

UNIVERSITI TEKNOLOGI MARA

**ECONOMIC EVALUATION AND
CLINICAL IMPACT OF HOME
MEDICATION REVIEW (HMR) BY
COMMUNITY PHARMACISTS
AMONG PATIENTS WITH TYPE 2
DIABETES MELLITUS (T2DM)**

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ABSTRACT

Objective: Successful diabetes treatment requires commitment and understanding of disease management by the patients. This trial aimed to evaluate the clinical and economic impacts of home medication review by community pharmacists (HMR-CP) in optimising diabetes care and as a cost-effective intervention from the Malaysian healthcare provider perspective. **Methodology:** A randomised controlled trial (RCT) was conducted on 166 patients with Type 2 Diabetes Mellitus (T2DM) who were randomly assigned to the intervention or control groups. The economic evaluation was conducted alongside the RCT to estimate the intermediate cost-effectiveness of HMR-CP for patients with T2DM. The intervention group received HMR-CP at 0-month, 3-month, and 6-month. The primary outcome was haemoglobin A_{1c} (HbA_{1c}) and quality-adjusted life-years (QALYs), while clinical outcomes, anthropometric data, and humanistic outcomes were the secondary outcomes. The utility value measured using five-level EuroQoL five-dimensional questionnaire (EQ-5D-5L). For the intervention group, drug-related problems (DRP) were classified according to the Pharmaceutical Care Network Europe Foundation (PCNE). Medication adherence was determined based on the Pill Counting Adherence Ratio (PCAR). The costs included in the studies was cost of implementing the intervention and the cost associated with the use of healthcare services. General linear model and generalised estimating equations were used to compare data across the different time-points within and between the groups, respectively. A Markov model was then constructed to project the lifetime cost-effectiveness data beyond the RCT. The primary outcomes for the economic evaluation were cost per HbA_{1c} reduction and cost per quality-adjusted life-years (QALYs). **Result:** No significant difference was observed in the demographic and anthropometric data at baseline between the two groups except for fasting blood glucose (FBG). There was a significant reduction in the HbA_{1c} (-0.91%) and FBG (-1.62mmol/L) over the study period ($p < 0.05$). A similar observation was noted in diastolic blood pressure (DBP) and total cholesterol (TC) but not in high-density lipoprotein (HDL) and anthropometric parameters. Both utility value and Michigan Diabetes Knowledge Test (MDKT) scores increased significantly over time. As for the intervention group, significant changes in PCAR ($p < 0.001$) and the number of DRP ($p < 0.001$) were noted. The intervention and health services costs throughout the 6-month HMR-CP trial was RM121.45 [95%CI: RM115.89 to 127.08] per participant. The ICER of HMR-CP intervention versus standard care was RM178.82 [95%CI: RM86.77-364.03] per reduction of HbA_{1c}. HMR-CP intervention [RM12,764.82] was associated with an incremental cost of RM83.34 over control group [RM12,682.95] with an additional of 0.07 QALY gained. The ICER associated with HMR-CP intervention was RM1,190.57 per QALY gained, which was below the ICER threshold in Malaysia, indicating that HMR-CP was a cost-effective option. **Conclusion:** HMR-CP was found to be a cost-effective intervention that had significantly reduced the HbA_{1c} and significantly improved the glycaemic control, QoL, medication adherence, and knowledge of T2DM patients and reduced the number of DRP and cost of medication wastage. However, the impact of HMR-CP on certain clinical and anthropometric parameters remains inconclusive, and further investigation is warranted.

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TABLE OF CONTENTS

	Page
CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background Of Study	1
1.2 Problem Statement	4
1.3 Research Objective	5
1.4 Significance Of Study	6
CHAPTER TWO: LITERATURE REVIEW	8
2.1 Overview Of The Healthcare System	8
2.1.1 Malaysian Healthcare Setting	8
2.1.2 Public Healthcare System	9
2.1.3 Private Healthcare System	9
2.2 Diabetes Mellitus	10
2.2.1 Diabetes Management in Malaysia	13
2.2.1.1 Screening and Diagnosis of Diabetes	13
2.2.1.2 Diabetes Education	15
2.2.1.3 Lifestyle Modification	15
2.2.1.4 Prescribing Medication	16

2.2.1.5 Management of Comorbidities	22
2.2.2 Treatment Goal and Medication Used in T2DM Management	26
2.3 Pharmaceutical Care	28
2.3.1 Drug-related problems (DRPs)	28
2.3.1.1 Classification for DRPs	29
2.4 Provision Of Enhanced Services By Community Pharmacies	31
2.4.1 Integrating Community Pharmacists into a Team-Based Care Model	32
2.4.2 Impact of Intervention by Community Pharmacies	33
2.5 Medication Review	35
2.5.1 Objectives and different types of medication review	35
2.5.2 Home Medication Review	36
2.5.3 Implementation of Home Medication Review programme	37
2.5.3.1 International Settings of Home Medication Review Programme	38
2.5.3.2 Malaysian Setting Under MOH	41
2.6 Effectiveness Of Home Medication Review	45
2.6.1 Community Pharmacists Versus Hospital Pharmacists	45
2.6.3 Impact of HMR on Clinical Outcomes	47
2.6.4 Impact of HMR on Drug Related Problems	48
2.6.5 Impact of HMR on patients' Medication Adherence	50
2.6.6 Impact of HMR on Patients' Knowledge About The Disease	52
2.6.7 Impact of HMR on Patients' Quality of Life (QoL)	53
2.7 Economic Evaluations	54
2.7.1 Overview of Economic Evaluation	55
2.7.2 Types of Economic Evaluation	55
2.7.2.1 Cost-Effectiveness Analysis (CEA)	56
2.7.2.2 Cost-Utility Analysis (CUA)	57
2.7.2.3 Cost-Benefit Analysis (CBA)	57
2.7.3 Steps in Conducting Economic Evaluations	58
2.7.4 Piggy-back Study Alongside an RCT	58
2.7.5 Economic Modelling	59