utilisation and hospitalisation, but that further research is required to clarify this.

Source: [Canadian Journal of Cardiology](#)

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