Notice of the Final Oral Examination
for the Degree of Doctor of Philosophy

of

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PhD (Isik University, 2008)
MA (Marquette University, 1995)
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“Effective Message Strategies for Mobile Text Messaging Interventions Targeting Type 2 Diabetes Self-Management”

Social Dimensions of Health

Tuesday, May 12, 2020
10:00 A.M.
Conducted Remotely

Supervisory Committee:
Dr. Karen Courtney, School of Health Information Science, University of Victoria (Co-Supervisor)
Dr. Patti-Jean Naylor, School of Exercise Science, Physical and Health Education, UVic (Co-Supervisor)
Dr. Ryan Rhodes, School of Exercise Science, Physical and Health Education, UVic (Member)

External Examiner:
Dr. Marge Benham-Hutchins, College of Nursing and Health Sciences, Texas A&M University-Corpus Christi

Chair of Oral Examination:
Dr. Jeff Corntassel, Indigenous Governance Program, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

Type 2 diabetes is a life-threatening condition, and it is one of the rapidly growing chronic diseases in the world. However, it is a preventable disease. If provided by adequate education and support, patients can manage their diabetes-related tasks and reduce diabetes complications. Mobile text messaging is a promising method to provide continuous and customized support for patients with type 2 diabetes patients who often fail to follow traditional self-management practices. However, there is a lack of knowledge about the optimal approach to designing and delivering mobile text messages. Hence, this dissertation aimed to define effective message strategies for mobile text messaging interventions targeting type 2 diabetes self-management. This manuscript-based dissertation consists of three complementary studies. The first manuscript includes a systematic review and a meta-analysis of tailored mobile text messaging interventions on type 2 diabetes self-management and examines the tailoring strategies, message content, and the moderators of effectiveness in these interventions. The second manuscript includes a systematic review and a meta-synthesis of qualitative evidence on patients' experiences and perspectives of mobile text messaging studies. The third manuscript consists of a prospective qualitative study to explore the text messaging design and delivery preferences of patients.

In the first and second studies, the comprehensive search strategy included major electronic databases, key journal searches, and hand searches of the reference lists of related systematic reviews and meta-analyses. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and Cochrane Collaboration's guidelines and recommended tools were used for data extraction, quality appraisal, data analysis and reporting. Within a social marketing framework, the third study included semi-structured interviews and a thematic analysis of the main findings.

In the first manuscript, 13 eligible trials were included for the systematic review and 11 eligible trials were further analyzed in the meta-analysis. This study concluded that tailored mobile text messaging interventions could improve glycemic control in patients with type 2 diabetes. The subgroup analyses revealed the importance of some moderators such as message delivery, message direction, message frequency, and using multi-modalities.
In the second manuscript, the systematic review included 14 eligible studies, and the thematic synthesis included 13 eligible studies for a further examination. Patients emphasized the importance of tailored text message design and delivery. They felt “supported” by using text messaging and improved their communication with family/friends and care providers. Mobile text messaging increased patients’ self-awareness, knowledge and control of diabetes.

The third study explored that mobile text messages could be more effective if gain-framed messages were used, and the messages included an authoritarian tone, a standard format, and provided statistical evidence. Psychosocial and behavioural tailoring were preferred more than a personalization strategy; however, patients tended to like both types of tailoring strategies in text messages. The findings also highlighted the importance of an individualized schedule of message delivery for these patients.

Together, the manuscripts fill a significant gap and inform research and practice for the development of more effective message strategies that could lead to reducing the spread of type 2 diabetes worldwide.