



Smartphone application interventions to prevent onset of chronic disease: A systematic review

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Introduction

Chronic diseases are the leading cause of global mortality and morbidity, yet majority of the disease burden is poorly self-managed.

It has been proposed that mobile health can aid patients adhere to clinical recommendations and assimilate their own knowledge of their condition with clinical recommendations to adopt an integrated self-management regime.

Although interest in mobile health is increasing, and there is a sufficient research on the use of SMS or phone calls to manage health, specific research into the efficacy of smartphone applications is limited. Furthermore, applications for the prevention of onset of disease is still being developed and, to the best of our knowledge, the current knowledge has not been systematically reviewed.

Research objectives

The aim of this study was to systematically review the evidence surrounding the use of smartphone applications to prevent onset of chronic disease by improving self-management to understand the current gaps in knowledge.

Methods

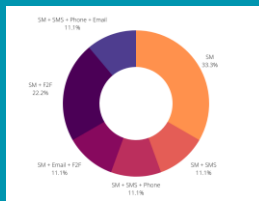
Search Strategy

Several databases including The Cochrane Library, PubMed, Google Scholar, the UQ library and Science Direct were searched from 2012 to 2020. The search identified 561 papers, of which, nine RCTs published within 2014 and 2019 met the study criteria.

Results

Sample size of the studies ranged from 61 to 2,086 patients with a total of 4,800 patients aged 26-70, all from developed nations.

Included studies recruited patients at risk for a range of chronic illnesses including cardiac-related diseases, diabetes, and blindness. Four studies aimed to prevent onset of a variety of common chronic diseases. Two studies aimed to prevent diabetes. The remaining four studies focused on preventing cardiac-related diseases including stroke.



F2F: Face-to-face; SM: Smartphone; SMS: Short Messaging Service

Discussion

The main driver of the increased economic burden of chronic disease is prevalence. Therefore, it is important to engage with this population cost-effectively. However, disease prevention often involves lifestyle changes and are more difficult to convey and implement.

Historically, mobile health has often focused on monitoring or educating participants. In more recent times, there is an observable shift in focus to the disease prevention.

The easy availability of education via smartphone technologies enhanced patient understanding and information retention, which reflects the need for future intervention content to better fit user needs for additional information uptake.

However, this should be combined with co-design principles for improved engagement.

Limitations

Some of the limitations of this review included the high number of studies that used self-reporting and there was bias in the recruitment methods of four studies that used self-referral, leading to potential sampling bias.

Perhaps the most important limitation of this study is the dearth of published information available. This review only identified nine randomized controlled trials using primarily smartphone applications to prevent the onset of chronic diseases.

However, this review demonstrates the feasibility and effectiveness of these technologies for severe psychological distress, particularly through improved self-care.

Conclusion

This review found that smartphone applications and other novel technologies can be important drivers for behavioural change via the use of targeted features for specific populations, but that these technologies, if not well-planned were limited to improving baseline behaviours rather than significant behaviour change.

Selected references

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