

UNIVERSITI TEKNOLOGI MARA

**FACTORS ASSOCIATED WITH
HIGHER CARDIOVASCULAR
DISEASE RISK AWARENESS
AMONG PATIENTS WITH
CARDIOVASCULAR RISK
FACTORS IN PRIMARY CARE**

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Thesis submitted in fulfilment
of the requirements for the degree of

Master of Medicine

(Family Medicine)

November 2025

ACKNOWLEDGMENT

In the name of Allah, the Most Gracious, the Most Merciful.

First and foremost, I humbly express my deepest gratitude to my esteemed supervisor, Professor Dr. Anis Safura Ramli, for her unwavering guidance, patience, and wisdom throughout this journey and beyond. I am truly thankful for her continuous encouragement and for consistently steering me in the right direction whenever I needed support.

My sincere appreciation also extends to my co-supervisor, Dr Lina Lohshini Kanoo, for her invaluable insights, dedication, and the time they devoted to shaping this thesis.

I am also profoundly grateful to all the lecturers and staff of the Primary Care Medicine Department at Universiti Teknologi MARA (UiTM) for their support and encouragement, which have greatly enriched my experience during my Master's program.

Lastly, I am eternally thankful to my beloved parents,
and my precious siblings. Their unwavering support, prayers, and encouragement have been my source of strength and hope. Words cannot fully express how much I appreciate everyone who stood by me, believed in me, and lifted me up, even in moments of doubt.

May Allah bless all of you abundantly.

ABSTRACT

Background: Cardiovascular diseases (CVD) remain a leading cause of morbidity and mortality due to the increasing prevalence of major CVD risk factors, including type 2 diabetes mellitus, hypertension, dyslipidaemia and obesity. Lifestyle intervention is crucial for tackling these risk factors and curbing CVD. A prerequisite for adopting healthy behaviour is an individual's awareness of their CVD risk. Therefore, this study aimed to determine the overall CVD risk awareness and identify factors associated with higher CVD risk awareness among individuals with CVD risk factors in primary care.

Method: A cross-sectional study was conducted among individuals with at least one CVD risk factor at a university primary care clinic from June 2024 until February 2025. CVD risk awareness was measured using the Attitudes and Beliefs of Cardiovascular Disease–Malay version (ABCD-M) questionnaire. Multiple linear regression was utilised to identify the factors associated with higher CVD risk awareness.

Result: A total of 394 patients were recruited. The mean age was 53.3 (± 8.9). The majority were Malays (59.6%), married (60.2%), and females (55.3%). The mean ABCD-M risk score was 60.1 (± 8.98), indicating high overall CVD risk awareness. Significant factors associated with higher CVD risk awareness included secondary education ($B = 5.54$, 95% CI: 4.75, 6.34, $p < 0.001$), tertiary education ($B = 13.3$, 95% CI: 12.1, 14.4, $p < 0.001$), Middle 40% (M40) household income category ($B = 2.57$, 95% CI: 1.90, 3.25, $p < 0.001$), Top 20% (T20) household income category ($B = 3.02$, 95% CI: 2.12, 3.92, $p < 0.001$), personal history of CVD ($B = 4.06$, 95% CI: 3.17, 4.95, $p < 0.001$), first-degree family history of CVD ($B = 2.52$, 95% CI: 1.65, 3.39, $p < 0.001$), and high FRS ($B = 2.04$, 95% CI: 1.17, 2.91, $p < 0.001$).

Conclusion: This study revealed a high mean score for overall CVD risk awareness among patients with CVD risk factors in our primary care clinic. Higher education levels, higher income categories, personal and family history of CVD and high FRS were significantly associated with higher CVD risk awareness. These findings could be used to develop targeted interventions to improve CVD risk awareness and promote healthy behaviours in primary care.

Keywords: CVD risk awareness, ABCD-M risk score, CVD risk factors, primary care

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CHAPTER 1: INTRODUCTION

Cardiovascular diseases (CVD), namely acute coronary syndrome (ACS) and stroke contributed to 17.9 million deaths worldwide in 2019 (1). In Malaysia, ACS and stroke has been identified as the primary cause of death over the last three decades accounting for 17% and 8.3%, respectively (2). According to the Malaysian Annual Report of the National Cardiovascular Database on Acute Coronary Syndrome (NCVD-ACS) Registry in 2020-2021, the average age of onset of ACS was 58.5 years (3). With regard to stroke, the average age of onset in Malaysia was recorded at 63 years (4, 5). These age profiles were younger compared to those observed in Thailand, Singapore and the Western populations (4). This phenomenon may be caused by the rising prevalence of major CVD risk factors among the Malaysian population, namely type 2 diabetes mellitus (T2DM), hypertension, dyslipidaemia, and obesity (6). According to the National Health and Morbidity Surveys (NHMS) 2019 and 2023, an estimated 3.9 million were reported to have T2DM, 6.4 million have hypertension and 7.6 million adults have dyslipidaemia (6, 7).

In Malaysia, the majority of individuals with CVD risk factors are managed in primary care. However, findings from numerous studies demonstrated that a significant proportion of these patients fail to achieve optimal control of their risk factors (8). Lifestyle interventions, such as maintaining a healthy diet and regular exercise, are fundamental in managing these CVD risk factors and are associated with a reduction of approximately 80% in the occurrence of CVD burden (9-11). Despite the proven effectiveness of lifestyle changes, it is imperative to recognise that a fundamental prerequisite for adopting a healthy lifestyle and achieving optimal disease control involves individuals being aware of their CVD risk (12). This awareness fosters proactive preventive behaviours and better treatment adherence, ultimately resulting in improved cardiovascular outcomes (10, 12).

In line with this, Woringer et al. defined overall CVD risk awareness as a combination of four domains; having knowledge of CVD risk, perceiving one's own risk of CVD, recognising the benefits of diet and exercise, and being ready to change dietary and exercise behaviours (13). Subsequently, this team of researchers developed the Attitudes and Beliefs of Cardiovascular Disease (ABCD) risk questionnaire to measure the overall CVD risk awareness (13). This questionnaire was then translated and validated into the Malay version, namely Attitudes and Beliefs of Cardiovascular Disease (ABCD-M) risk questionnaire (14). A higher score indicates a higher overall CVD risk awareness (13, 14).