

Mobile health interventions to support long-term health conditions.

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Mobile health (mHealth) tools have become increasingly popular in delivering health behaviour change interventions, merely due to their potential to reach large numbers of people in diverse contexts. Mobile health interventions refer to the delivery of health messages via mobile phones, patients' monitoring devices, personal digital assistants, tablets, and/or other wireless devices (WHO, 2011; Yardley et al., 2016). Mobile health interventions can utilise pre-existing functionalities of these devices (e.g. voice, text, global positioning systems, bluetooth, radio-frequency identification etc.) to facilitate interactive advice and support. Such interventions could reduce the burden on traditional (mostly face-to-face) healthcare provision, especially when targeting people with single or multiple long-term health conditions.

Long-term health conditions affect millions of people and are leading cause of morbidity and mortality worldwide. For example, 422 million of people have been recorded with diabetes (WHO, 2016), and the numbers accelerate when counting for cardiovascular diseases or multi-morbidities (WHO, 2011; Di Angelantonio et al. 2015). However, the rapidly growing usage of mHealth to provide lifestyle advice to people with long-term conditions has evoked some scepticism from health researchers, primarily due to the lack of rigorous evidence on whether and how they can support health behaviour change.

In this Special Issue authors tap onto current knowledge to reveal the significant insight that

mHealth interventions can provide to our understanding of health behaviour change. Authors also raise awareness on the challenges and facilitators on the development of such interventions and provide useful tips and recommendations for future mHealth interventions. Drawing on evidence synthesis and theory, authors stress the need of rigorous interventions to generate understanding of health behaviour change.

Keegan Knittle et al (2016) article reflects upon group discussions conducted during the Synergy Experts Meeting 2015 "MHealth for behaviour change: opportunities, challenges and future directions", convened by Lucy Yardley, Susan Michie and Robert West. The authors provide an overview the different modes to deliver mHealth interventions, users' experiences when engaging with mHealth interventions and the available tools to create and test such interventions. Authors also highlight the challenges, as well as the potential of mHealth interventions to produce novel and big data to inform the theoretical basis of behaviour change. Keegan and colleagues conclude with useful tips on how to promote collaboration with industry and recommend actions that could enable the EHPS to remain on the top of mHealth behaviour change research.

Katerina Kassavou and Stephen Sutton (2016) article describes the development and pre-test of a novel method to deliver behaviour change interventions: the Interactive Voice Response (IVR), the first IVR intervention to support medication adherence within the UK. For intervention development, authors discuss meta-analytic evidence on the efficacy of the IVR to produce

changes in four different health behaviours, and present results on coding interventions in term of theoretical basis and behaviour change techniques. For intervention pre-testing, authors present qualitative evidence on the acceptability of the IVR to support medication adherence to patients with Hypertension and/or Diabetes type 2. Kassavou and Sutton proved the capacity of the IVR to facilitate very brief behaviour change messages and conclude with recommendations on future IVR interventions.

Sumira Riaz (2016) article discusses the process of developing a 12-weeks text message intervention for patients with Inflammatory Bowel Disease. The author describes the different parameters to consider when developing a text message intervention and evaluate the acceptability of personalised messages. Riaz also reports on the theory used to inform the development of the intervention content, presents examples of how she mapped the messages onto the baseline measures, and concludes with useful tips to consider when developing such interventions.

Kristina Curtis (2016) article describes the process of developing two mHealth apps: the Health Heroes aiming to reduce children's eating portion sizes targeting parents; and MyMate aiming to support medication adherence targeting children with Sickle Cell Disease. Curtis describes the usage of 'The Behaviour Change Wheel' to map theoretical conditions to direct intervention components, the interaction design model to incorporate users' input, the collaboration with the development company to integrate design features and describes some methods to evaluate intervention development process. The article concludes highlighting the need for evidence-based apps.

Hynes et al (2016) article describes a dynamic, collaborative method of developing mHealth interventions. This novel approach applies design strategies from the technology world to healthcare innovations. In doing so, the authors recognized a need for healthcare professionals to learn from, and

integrated pre-existing expertise of other disciplines, as well as stakeholders. Further, this approach offers an engaging method of developing prototype evidence-based interventions in a timely manner, before beginning a pilot randomised feasibility study.

Müller (2016) article calls for a culture-based approach to inform the development of behavioural digital interventions. Currently, much of evidence base for mHealth literature is based on research conducted in developed countries, limiting the global generalizability of findings. The cultural context is likely to influence factors such as the (health) behaviour, the interaction with mobile technology, and how user interfaces and intervention content is perceived.

Conclusion

The field of mHealth is rapidly emerging and has the potential to supplement traditional models of healthcare provision. This Special Issue has illuminated ongoing work and remaining questions about the future of mHealth to deliver advice and support. We thank all authors for their valuable contribution to this Issue and we truly hope that it will be a useful piece of information for all those interested in mHealth and long-term health conditions.

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