Change facilitation for the implementation of innovation in healthcare practice.

By Lydia Michel Moussa

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Certificate of original authorship

I, *Lydia Michel Moussa*, declare that this thesis is submitted of the requirements for the award of Doctor of Philosophy, in the Discipline of Pharmacy, Graduate School of Health at the University of Technology, Sydney, Australia. This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualification at any other academic institution.

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Abstract

Background: The Implementation of innovations in healthcare is complex and multi-dimensional. An intervention that is commonly used in healthcare is change facilitation. There is, however, a lack of frameworks specific to change facilitation, evidence into the specific strategies conducted by Change Facilitators (CFs), and the effectiveness of CF strategies. In addition, there is a gap in the literature regarding frameworks that encompass diagnosis of implementation barriers, prescribing of strategies, and evaluation of effectiveness. Chapter 1 presents an introduction and background to the use of change facilitation during the implementation of innovations in healthcare practice.

Methods: This research involved four phases. Phase one (Chapter 2) was to conduct a systematic review of randomised controlled trials following the Cochrane handbook and PRISMA guidelines. Phase two (Chapter 3) was a mixed method study of a two-year implementation program involving qualitative input by CFs of the barriers and facilitation strategies used during implementation of innovations in community pharmacy, and quantitative analysis using a machine learning approach to predict the effectiveness of facilitation strategies in overcoming the barriers. Phase three (Chapter 4) was the use of an effectiveness-implementation hybrid study during a Minor Ailments Service (MAS) study in community pharmacy aimed at evaluating the effectiveness of a tailored change facilitation intervention using findings from the mixed method study in phase two. Statistical analysis was conducted to determine the resolution percentage of change facilitation categories and longitudinal analysis was conducted to determine the effectiveness of the change facilitation intervention. Phase four (Chapter 5) brings together the findings from phases one, two, and three, and proposes a change facilitation framework.

Results: Chapter 2 presents 51 change facilitation strategies captured from the literature, including common strategies in studies reporting positive outcomes. Chapter 3 presents a link between 36 barriers identified during the two-year implementation study, and a prediction of the most effective facilitation strategies to overcome the barriers. Chapter 4 presents the evaluation of a tailored change facilitation approach, resulting in CFs identifying 67% of implementation barriers in the first two monthly visits and overcoming 75% of these barriers in the same visits. Chapter 5 proposes the 6E Change Facilitation Framework for CFs as a dynamic, non-linear approach allowing CFs to explore barriers, tailor their strategies, evaluate their progress, while ensuring adoption by stakeholders.

Conclusion: Change facilitation is an effective intervention for the implementation of innovation in healthcare. A tailored change facilitation approach according to existing barriers has been deemed effective in early identification and resolution of implementation barriers in community pharmacy. The 6E Change Facilitation Framework provides a guiding structure for CFs to tailor their interventions and move dynamically through the implementation and adoption of innovations in healthcare and beyond.

Dissemination of Research

The research described within this thesis has been disseminated as follows,

Publications

1. **Moussa, L.,** Garcia-Cardenas, V., & Benrimoj, S. I. (2019). Change Facilitation Strategies Used in the Implementation of Innovations in Healthcare Practice: A Systematic Review. *Journal of Change Management*, *19*(4), 283-301.

2. **Moussa, L.,** Benrimoj, S., Musial, K. *et al.* Data-driven approach for tailoring facilitation strategies to overcome implementation barriers in community pharmacy. *Implementation Sci* **16,** 73 (2021). https://doi.org/10.1186/s13012-021-01138-8

3. **Moussa, L.**, Benrimoj, S., Dineen-Griffin, S., Garcia-Cardenas V. Evaluation of tailored change facilitation interventions used during the implementation of a Minor Ailments Service in community pharmacy **(To be submitted)**

4. **Moussa, L**., Moussa, A., Benrimoj, S., Garcia-Cardenas, V., The 6E Change Facilitation Framework | A dynamic change framework to navigate implementation and adoption of innovations in healthcare and beyond **(To be submitted)**

Conference proceedings

1. **Moussa, L.,** Benrimoj S.I, Garcia-Cardenas V. Change facilitation strategies used in the implementation of innovation in healthcare. FIP Pharmacy Practice Research Symposium Lisbon, Portugal. 2019. (Poster Presentation).

2. **Moussa, L.,** Benrimoj S.I, Garcia-Cardenas V. Change facilitation strategies used in the implementation of innovation in healthcare. Congreso Simpodader Annual Conference. Granada, Spain. 2018. (Poster Presentation)

3. **Moussa, L.,** Garcia-Cardenas V. What's stopping pharmacy from adapting. Pharmaceutical Society of Australia 2019 Conference, Sydney. (Oral Presentation)

4. **Moussa, L.,** S.I, Musial, K., Kocbek, S., Garcia-Cardenas V. The use of machine learning to link change barriers with the most effective change facilitation strategies. Society of Implementation Science (SIRC), Seattle, United States of America. 2019. (Oral Presentation).

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Preface

This thesis is presented in fulfilment of the doctoral requirements for UTS. The thesis is structured as a PhD by compilation. Six chapters are presented throughout the thesis, comprising a coherent suite of articles, some of which are published or currently under review, and some of which are to be submitted. Lydia M Moussa is the primary author of each publication. Co-authors include supervisors and collaborators who contributed concepts, design,data collection, data analysis, data interpretation, and revision of manuscripts.

This thesis applied a mixed-methods approach to investigate the strategies used by change facilitators for the implementation of innovation in community pharmacy.

The thesis has been organised into six chapters:

Chapter 1 presents an introduction and background to the research. It provides a justification of why the research was conducted, and objectives of the research.

Chapter 2 presents a systematic review of published literature. The systematic review was undertaken as part of the early exploratory work to capture the breadth of literature surrounding facilitation strategies used by change facilitators to implement innovations in healthcare practice. Thirty-five Randomised Controlled Trials were reviewed, and 51 change facilitation strategies were extracted. Such findings helped form an initial understanding of actions taken by change facilitators and highlighted the need for more evidence-based strategies, and a framework specific to change facilitation.

Chapter 3 presents a mixed-methods implementation study that follows the activities conducted by change facilitators during a two-year implementation study in community pharmacy. Change facilitators recorded the barriers identified during implementation of Professional Pharmacy Services in community pharmacy and the facilitation strategies they used to overcome these barriers. Thirty-six implementation barriers and 111 facilitation strategies were identified. A Machine Learning approach (Random Forest) was used to predict the effectiveness of the facilitation strategies to overcome specific implementation barriers.

The most common implementation barrier identified was, 'the inability for teams to plan for change'. To overcome this barrier, the most effective change strategy was to 'engage stakeholders by creating ownership of the change', which had a predictive resolution percentage (PRP) of 84%. The strategy that was predicted to overcome the most implementation barriers was to 'empower groups to develop objectives and solve problems'.

The chapter concludes by highlighting the need for change facilitators to take into consideration the implementation barriers within the practice and tailor their strategies accordingly. The chapter also mentions that there is no one-size fits all strategy, and that whilst one strategy may be effective in overcoming a specific implementation barrier, it may not be effective for another.

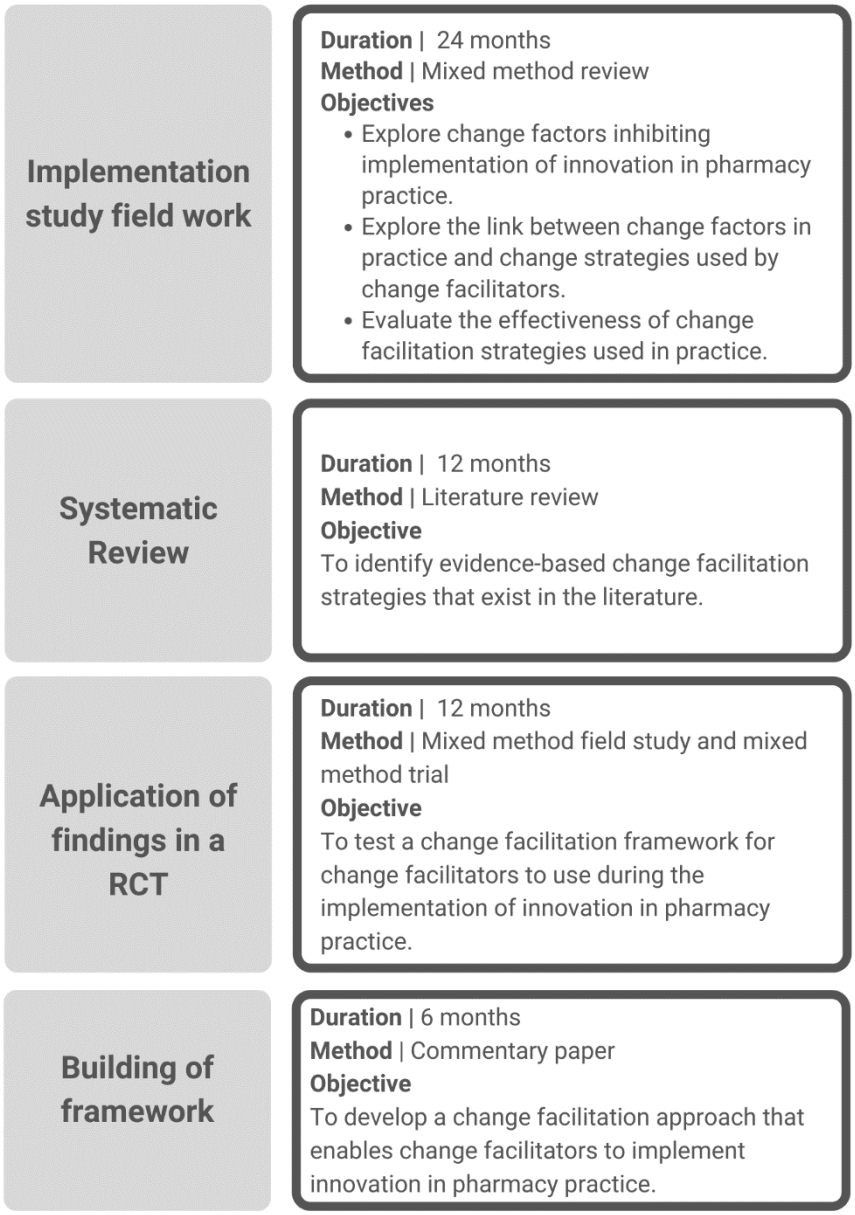
Chapter 4 focuses on the implementation aspect of an effectiveness-implementation hybrid study, where data pertaining to a tailored change facilitation intervention was recorded by CFs during a Minor Ailments Service (MAS) study in community pharmacies. CFs used a preliminary facilitation approach, which included exploration of implementation barriers using a list of implementation factors identified in the previous implementation study in community pharmacy and establishing facilitation strategies using a list of 111 facilitation strategies, also compiled from findings of the previous implementation study in community pharmacy. Longitudinal analysis of the tailored interventions demonstrated that CFs identified 67% of all implementation barriers in the first two visits (across two months) and resolved 75% of these barriers in the same two visits. The most common implementation barrier identified during the MAS study was 'a lack of prioritisation of the change'. To overcome this barrier, the most effective change strategy was to 'communicate the change to stakeholders' with a Resolution Percentage of 67%. The Chapter concludes by highlighting the importance of equipping CFs with a framework to navigate implementation barriers, facilitation strategies, and a way to evaluatethe effectiveness of their strategies, allowing for a dynamic yet streamlined approach to changeimplementation.

Chapter 5 presents a commentary that proposes the 6E Change Facilitation Framework. This framework is proposed for use by CFs to tailor their interventions according to the implementation factors identified in a particular setting. The framework proposes 6 principles,

three of which focus on theimplementation of the innovation and three that focus on adoption by stakeholders.

Chapter 6 discusses the overall research and its implications. The chapter focuses on describing how the research methods addressed the overall objectives and discusses contributions to existing knowledge in implementation science, business management, and the wider literature. The chapter reflects on the overall strengths and limitations of the research, describes the implications of the research findings and areas for future research. The chapter concludes by drawing conclusions from the overall research and provides recommendations for practice.

Figure 1. Flow chart of study Work Streams and methods



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