BUILDING AN EVIDENCE BASE FOR A COLLABORATIVE MEDICATION THERAPY MANAGEMENT MODEL FOR CHRONIC DISEASES IN MALAYSIA: PERSPECTIVES OF HEALTHCARE STAKEHOLDERS

BY

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ABSTRACT

Ageing populations and burden of chronic diseases affect economies, resources, and most importantly quality of patient care. Generally, in chronic diseases, patients take multiple drugs life long and there is a need to better manage their medicine. Collaboration among the healthcare providers in chronic diseases is required for effective medicine management to improve the outcomes of drug therapy. In developed countries, collaborative working of the community pharmacist and general practitioners to manage medicines in chronic disease have been extensively cited as beneficial. However, in Malaysia, there exists least collaboration between community pharmacist and general practitioner. The aim of this mix method study was to build an evidence base for a collaborative medication therapy management model by engaging community pharmacists and general practitioners in a collaborative practice for chronic diseases with a special focus on asthma in three phases.

Phase one of this study quantified the impact of collaborative practice between community pharmacist and general practitioner on various clinical, humanistic and economical outcomes in asthma in the form of a systematic review and meta-analysis. This served as a base for the next phase.

Phase two deployed Delphi technique (a consensus based method) to gauge level of agreement among different healthcare stakeholders on collaborative working of community pharmacist and general practitioners. Twenty-nine experts (mainly on strategic posts) were recruited from all over Malaysia, representing i.e., community pharmacists (n=10), general practitioners (n=11) and nurses (n=8), to constitute a panel of experts. An online questionnaire consisted of 132 items, was drafted, validated and administered to the experts. Median, interquartile range and intra-class correlation coefficient were computed to appraise degree of consensus or dissensus, among the experts for the possibilities and different aspects of a collaborative medicine management model for chronic diseases. The results were assembled in the form of recommendations.

Phase three of the study began with the aim to further enrich data obtained in the phase two, based on axiom of triangulation, through in-depth semi-structured interviews. Twelve experts (from the same expert panel) were interviewed to size up views, perception and experiences of experts about various aspects of collaboration. Themes were identified using a constant comparison approach based on grounded theory, while theoretical saturation directed the data collection. Result of this phase confirmed the data acquired in phase-2 and explored the collaboration possibilities in details and covered various barriers, diseases, modes of funding for the service, and the feasibility of establishing the collaborative medicine management model in Malaysia.

Data generated in three phases of research are an original contribution to the evidence base and provided a frame work to guide the future health care policy to switch to a collaborative medicine management model and recommends future research to evaluate its related outcomes using a randomized control trial.

Key words: community pharmacist, general practitioner, medicine management, medication therapy management, chronic disease, asthma, collaborative care, shared care, team based care, Delphi method, perception, barriers, qualitative inquiry, Malaysia.

خلاصة البحث

رعاية جودة ذلك من والأهم ، والموارد الاقتصادات على تؤثر المزمنة الأمراض وعبء السكان شيخوخة لإدارة حاجة وهناك الحياة مدى متعددة عقاقير المرضى يأخذ ، المزمنة الأمراض في ، عام بشكل .المرضى الإدارة أجل من المزمنة الأمراض في الصحية الرعاية مقدمي بين تعاون مطلوب .أفضل بشكل أدويتهم بالعمل واسع نطاق على الاستشهاد تم ، المتقدمة البلدان في .الدوائي العلاج نتائج لتحسين للطب الفعالة من الأولى المرحلة حددت .المزمنة الأمراض في الأدوية لإدارة العامين والممارسين المجتمع لصيادلة التعاوني السريرية النتائج مختلف على العام والممارس المجتمع صيدلي بين التعاونية الممارسة تأثير الدراسة هذه .القادمة للمرحلة قاعدة بمثابة هذا .تلوي وتحليل منهجية مراجعة شكل في الربو في والاقتصادية والإنسانية أصحاب مختلف بين الاتفاق مستوى لقياس (الإجماع على تعتمد طريقة) دلفي تقنية الثانية المرحلة نشرت وعشرين تسعة تعيين تم .العامين والممارسين المجتمع لصيادلة التعاوني العمل على الصحية الرعاية في المصلحة (10 = ن) المجتمع صيادلة أي يمثلون ، ماليزيا أنحاء جميع من (الاستراتيجية الوظائف في أساسا) خبيرا عبر الاستبيان يتكون .الخبراء من لجنة لتشكيل ، (8 = ن) والممرضات (11 = ن) العامين والممارسين مجموعة ، متوسط حساب تم. للخبراء وإدارته صحته من والتحقق صياغته وتمت ، بندا 132 من الإنترنت الخبراء بين ، الإختلاف أو الإجماع من درجة لتقييم الطبقة داخل الارتباط ومعامل interquartile شكل في النتائج تجميع تم .المزمنة للأمراض التعاوني الدواء إدارة لنموذج المختلفة والجوانب لإمكانيات المرحلة في عليها الحصول تم التي البيانات إثراء زيادة بهدف الدراسة من الثالثة المرحلة بدأت .توصيات اثني مع مقابلات وأجريت .متعمقة منظمة شبه مقابلات خلال من ، التثليث بديهية على بناءً ، الثانية جوانب مختلف حول الخبراء وخبرات وتصورات نظر وجهات لتكبير (نفسه الخبراء فريق من) خبيرا عشر التشبع وجه حين في ، متأصلة نظرية على يعتمد ثابت مقارنة نهج باستخدام السمات تحديد تم .التعاون الثانية المرحلة في عليها الحصول تم التي البيانات المرحلة هذه نتيجة أكدت .البيانات جمع النظري للخدمة التمويل وأساليب والأمراض الحواجز مختلف وغطت التفاصيل في التعاون إمكانيات واستكشفت ماليزيا في التعاونية الأدوية لإدارة نموذج إنشاء وجدوى ،

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APPROVAL PAGE

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ABBREVIATIONS

ACQ	Asthma Control Questionnaire
ACT	Asthma Control Test
AIDS	Acquired Immune Deficiency Syndrome
AKQ	Asthma Knowledge Questionnaire
AQLQ	Asthma Quality of Life Questionnaire
BMQ	Brief Medication Questionnaire
CAKQ	Consumer Asthma Knowledge Questionnaire
CC	Case Control
Cont. I	Controlled Interventions
CMTM	Collaborative Medication Therapy Management
COPD	Chronic Obstructive Pulmonary Disease
CP	Community Pharmacist
CPA	Canadian Pharmacist Association
CPGM	Community Pharmacy Guild Malaysia
C-RCT	Clustered Randomized Control Trials
CT	Controlled Trials
CVDs	Cardiovascular Diseases
CVI	Content Validity Index
DRPs	Drug Related Problems
DUR	Drug Utilization Review
EPOC	Effective Practice and Organization of Care
ES	Effect Size
FEV1	Forced Expiratory Volume
FIP	International Pharmaceutical Federation
FMS	Family Medicine Specialist
FVC	Forced Vital Capacity
GAR	Global Asthma Report
GINA	Global Initiative for Asthma
GP	General Practitioner
HMR	Home Medication Review
ICC	Intra-class Correlation Coefficient
IIUM	International Islamic University of Malaysia
IPC	Inter-professional Collaboration
IQR	Interquartile Range
KI	Key Informant
LABA	Long acting Beta Agonist
LWAQ	Living with Asthma Questionnaire
MeSH	Medical Subject Handling
MHE	Ministry of Higher Education
MMA	Malaysian Medical Association
MoH	Ministry of Health
MPS	Malaysian Pharmaceutical Society
MTM	Medication Therapy Management
MUR	Medication Use Review
NCDs	Non-communicable Diseases

P to R ratio	Preventer to Reliever ratio
PCAQ	Perceived Control of Asthma Questionnaire
PEFR	Peak Expiratory Flow Rate
QoL	Quality of Life
QP	QuestionPro
RCT	Randomized Controlled Trial
RevMan	Review Manager
RMMR	Residential Medication Management Review
RoB	Risk of Bias
SABA	Short acting beta agonist
SPSS	Statistical Package for Social Sciences
UHC	Universal Health Coverage
UK	United Kingdom
USA or US	United States of America
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 CHAPTER INTRODUCTION

This chapter starts with the introduction and background of the research problem. It takes an account of global burden and problems in medicine management in chronic diseases. It highlights the concept and need of collaboration among healthcare professionals to manage chronic disease in an effective way. Then, chapter discusses in detail the Malaysian healthcare system, growing burden of chronic diseases, and prevalence of irrational prescribing and medicine use, especially in private primary care in Malaysia to establish the problem statement and gaps in practice and policy. This follows setting research objectives guided by specific research questions. At the end, it highlights the significance of the study and introduces the readers to the chapter wise organization of thesis in accordance with the research objective set.

1.2 BACKGROUND OF THE PROBLEM

1.2.1 Global Burden of Chronic Diseases

Chronic diseases also known as non-communicable diseases or lifestyle-related diseases, impose a serious public health issue all around the globe. World Health Organization (WHO) define a chronic disease as ″diseases which are not passed from person to person, they are of long duration and generally slow progression.″. WHO has prime focus on the four major chronic diseases based on prevalence and magnitude of threat, these are: cardiovascular diseases, cancer, chronic respiratory diseases (asthma and chronic obstructive pulmonary diseases) and diabetes. In almost every country, chronic diseases are leading cause of death and disease burden (Bernell & Howard, 2016; Sinha & Pati, 2017; WHO, 2014a). For the sake of clarity, and to distinguish chronic diseases from acute conditions which are curable, throughout this thesis the term chronic diseases would refer to incurable diseases which require prolong treatment and care or lifelong treatment and care.

In 2016, 41 million deaths were attributed to chronic diseases, which was 71% of total deaths per annum around the globe. A common myth is, chronic diseases related deaths occur only in older people, in fact, 86% burden of chronic diseases manifest itself between 30 to 69 years of age range (WHO, 2018b).

In 21st century, chronic diseases are considered as one of the grave threats to healthcare systems because of human miseries, hardships and the damage they levy on the economic fabric of countries. This is more relevant for low- and middle-income countries which share 85% of chronic diseases' burden of the globe (WHO, 2018a).

Chronic diseases require life-long medications and continuous care, thus persistently consume large proportion of healthcare resources which result in constant overload not only on the budget of an individual or family, but also on the overall health

budget of a country. The growing threat of chronic diseases thus occults the economic development and is considered an under-appreciated cause of poverty in these countries. Fact is, economic ramifications of chronic diseases have already been felt around the world, but these ramifications are more disastrous for low- and middle-income countries. Reduction in the burden of chronic diseases is not only a cardinal priority, but also a paramount step in the sustainable development of a country (WHO, 2013b, 2014a).

No country in the world can afford to ignore the up-surging burden of chronic diseases. If countries do not opt for an evidence based systematic intervention and action, the cost of health in chronic diseases would keep on mounting till it gets out of the capacity of a country (Sinha & Pati, 2017; WHO, 2014b). Thus, there is a need of systematic approach in chronic diseases management with a focus on treatment plans which ensure patients' adherence to the prescribed therapy, improve patient safety and maximize positive health outcomes. These approaches are largely dependent on the local healthcare policies made by the government under guidance and influence of various healthcare stakeholders. A healthcare system, if enabled based on effective policies, may reciprocate the needs of people with chronic diseases and proffer significant reduction of these premature deaths which were largely preventable (WHO, 2013b). So, it is imperative to focus, foresee and deploy serious steps to manage the growing burden of chronic diseases. In this regard, the essential step is to open a liberal communication channel between healthcare professionals. To effectively address the major challenge imposed by chronic diseases, ″WHO Global Action Plan for the Non-Communicable diseases 2013-2020″ emphasizes more on strengthening of the healthcare systems through policies which foster a culture of collaborative care practice involving all healthcare stakeholders, and making them responsible for prevention,

control and management of chronic diseases (Morrissey, Ball, Jackson, Pilloto, & Nielsen, 2015; WHO, 2013b).

1.2.2 Medicines and Chronic Diseases

1.2.2.1 Medicine Use in Chronic Diseases

Medicines have been part and parcel of human society. They are used to cure, maintain health, prevent illness and manage chronic diseases. However, in case of chronic diseases, medicines receive the vital importance and play a crucial role because they are the most common, repeated and continual interventions which must be applied throughout life (Perez-Jover et al., 2018). For instance, in USA alone, data from centre of disease control and preventions reveals, 50% of the USA population uses at least one prescription drug in a month and 10% population takes more than 5 medicines at a time (Blozik, Rapold, & Reich, 2015). Similarly, in New Zealand , older population take on an average of 7 medications per day (Merry & Webster, 2008; Robb, Loe, Maharaj, Hamblin, & Seddon, 2017). The aging, multimorbid population with chronic diseases is dilating globally. Thus, management of chronic diseases is heavily dependent on the appropriate use of medicines. Furthermore, one out of ten most common reasons of healthcare system inefficiency is spending too much on medicines which are being inappropriately used. Nevertheless, if used appropriately, medicines give sustainable positive results (WHO, 2015).

1.2.2.2 Medication Errors and Adverse Drug Reactions

Another important aspect of medicine use process involves potential medication errors, which may have originated from errors in prescribing, dispensing, wrong storage,