

UNIVERSITI TEKNOLOGI MARA

**FACTORS ASSOCIATED WITH USABILITY OF THE
EMPOWER-SUSTAIN SELF-MANAGEMENT MOBILE APP©
AMONG INDIVIDUALS WITH CARDIOVASCULAR RISK
FACTORS IN PRIMARY CARE**

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ABSTRACT

Objective: This study aimed to determine the usability of the EMPOWER-SUSTAIN Self-Management Mobile App[©] and evaluate the factors associated with its usability among patients with cardiovascular (CV) risk factors in primary care.

Methodology: This was a cross-sectional study, conducted among patients aged ≥ 18 years with CV risk factors (hypertension, T2DM, dyslipidaemia and/or obesity) attending a university primary care clinic. Inclusion criteria included those who were able to read Malay, have an Android smartphone, have the EMPOWER-SUSTAIN Self-Management Mobile App installed, and attend the clinic twice within 6 months. Those who were diagnosed with circulatory disorders, on renal dialysis, severe hypertension, on radiotherapy, having mental disorders or pregnant. Those who fulfilled the inclusion and exclusion criteria were recruited. Data gathered were on sociodemographic, clinical characteristics, self-management support by doctors, utilisation of the app at home and social support in using the app. The previously translated and validated Malay version of the mHealth App Usability Questionnaire (M-MAUQ) was used to measure usability. The mean usability score was calculated and multiple linear regression analysis was conducted to determine the factors associated with usability of the app.

Results: A total of 247 patients with at least one CV risk factor(s) were recruited. The mean age was 60.2 (± 8.2), and the highest proportion of participants (45%) were from the middle age group of 55–64 years. The total mean (\pm SD) usability score was 5.26 (± 0.67) indicating a high usability of the app. Being Malay ($b = 0.31$, 95% CI 0.08,0.54), using the app at home to understand their medications ($b = 0.33$, 95% CI 0.12,0.53) and having social support from family members and friends ($b = 0.28$, 95% CI 0.07,0.49) were significantly associated with higher usability of the app.

Conclusion: This study found that the usability of the EMPOWER-SUSTAIN Self-Management Mobile App[©] was high among patients with CV risk factors in our primary care clinic. This finding

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CHAPTER 1

INTRODUCTION

Background

Cardiovascular disease (CVD) is the principal cause of death and disability worldwide, with 366 million disability-adjusted life years attributed to CVD in 2017 [1]. Four major cardiovascular (CV) risk factors i.e., hypertension, type 2 diabetes mellitus (T2DM), dyslipidaemia and obesity have been identified to cause CVD [1]. In Malaysia, the clustering of multiple CV risk factors has undoubtedly contributes towards CVD being the number one cause of death over the last three decades [2,3]. The National Health and Morbidity Survey (NHMS) 2019 found that a staggering 3.4 million people lived with two major risk factors while another 1.7 million people lived with three major risk factors [2]. Out of all deaths, CVD was responsible for 35%, with coronary artery disease contributing 15% and stroke 8% [3]. Meanwhile, 18% of CVD deaths in 2020 were premature, occurring in the age group of 41 to 59 years old [3].

In Malaysia, most patients with CV risk factors are managed in primary care [4]. However, the majority of them do not achieve control targets [4-8]. Suboptimal management of long-term conditions such as those with CV risk factors leads to CVD complications [4-8]. In order to improve outcomes, the Chronic Care Model (CCM) provides a conceptual framework for healthcare system change in managing long-term conditions [9]. This model describes six integrated elements i.e., health system structure, self-management support, delivery system architecture, decision support, clinical information system and community resources [9,10]. Among the elements of CCM, self-management support has been acknowledged as one of the key elements to improve outcomes especially for those with CV risk factors [11].