COMMUNITY-BASED INTERVENTION TO IMPROVE HYPERTENSION MANAGEMENT IN THAILAND

SAKUNTALA ANURUANG

A thesis in fulfilment of the requirements for the degree of

Doctor of Philosophy

Centre for Cardiovascular and Chronic Care

Faculty of Health

University OF Technology Sydney

July 2015

CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged in the text.

I also certify that the thesis has been written by me. Any help I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of student:

Production Note:
Signature removed prior to publication.

Date:

8 July 2015

ACKNOWLEDGEMENTS

This thesis represents not only my PhD work; it is a milestone in more than three years of learning and growing at the University of Technology, Sydney. Foremost, I am deeply thankful to my principal supervisor, Professor Patricia Mary Davidson for continuous support me in every moment during these past three years. In 2011, the first time I met Professor Patricia Mary Davidson, I felt the power encouragement from her. Thank you for all the opportunities that she always gives me. She is an excellent supervisor who coaches, cares, and empowers. I would never have been able to finish my PhD work without her guidance.

I would like to thank my co-supervisors, Dr Louise Hickman and Professor Debra Jackson for all their support. I would also like to thank Dr Michelle DiGiacomo as my last co-supervisor for supporting and helping me along with the qualitative study. My special thanks to Dr Phillip Newton, Dr Sungwon Chang, and all the staff Centre for Cardiovascular and Chronic Care. I would also like to thank Dr Terry Royce, Professor Tony Moon, Priya Nair, Jane Van Balen, Graduate Research School and the UTS library for supporting and conducting the useful sessions to support my PhD journey. Thanks to Dr Chakra Budathoki and Ajarn Thitipong Tankumpuan for their supervision of statistical analysis. In addition, I would like to special thank my master degree's supervisor Associate Professor Siriorn Sindhu for all previous valuable advice.

I am also thankful to the study participants, the Directors, and staffs of Huatale Primary Care Health Centre for their great support and cooperation in conducting the data collection.

Many thanks to all my supportive friends in the Faculty of Health, Penny, Dessie, Hiba, Vijay, Linna, Sarah, Dr Caleb, Dr Ponndara, Melanie and all my friends in research student room for always being with me when I was pleased or depressed. I also thank you to all my Thai friends here to bring me out for getting a fresh air outside the office. I would like to thank my landlord Arin Jintana for her kindness.

Thank you to all my former colleges at Suranaree University of Technology for encouraging and pushing me up to more than I can be. Thank you my sister Emon Chunhakarntakul for all sincerely support and always concern about my health during PhD period. I truly thank Dr Chanick Wangphanich and her family for emotional support and being with me when I was in trouble.

I would love to give my thankful gratitude to my wonderful family my dad, Pongsak Anuruang, my mom Rungnapa Anuruang (passed away), my younger brother Pratompong Anuruang and Khun Kemjira Anuruang for always inspiring, supporting and encouraging me through the past three years with their best wishes.

Finally, I would like to thanks to the University of Technology Sydney for the provision of financial support through the International Research Student scholarships.

This thesis would not exist without the help and encouragement of those named above.

TABLE OF CONTENTS

CERTIFICATE OF ORIGINAL AUTHORSHIP ii
ACKNOWLEDGEMENTS iii
TABLE OF CONTENTS v
LIST OF FIGURES x
LIST OF TABLES xi
ABSTRACT xiv
CHAPTER 1: INTRODUCTION 1
1.1 INTRODUCTION 1
1.2 BACKGROUND 1
1.2.1 Older Population 1
1.2.2 The Magnitude of the Problem 2
1.2.3 Responses to Changing Population Structure 3
1.3 SIGNIFICANCE AND INNOVATION OF THE STUDY 4
1.3.1 Definition of Terms 5
1.3.2 Strategies for Promoting Self-Management to Improve Health Status 8
1.3.3 Expected Outcomes to Improve Self-Management in Older People 9
1.4 RESEARCH STUDY AIMS 11
1.5 RESEARCH QUESTIONS 11
1.6 HYPOTHESES 12
1.7 STRUCTURE OF THE THESIS 12
1.8 CHAPTER SUMMARY 14
1.9 REFERENCES 15
CHAPTER 2: LITERATURE REVIEW (PUBLICATION) 18
Publication Title: Community-based Interventions to Promote Management for Older People: an Integrative Review 18
2.1 INTRODUCTION 18
2.2 METHOD 21
2.2.1 Research Questions 21
2.2.2 Design 21
2.2.3 Search Strategy 21
2.2.4 Classification and Review Process 22

2.3 RESULTS 23
2.3.1 Study Characteristics 23
2.3.2 Sample and Setting 23
2.3.3 Theoretical Perspective for Self-care of Self-management Interventions 28
2.3.4 Conceptualization of Self-care and Self-management 28
2.3.5 Self-care/management Intervention Strategies in Community-based Settings 29
2.3.6 Self-care/management Intervention Approach Attributes 30
2.3.7 Outcome Measures of Self-care/management Interventions 31
2.4 DISCUSSION 32
2.5 LIMITATIONS OF THE REVIEW 33
2.6 CHAPTER SUMMARY 34
2.7 REFERENCES 35
CHAPTER 3: CONCEPTUAL FRAMEWORK 38
3.1 INTRODUCTION 38
3.2 HYPERTENTION 38
3.3 AN OVERVIEW OF THE CONCEPT OF SELF-REGULATION 42
3.4 EFFECTS OF SELF-REGULATION ON THE OUTCOMES 43
3.5 CONCEPTUAL FRAMEWORK 44
3.6 CHAPTER SUMMARY 45
3.7 REFERENCES 46
CHAPTER 4: RESEARCH METHODOLOGY 48
4.1 INTRODUCTION 48
4.2 METHODS 48
4.2.1 Study Design 48
4.3 ETHICAL CONSIDERATIONS 52
4.4 POPULATION AND RESEARCH SETTING 52
4.5 STUDY SAMPLE AND ALLOCATION 53
4.6 SAMPLE RECRUITMENT PROCESS 54
4.7 INSTRUMENTS AND MEASURE 55
4.8 INTERVENTION 57
4.9 CONTROL GROUP 61
4.10 DATA COLLECTION PROCEDURE 61
4.11 FOCUS GROUP DISCUSSION PROCEDURE 61
4.12 DATA ANALYSIS 63
4.12.1 Quantitative Analysis 63

4.12.2 Qualitative Analysis 63
4.13 CHAPTER SUMMARY 66
4.14 REFERENCES 67
CHAPTER 5: TRANSLATION AND VALIDATION OF INSTRUMENT (PUBLICATION) 70
Publication Title: The Thai Hill-Bone HBP Compliance Scale: a Translation and Validation Study 70
5.1 ABSTRACT 70
5.2 INTRODUCTION 71
5.3 BACKGROUND 72
5.4 AIM 73
5.5 METHODS 73
5.5.1 Design and Participants 73
5.5.2 Ethical Issues 73
5.5.3 Instrument 73
5.5.4 Data Analysis 82
5.6 RESULTS 83
5.6.1 Characteristics of the Sample 83
5.6.2 The Psychometric Evaluation 86
5.6.3 Reliability and Construct Validity 88
5.6.4 Criterion Validity 88
5.7 DISCUSSION 89
5.8 LIMITATIONS 90
5.9 CONCLUSION 91
5.10 RELEVANCE TO CLINICAL PRACTICE 91
5.11 ACKNOWLEDGEMENTS 91
5.12 CONTRIBUTIONS 92
5.13 CHAPTER SUMMARY 92
5.14 REFERENCES 93
CHAPTER 6: QUANTITATIVE STUDY RESULTS 96
6.1 INTRODUCTION 96
6.2 THE PARTICIPANTS OF THE STUDY 96
6.3 CHARACTERISTICS OF THE SAMPLE 99
6.4 HEALTH STATUS 99
6.5 ADHERENCE TO HIGH BLOOD PRESSURE THERAPY 102
6.6 HEALTH RELATED QUALITY OF LIFE 103

6.7 EFFECT OF COMMUNITY-BASED INTERVENTION BETWEEN THE INTERVENTION GROUP AND THE CONTROL GROUP 104
6.7.1 Comparisons of the Changes of Health Status (Systolic Blood Pressure, Diastolic Blood Pressure and Waist Circumference), Adherence to High Blood Pressure Therapy and Health Related Quality of Life over Time between the Two Groups ... 104
6.8 EFFECT OF COMMUNITY-BASED INTERVENTION WITHIN SUBJECTS 129
6.8.1 Comparisons of the Change of Health Status (Systolic Blood Pressure, Diastolic Blood Pressure and Waist Circumference), Adherence to High Blood Pressure Therapy and Health Related Quality of Life Over Time Measurement 129
6.9 CHAPTER SUMMARY 147
6.10 REFERENCES 148
CHAPTER 7: QUALITATIVE STUDY RESULTS 149
7.1 INTRODUCTION 149
7.2 PARTICIPANT DEMOGRAPHICS 150
7.3 APPROACHABILITY 151
Reasons for participation 151
7.4 ACCEPTABILITY 152
7.5 AVAILABILITY AND ACCOMMODATION 154
7.6 AFFORDABILITY 156
7.7 APPROPRIATENESS 157
7.8 CHAPTER SUMMARY 159
7.9 REFERENCES 160
CHAPTER 8: DISCUSSION AND CONCLUSION 161
8.1 INTRODUCTION 161
8.2 SUMMARY OF THE EFFECTIVE ELEMENTS OF THE INTERVENTION PROGRAM: WHAT ARE THE CORE ELEMENTS OF A COMMUNITY BASED INTERVENTION FOR HYPERTENSION IN THAILAND? (RESEARCH QUESTION ONE) 161
8.3 THE EFFECTIVENESS OF THE COMMUNITY-BASED PROGRAM FOR OLDER PEOPLE IN THAILAND: WHAT IS THE IMPACT OF A COMMUNITY-BASED INTERVENTION IMPROVE SELF-MANAGEMENT FOR HYPERTENSION, SPECIFICALLY DECREASE BLOOD PRESSURE; DECREASE WAIST CIRCUMFERENCE; DECREASE SODIUM INTAKE; PROMOTE APPOINTMENT KEEPING; IMPROVE ADHERENCE TO HIGH BLOOD PRESSURE THERAPY AND IMPROVE HEALTH RELATED QUALITY OF LIFE AMONG OLDER PEOPLE WITH HYPERTENSION? (RESEARCH QUESTION TWO) 163
8.4 THE ACCEPTABILITY OF THE COMMUNITY-BASED PROGRAM FOR OLDER PEOPLE IN THAILAND: PATIENT-CENTRED ACCESS TO HEALTH CARE 168
8.5 STRENGTHS AND LIMITATIONS 172
8.6 IMPLICATIONS FOR NURSING CLINICAL PRACTICE, NURSING RESEARCH AND NURSING POLICY 175

8.7 CONCLUSION 177
8.8 REFERENCES 178
APPENDICES 182
APPENDIX A: INFORMATION SHEET 183
APPENDIX B: CONSENT FORM 185
APPENDIX C: ETHICAL APPROVAL 187
APPENDIX D: PERMISSION LETTER FOR RESEARCH SETTING 190
APPENDIX E: SOCIO-DEMOGRAPHIC DATA COLLECTION TOOL 191
APPENDIX F: THE THAI HILL-BONE COMPLIANCE TO HIGH BLOOD PRESSURE THERAPY SCALE 193
APPENDIX G: THE THAI SF-36 V1 QUESTIONNAIRE 194
APPENDIX H: THE SELF MANAGEMENT WEEKLY PLAN 200
APPENDIX I: THE SELF MANAGEMENT OUTCOMES RECORD BOOK 201
APPENDIX J: THE SELF MANAGEMENT PROGRAM PROCEDURE 204
APPENDIX K: COPY PERMISSION TO TRANSLATE THE HILL-BONE COMPLIANCE TO HIGH BLOOD PRESSURE THERAPY SCALE 218
APPENDIX L: COPY PERMISSION FROM JOURNAL OF CLINICAL NURSING 219
APPENDIX M: COPY PERMISSION FROM NURSE RESEARCHER 220
APPENDIX N: PUBLICATION (Strategies to enhance recruitment of rural dwelling older people with hypertension into community-based randomised controlled trials study) 221

LIST OF FIGURES

Figure 2.1 Flowchart of trial selection process 22

Figure 3. 1 Conceptual Framework of the Study (Bandura 1991) 45

Figure 4. 1 Sequential explanatory mixed method design 51
Figure 4. 2 Question route for Focus group discussion developed by using five-dimensions of access to health care (Levesque, Harris & Russell 2013) 65

Figure 6. 1 the progress of all participants through the study 98
Figure 6. 2 Mean of systolic blood pressure of the intervention group and the control group over times period (N = 75 control group; N = 73 intervention group) 107
Figure 6. 3 Mean of diastolic blood pressure of the intervention group and the control group over times period (N = 75 control group; N = 73 intervention group) 111
Figure 6. 4 Mean of waist circumference of the intervention group and the control group over time period (N = 75 control group; N = 73 intervention group) 114

LIST OF TABLES

Table 2. 1 Summary of the studies that met inclusion criteria 25

Table 4. 1 Inclusion and exclusion criteria 54
Table 4. 2 Summary of the 4-week community-based intervention and data collection 60

Table 5. 1 the Hill-Bone HBP Compliance Scale of the Original version and the Back-translation version 78
Table 5. 2 Demographic and Clinical status of the participants (N = 156) 85
Table 5. 3 Comparison of the Thai Hill-Bone HBP Compliance Scale and blood pressure control status (N = 156) 85
Table 5. 4 KMO measure of Sampling Adequacy and Bartlett's test of Sphericity 86
Table 5. 5 Factor analysis and corrected item to total correlation (N = 156) 87
Table 5. 6 Correlation between the Thai Hill-Bone HBP Compliance Scale total score and blood pressure level 88

Table 6. 1 Participant characteristics and clinical status at pre-intervention measurement (N = 156) 101
Table 6. 2 Normal distributed by using Shapiro-Wilk test 102
Table 6. 3 Descriptive statistics of systolic blood pressure (log transformation) 104
Table 6. 4 Mauchly's Test of Sphericity: systolic blood pressure level 105
Table 6. 5 Within-Subjects Effects: systolic blood pressure 106
Table 6. 6 Between-Subjects Effects: systolic blood pressure 106
Table 6. 7 Descriptive statistics of diastolic blood pressure (log transformation) 108
Table 6. 8 Mauchly's Test of Sphericity of diastolic blood pressure level 109
Table 6. 9 Within-Subjects Effects: diastolic blood pressure 109
Table 6. 10 Between-Subjects Effects: diastolic blood pressure 110
Table 6. 11 Descriptive statistics of waist circumference (log transformation) 112
Table 6. 12 Mauchly's Test of Sphericity of waist circumference 112
Table 6. 13 Within-Subjects Effects: waist circumference 113
Table 6. 14 Between-Subjects Effects: waist circumference 113
Table 6. 15 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at pre-intervention measurement 116
Table 6. 16 Mann-Whitney U test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at pre-intervention measurement 116

Table 6. 17 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at post-intervention measurement 117
Table 6. 18 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at post-intervention measurement 118
Table 6. 19 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 3-month follow-up measurement 118
Table 6. 20 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at 3-month follow-up measurement 119
Table 6. 21 Descriptive statistics of the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score and three subscales at 6-month follow-up measurement 120
Table 6. 22 Mann-Whitney U Test between the two groups: the Thai Hill-Bone Compliance to High Blood Pressure Therapy Scale score at 6-month follow-up measurement 120
Table 6. 23 Descriptive statistics for the two groups: the Thai SF-36v1 score at pre-intervention measurement 122
Table 6. 24 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at pre-intervention measurement 123
Table 6. 25 Descriptive statistics for the two groups: the Thai SF-36v1 score at post-intervention measurement 124
Table 6. 26 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at post-intervention measurement 125
Table 6. 27 Descriptive statistics for the two groups: the Thai SF-36v1 score at 3-month follow-up measurement 126
Table 6. 28 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at 3-month follow-up measurement 127
Table 6. 29 Descriptive statistics for the two groups: the Thai SF-36v1 score at 6-month follow-up measurement 128
Table 6. 30 Mann-Whitney U Test between the two groups: the Thai SF-36v1 score at 6-month follow-up measurement 129
Table 6. 31 Pairwise comparisons of systolic blood pressure in the control group 130
Table 6. 32 Pairwise comparisons of diastolic blood pressure in the control group 131
Table 6. 33 Pairwise comparisons of waist circumference in the control group 132
Table 6. 34 Comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales change over time by using Wilcoxon Sign Ranks test and Friedman Test for the control group 134
Table 6. 35 Comparison of the mean score of the Thai SF-36v1 (revised 2005) scales over time by using Wilcoxon Sign Ranks test and Friedman Test for the control group 137
Table 6. 36 Pairwise comparisons of systolic blood pressure in the intervention group 139
Table 6. 37 Pairwise comparisons of diastolic blood pressure in the intervention group 140
Table 6. 38 Pairwise comparisons of waist circumference in the intervention group 141

Table 6. 39 Comparison of the total score of the Thai Hill-Bone HBP Compliance Scale and subscales change over time by using Wilcoxon Sign Ranks test and Fried Man Test for the intervention group 143
Table 6. 40 Comparison of the mean score of the Thai SF-36v1 (revised 2005) scales over time by using Wilcoxon Sign Ranks test and Fried Man Test for the intervention group 146

ABSTRACT

Hypertension is a common and burdensome condition among older people in Thailand. Extrapolating models from Western society is fraught unless they are able to be tailored and targeted to the host society. This thesis has appraised evidence-based strategies for self-management of hypertension and sought to develop and evaluate an intervention appropriate for rural, community dwelling older individuals in Thailand. Findings from appraisal of the evidence and integrative review identified shared decision-making and mutual goal setting as elements of effective interventions for improving health behaviours and outcomes.

In order to ensure a reliable, valid and culturally appropriate measurement for hypertension management in Thailand, the Hill-Bone Compliance to High Blood Pressure Scale, was translated and culturally adapted. The standardized Cronbach's alpha of all items was 0.64, 0.61 for reduced sodium intake subscale, 0.5 for appointment keeping subscale and 0.69 for medication taking subscale. Pearson's correlation coefficient demonstrated inter-item correlation values ranged from -0.14 to 0.58. The Thai Hill-Bone HBP Compliance scores were positively correlated with level of systolic and diastolic blood pressure.

A sequential explanatory mixed method design, embedding a quasi-experimental with longitudinal study followed by focus group interviews was undertaken. A four week, theoretically derived, community-based intervention program was implemented to improve hypertension management. Adherence to high blood pressure therapy was assessed using the Thai Hill-Bone HBP Compliance Scale, and health related quality of life using the Thai SF-36v1. Participants were 156 (68.6% female). The mean age of participants was 70 years (SD 6.3).

The outcomes demonstrated a statistically significant difference between the groups in systolic blood pressure at all 4 time points , and diastolic blood pressure at three time points (post-intervention, 3-month, 6-month follow-up), and waist circumference at 3-month follow-up. Adherence of high blood pressure therapy showed significant differences between groups in 3-month and 6-month follow-up measurement for sum score, salt intake and appointment keeping subscale. The results in health related quality of life demonstrated statistically significant differences between the groups at all 4 time points in the physical functioning domain.

Conclusion: This study has summarised the burden of hypertension in Thailand and systematically developed a tailored and targeted method of promoting self-management of hypertension in a model of intervention appropriate to older Thai individuals living in a rural setting. This model of intervention requires further evaluation in a multi-centred randomised controlled trial to demonstrate efficacy and effectiveness.