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Assessment of Awareness of Risk Factors Associated with Cardiovascular Diseases Among Undergraduate Students at The University of Cyberjaya in Malaysia

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Abstract

Background: Although significant research has explored cardiovascular disease (CVD) epidemiology and risk factors across populations, there's been a notable oversight in assessing awareness levels among undergraduate students in Malaysia. Awareness significantly influences health behaviours and preventive measures. Recognizing knowledge gaps and misconceptions regarding CVD risk factors among young adults is crucial for crafting impactful health promotion strategies aimed at alleviating the long-term burden of CVD.

Aim: The study was conducted to assess the prevalence of awareness of risk factors for cardiovascular disease among students of various faculties in the University of Cyberjaya.

Method: A cross-sectional study was conducted by distributing questionnaires online and physically to 424 students from various faculties. Data analysis was done with Jeffrey's Amazing Statistics Program with Pearson's correlation.

Result: The study shows that students from the faculty of medicine had the highest awareness of cardiovascular disease risk factors while students from faculty of allied health sciences had moderate awareness and those from other non-healthcare related faculties had lower awareness.

Conclusion: This research reveals significant differences in cardiovascular disease risk awareness among undergraduate students at the University of Cyberjaya.

Keywords: awareness, cardiovascular diseases, risk factors

CHAPTER 1
INTRODUCTION

Cardiovascular diseases constitute a significant global health burden, encompassing a range of conditions affecting the heart and blood vessels. In Malaysia, cardiovascular disease, particularly ischemic heart disease, rank as the second leading cause of death, imposing substantial socioeconomic costs and public health challenges. Despite advances in medical treatment and preventive strategies, the prevalence of cardiovascular disease continues to rise, underscoring the critical need for targeted interventions, especially among vulnerable populations such as young adults.

Among various demographic groups, undergraduate university students represent a pivotal cohort for understanding health behaviors and risk perceptions. Their lifestyles, including dietary habits, physical activity levels, and stress management practices, significantly influence their susceptibility to cardiovascular risk factors. Moreover, university settings offer unique opportunities for health promotion and education initiatives aimed at raising awareness and fostering positive health behaviors among young adults.

The University of Cyberjaya, situated in Malaysia, serves as a microcosm of the broader population, comprising diverse student demographics and academic disciplines. Understanding the awareness levels of cardiovascular risk factors among undergraduate students at this institution is paramount for informing targeted health interventions and promoting cardiovascular health within the university community and beyond.

1.1 Research Background

While extensive research has investigated the epidemiology and risk factors of cardiovascular disease in various populations, limited attention has been directed wards assessing the awareness levels of cardiovascular risk factors among undergraduate university students in Malaysia. Given the pivotal role of awareness in shaping health behaviors and preventive actions, understanding the knowledge gaps and misconceptions surrounding cardiovascular disease risk factors among young adults is imperative for designing effective health promotion strategies and reducing the burden of cardiovascular disease in the long term.

1.2 Research Objectives

The present study aims to address this gap in the literature by assessing the prevalence of awareness of cardiovascular disease risk factors among undergraduate students at the University of Cyberjaya. Specifically, the research objectives are as follows:

1. To evaluate the level of awareness of cardiovascular disease risk factors among undergraduate students across different academic faculties at the University of Cyberjaya.
2. To assess the association between awareness of cardiovascular disease risk factors and family history of cardiovascular disease among undergraduate students.
3. To examine the relationship between awareness of cardiovascular disease risk factors and its impact on the lifestyle choices of undergraduate students.

1.3 Research Hypotheses

To guide the investigation, the following hypotheses are proposed:

Null Hypothesis (H0): The prevalence of awareness of risk factors for cardiovascular disease is similar among undergraduate students of various faculties at the University of Cyberjaya.

Alternative Hypothesis (H1): The prevalence of awareness of risk factors for cardiovascular disease is not similar among undergraduate students of various faculties at the University of Cyberjaya.

1.4 Significance of the Study

This research holds significant implications for public health policy and practice by providing insights into the awareness levels of cardiovascular disease risk factors among undergraduate university students in Malaysia. By identifying knowledge gaps and misconceptions, the findings of this study can inform the development of targeted health promotion interventions and educational campaigns aimed at enhancing cardiovascular health awareness and promoting healthy lifestyles among young adults. Moreover, the results may contribute to the formulation of evidence-based strategies for reducing the burden of

cardiovascular disease and improving long-term health outcomes within the university community and beyond.

CHAPTER 2: MATERIALS AND METHOD

METHODOLOGY

2.1 Materials and Methods

2.1.1 Study Location

The study was conducted at UOC in Cyberjaya, Selangor.

2.1.2 Study Design

The study was carried out with cross-sectional study design

2.1.3 Reference Population

Students of UOC.

2.1.4 Study Participant

Undergraduate students of UOC with the following criteria:

Inclusion Criteria:

- 18 years old and above
- Undergraduate students
- Self-volunteer
- Able to read and understand English

Exclusion Criteria:

- Refuse to provide consent
- Incomplete submission of questionnaire

2.1.5 Sample Size

The sample size was calculated by using the data of a previous study on University Students Knowledge of Cardiovascular Disease Risk Factors by D. Smith, D.C. and D.M. Spillman.

Formula used to calculate the sample size was as follows:

$$n = p(1-p) \times \left(\frac{Z}{m}\right)^2$$

By which:

n = simple space.

Z = area under the curve for a desired confidence level of 95%.

P = proportion or prevalence in a previous study.

m = the desired margin of error which is taken at 5%.

Approximately 50% of students from previous study believed that there are at risk of CVD. The calculated sample size based on that study with 10% non-respondent is 423.

2.1.6 Sampling Method

A non-probability convenience sampling was used as the sampling method. A set of questionnaires was distributed to the students via Outlook email, WhatsApp and face to face.

2.2 Data Collection and Analysis

2.2.1 Collection Method

All the data of this study was collected by using an online questionnaire created with Google Forms and QR code created with ME-QR Generator. The form was being distributed in September 2023 and was

closed in May 2024 once the required sample size of 334 respondents were collected. A QR code image was distributed alongside the Google Forms link to those who agreed to participate willingly.

2.2.2 Study Instrument

Online questionnaires consisting of closed-ended questions were used to assess the awareness of risk factors of CVD among students of UOC. The questionnaire was adapted from two validated sources, which are D. Smith et al., (2003) conducted the study in which it has been pretested for validity of their questionnaire. The second source is taken from Metagenics Institute, (2024) on Cardiovascular Risk Assessment Questionnaire.

The questionnaire consists of 4 sections including sociodemographic characteristics, awareness on risk factors of CVD, family history of CVD and practice of awareness in lifestyle.

2.2.3 Data Analysis

The data collected from the questionnaire were tabulated and compiled using Microsoft Excel. Jeffreys' Amazing Statistics Program (JASP) and jamovi software program were used for statistical analysis of our study. Based on the sample size, 424 responses were collected. During cleaning of data, no responses were rejected for data analysis. Kruskal- Wallis ANOVA, Mann-Whitney Test and Spearman's Correlation Test were the statistical tests utilized to achieve our objectives.

CHAPTER 3
RESULTS

Our study received a total of 424 respondents from undergraduate students of University of Cyberjaya.

4.1 SECTION A: SOCIODEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

Table 4.1: Sociodemographic Characteristics of the Respondents

Sociodemographic Variables		Frequency	Percentage (%)
Gender	Male [ ]	175	41.3
	Female [ ]	249	58.7
Age group	18 - 22 Years Old [ ]	232	54.7
	23 - 27 Years Old [ ]	167	39.4
	27 - 30 Years Old [ ]	16	3.8
	Above 30 [ ]	9	2.1
Courses	Bachelor of Medicine and Bachelor of Surgery[ ]	112	26.4
	Bachelor of Psychology [ ]	58	13.6
	Bachelor of Biomedical Engineering Technology[ ]	36	8.5
	Bachelor in Business Administration [ ]	34	8.0
	Bachelor in Occupational Safety and Health[ ]	31	7.3
	Bachelor in Pharmacy[ ]	39	9.1
	Diploma in Psychology	22	5.2
	Diploma in Information Technology	6	1.4
	Bachelor in Physiotherapy	14	3.3
	Diploma in Graphic Design	5	1.2
	Bachelor of Homeopathic Medical Science	7	1.7

	Bachelor in Nursing	4	0.9
	Diploma in Healthcare	7	1.7
	Bachelor of Education in TESL	10	2.4
	Bachelor of Dietetics	9	2.1
	Diploma in Cosmetics	7	1.7
	Bachelor of Information Technology	9	2.1
	Bachelor in Traditional Complementary Medicine	3	0.7
	Bachelor in Accounting and Finance	2	0.5
	Diploma in Physiotherapy	3	0.7
	Bachelor in Early Childhood Education	6	1.4

Table 4.1 shows the sociodemographic characteristics of our respondents. Female respondents occupied more than half (58.7%). Most of the respondents were aged between 18 to 22 (54.7%) years. The highest responses were gotten from Bachelor of Medicine and Bachelor of Surgery course (26.4%).

3.2 SECTION B: AWARENESS OF RISK FACTORS OF CARDIOVASCULAR DISEASE

Table 4.2a: Awareness of Risk Factors of Cardiovascular Disease (Part I: True/False Question Analysis)

	Components	Faculty	Frequency			P-value
			Yes/ True	No/ False	Unsure	
1	Cardiovascular disease is the leading cause of death in Malaysia.	Bachelor of Medicine and Bachelor of Surgery	100 (89.2%)	6 (5.4%)	6 (5.4%)	<0.001
		Bachelor of Psychology	39 (67.2%)	4 (6.9%)	15 (25.9 %)	
		Bachelor of Biomedical Engineering Technology	3 (8.3%)	27 (75.0%)	6 (16.7 %)	
		Bachelor in Business Administration	20 (58.8%)	4 (11.8%)	10 (29.4 %)	
		Bachelor in Occupational Safety and Health	20 (64.5%)	3 (9.7%)	8 (25.8)	
		Bachelor in Pharmacy	35 (89.7%)	3 (7.7%)	1 (2.6%)	
		Diploma in Psychology	10 (45.5%)	1 (4.5%)	11 (50.0 %)	
		Diploma in Information Technology	2 (33.3%)	0 (0.0%)	4 (66.7 %)	

		Bachelor in Physiotherapy	11 (78.6%)	0 (0.0%)	3 (21.4 %)	
		Diploma in Graphic Design	5 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor of Homeopathic Medical Science	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	0 (0.0%)	
		Diploma in Healthcare	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor of Education in TESL	3 (30.0%)	0 (0.0%)	7 (70.0 %)	
		Bachelor of Dietetics	2 (22.2%)	0 (0.0%)	7 (77.8 %)	
		Diploma in Cosmetics	4 (57.1%)	0 (0.0%)	3 (42.9 %)	
		Bachelor of Information Technology	4 (44.4)	1 (11.2%)	4 (44.4 %)	
		Bachelor in Traditional Complementary Medicine	1 (33.3%)	0 (0.0%)	2 (66.7 %)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Physiotherapy	2 (66.7%)	0 (0.0%)	1 (33.3 %)	
		Bachelor in Early Childhood Education	5 (83.3%)	1 (16.7%)	0 (0.0%)	
2	Does being diabetic increase the risk of developing cardiovascular diseases?	Bachelor of Medicine and Bachelor of Surgery	104 (92.9%)	5 (4.4%)	3 (2.7%)	<0.001
		Bachelor of Psychology	45 (77.6%)	4 (6.9%)	9 (15.5 %)	
		Bachelor of Biomedical Engineering Technology	29 (80.6%)	4 (11.1%)	3 (8.3%)	

		Bachelor in Business Administration	26 (76.5%)	3 (8.8%)	5 (14.7 %)	
		Bachelor in Occupational Safety and Health	25 (80.6%)	3 (9.7%)	3 (9.7%)	
		Bachelor in Pharmacy	33 (84.6%)	6 (15.4%)	0 (0.0%)	
		Diploma in Psychology	19 (86.4%)	0 (0.0%)	3 (13.6 %)	
		Diploma in Information Technology	2 (33.3%)	2 (33.4%)	2 (33.3 %)	
		Bachelor in Physiotherapy	14 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Graphic Design	4 (80.0%)	0 (0.0%)	1 (20.0 %)	
		Bachelor of Homeopathic Medical Science	5 (71.4%)	2 (28.6%)	0 (0.0%)	
		Bachelor in Nursing	2 (50.0%)	1 (25.0%)	1 (25.0 %)	
		Diploma in Healthcare	6 (14.3%)	1 (85.7%)	0 (0.0%)	
		Bachelor of Education in TESL	4 (40.0%)	0 (0.0%)	6 (60.0 %)	
		Bachelor of Dietetics	3 (33.3%)	0 (0.0%)	6 (67.7 %)	
		Diploma in Cosmetics	4 (57.1%)	2 (28.6%)	1 (14.3 %)	
		Bachelor of Information Technology	6 (66.7%)	1 (11.1%)	2 (22.2 %)	
		Bachelor in Traditional Complementary Medicine	2 (66.7%)	1 (33.3%)	0 (0.0%)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	0 (0.0%)	

		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	4 (66.7%)	2 (33.3%)	0 (0.0%)	
3	People with high blood pressure are generally nervous and tense. (F)	Bachelor of Medicine and Bachelor of Surgery	69 (61.6%)	27 (24.1%)	16 (14.3 %)	0.008
		Bachelor of Psychology	35 (60.3%)	10 (17.3%)	13 (22.4 %)	
		Bachelor of Biomedical Engineering Technology	19 (52.8%)	5 (13.9%)	12 (33.3 %)	
		Bachelor in Business Administration	24 (70.6%)	3 (8.8%)	7 (20.6 %)	
		Bachelor in Occupational Safety and Health	15 (48.4%)	7 (22.6%)	9 (29.0 %)	
		Bachelor in Pharmacy	20 (51.3%)	7 (17.9%)	12 (30.8 %)	
		Diploma in Psychology	18 (81.8%)	3 (13.6%)	1 (4.6%)	
		Diploma in Information Technology	1 (16.2%)	1 (16.2%)	4 (66.6 %)	
		Bachelor in Physiotherapy	8 (57.1%)	1 (7.1%)	5 (35.8 %)	
		Diploma in Graphic Design	3 (60.0%)	2 (40.0%)	0 (0.0%)	
		Bachelor of Homeopathic Medical Science	3 (42.9%)	3 (42.9%)	1 (14.2 %)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	0 (0.0%)	
		Diploma in Healthcare	6 (85.7%)	0 (0.0%)	1 (14.3 %)	

		Bachelor of Education in TESL	6 (60.0%)	1 (10.0%)	3 (30.0 %)	
		Bachelor of Dietetics	1 (11.1%)	0 (0.0%)	8 (88.9 %)	
		Diploma in Cosmetics	4 (57.1%)	2 (28.6%)	1 (14.3 %)	
		Bachelor of Information Technology	6 (66.7%)	1 (11.1%)	2 (22.2 %)	
		Bachelor in Traditional Complementary Medicine	3 (100.0%)	0 (0%)	0 (0.0%)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	2 (66.7%)	0 (0.0%)	1 (33.3 %)	
		Bachelor in Early Childhood Education	4 (66.6%)	1 (16.7%)	1 (16.7 %)	
4	Cardiovascular diseases can be hereditary	Bachelor of Medicine and Bachelor of Surgery	97 (86.6%)	10 (8.9%)	5 (4.5%)	<0.001
		Bachelor of Psychology	37 (63.8%)	11 (19.0%)	10 (17.2 %)	
		Bachelor of Biomedical Engineering Technology	29 (80.6%)	4 (11.1%)	3 (8.3%)	
		Bachelor in Business Administration	27 (79.4%)	1 (2.9%)	6 (17.7 %)	
		Bachelor in Occupational Safety and Health	24 (77.4%)	2 (6.5%)	5 (16.1 %)	
		Bachelor in Pharmacy	32 (82.0%)	3 (7.7%)	4 (10.3 %)	
		Diploma in Psychology	10 (45.5%)	3 (13.6%)	9 (40.9 %)	

		Diploma in Information Technology	2 (33.3%)	1 (16.7%)	3 (50.0 %)	
		Bachelor in Physiotherapy	11 (78.6%)	1 (7.1%)	2 (14.3 %)	
		Diploma in Graphic Design	3 (60.0%)	1 (20.0%)	1 (20.0 %)	
		Bachelor of Homeopathic Medical Science	4 (57.1%)	1 (14.3%)	2 (28.6 %)	
		Bachelor in Nursing	4 (100%)	0 (0%)	0 (0%)	
		Diploma in Healthcare	2 (28.6%)	3 (42.8%)	2 (28.6 %)	
		Bachelor of Education in TESL	5 (50.0%)	0 (0.0%)	5 (50.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Cosmetics	5 (71.4%)	1 (14.3%)	1 (14.3 %)	
		Bachelor of Information Technology	5 (55.6%)	0 (0.0%)	4 (44.4 %)	
		Bachelor in Traditional Complementary Medicine	3 (100.0%)	0 (0.0%)	0 (0.0.0 %)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	2 (66.7%)	0 (0.0%)	1 (33.3 %)	
		Bachelor in Early Childhood Education	2 (33.3%)	3 (50.0%)	1 (16.7 %)	
5	Cardiovascular disease do not	Bachelor of Medicine and Bachelor of Surgery	18 (16.1 %)	89 (79.5%)	5 (4.4%)	

	affect young people. (F)	Bachelor of Psychology	23 (39.7%)	29 (50.0%)	6 (10.3 %)	<0.001
		Bachelor of Biomedical Engineering Technology	17 (47.2%)	17 (47.2 %)	2 (5.6%)	
		Bachelor in Business Administration	13 (38.2%)	17 (50.0 %)	4 (11.8 %)	
		Bachelor in Occupational Safety and Health	13 (41.9%)	12 (38.7%)	6 (19.4 %)	
		Bachelor in Pharmacy	14 (35.9%)	21 (53.8 %)	4 (10.3 %)	
		Diploma in Psychology	2 (9.1%)	17 (77.3 %)	3 (13.6 %)	
		Diploma in Information Technology	3 (50.0%)	2 (33.3%)	1 (16.7 %)	
		Bachelor in Physiotherapy	2 (14.3%)	12 (85.7%)	0 (0.0%)	
		Diploma in Graphic Design	1 (20.0%)	4 (80.0%)	0 (0.0%)	
		Bachelor of Homeopathic Medical Science	0 (0.0%)	6 (85.7%)	1 (14.3 %)	
		Bachelor in Nursing	1 (25.0%)	3 (75.0%)	0 (0.0%)	
		Diploma in Healthcare	0 (0.0%)	7 (100.0%)	0 (0.0%)	
		Bachelor of Education in TESL	0 (0.0%)	6 (60.0%)	4 (40.0 %)	
		Bachelor of Dietetics	4 (44.4%)	1 (11.2%)	4 (44.4 %)	
		Diploma in Cosmetics	0 (0.0%)	6 (85.7%)	1 (14.3 %)	

		Bachelor of Information Technology	1 (11.1%)	8 (88.9%)	0 (0.0%)	
		Bachelor in Traditional Complementary Medicine	0 (0.0%)	3 (100.0%)	0 (0.0%)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0%)	
		Diploma in Physiotherapy	0 (0.0%)	3 (100.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	2 (33.3%)	4 (66.7%)	0 (0.0%)	
6	High stress level can lead to cardiovascular diseases.	Bachelor of Medicine and Bachelor of Surgery	100 (89.3%)	8 (7.1%)	4 (3.6%)	<0.001
		Bachelor of Psychology	40 (67.0%)	8 (13.8%)	10 (17.2%)	
		Bachelor of Biomedical Engineering Technology	24 (66.7%)	4 (11.1%)	8 (22.2%)	
		Bachelor in Business Administration	29 (85.3%)	1 (2.9%)	4 (11.8%)	
		Bachelor in Occupational Safety and Health	21 (67.7%)	2 (6.5%)	8 (25.8%)	
		Bachelor in Pharmacy	28 (71.8%)	7 (17.9%)	4 (10.3%)	
		Diploma in Psychology	17 (77.3%)	1 (4.5%)	4 (18.2%)	
		Diploma in Information Technology	3 (50.0%)	2 (33.3%)	1 (16.7%)	
		Bachelor in Physiotherapy	11 (78.6%)	0 (0.0%)	3 (21.4%)	
		Diploma in Graphic Design	4 (80.0%)	0 (0.0%)	1 (20.0%)	

		Bachelor of Homeopathic Medical Science	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	0 (0.0%)	
		Diploma in Healthcare	6 (85.7%)	1 (14.3%)	0 (0.0%)	
		Bachelor of Education in TESL	8 (80.0%)	0 (0.0%)	2 (20.0 %)	
		Bachelor of Dietetics	2 (22.2%)	0 (0.0%)	7 (77.8 %)	
		Diploma in Cosmetics	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor of Information Technology	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Traditional Complementary Medicine	2 (66.7%)	0 (0.0%)	1 (33.3 %)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	5 (83.3%)	0 (0.0%)	1 (16.7 %)	
7	High cholesterol level increases the risk of Cardiovascular diseases.	Bachelor of Medicine and Bachelor of Surgery	107 (95.5%)	2 (1.8%)	3 (2.7%)	<0.001
		Bachelor of Psychology	46 (79.3%)	3 (5.2%)	9 (15.5 %)	
		Bachelor of Biomedical Engineering Technology	33 (91.7%)	3 (8.3%)	0 (0.0%)	
		Bachelor in Business Administration	28 (82.3%)	2 (5.9%)	4 (11.8 %)	
		Bachelor in Occupational Safety and Health	26 (83.9%)	4 (12.9%)	1 (3.2%)	
		Bachelor in Pharmacy	37 (94.9%)	2 (5.1%)	0 (0.0%)	

		Diploma in Psychology	16 (72.7%)	4 (18.2%)	2 (9.1%)	
		Diploma in Information Technology	6 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Physiotherapy	14 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Graphic Design	3 (60.0%)	0 (0.0%)	2 (40.0 %)	
		Bachelor of Homeopathic Medical Science	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Nursing	4 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Healthcare	6 (85.7%)	1 (14.3%)	0 (0.0%)	
		Bachelor of Education in TESL	5 (50.0%)	1 (10.0%)	4 (40.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Cosmetics	5 (71.4%)	0 (0.0%)	2 (28.6 %)	
		Bachelor of Information Technology	8 (88.9%)	0 (0.0%)	1 (11.1 %)	
		Bachelor in Traditional Complementary Medicine	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	5 (83.3%)	0 (0.0%)	1 (16.7 %)	
8	Overweight and obesity increase the risk of Cardiovascular diseases.(T)	Bachelor of Medicine and Bachelor of Surgery	109 (97.3%)	1 (0.9%)	2 (1.8%)	0.008
		Bachelor of Psychology	50 (86.3%)	2 (3.4%)	6 (10.3 %)	
		Bachelor of Biomedical Engineering Technology	31 (86.1%)	5 (13.9%)	0 (0.0%)	

		Bachelor in Business Administration	31 (91.2%)	1 (2.9%)	2 (5.9%)	
		Bachelor in Occupational Safety and Health	27 (87.0%)	2 (6.5%)	2 (6.5%)	
		Bachelor in Pharmacy	38 (97.4%)	1 (2.6%)	0 (0.0%)	
		Diploma in Psychology	17 (77.3%)	4 (18.2%)	1 (4.5%)	
		Diploma in Information Technology	6 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Physiotherapy	13 (92.9%)	1 (7.1%)	0 (0.0%)	
		Diploma in Graphic Design	4 (80.0%)	0 (0.0%)	1 (20.0 %)	
		Bachelor of Homeopathic Medical Science	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor in Nursing	3 (75.0%)	0 (0.0%)	1 (25.0 %)	
		Diploma in Healthcare	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor of Education in TESL	8 (80.0%)	0 (0.0%)	2 (20.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Cosmetics	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor of Information Technology	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Traditional Complementary Medicine	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	5 (83.3%)	1 (16.7%)	0 (0.0%)	

9	Some risk factors of Cardiovascular diseases are modifiable.(T)	Bachelor of Medicine and Bachelor of Surgery	101 (90.2%)	2 (1.8%)	9 (8.0%)	<0.001
		Bachelor of Psychology	41 (70.7%)	7 (12.1%)	10 (17.2 %)	
		Bachelor of Biomedical Engineering Technology	23 (63.9%)	3 (8.3%)	10 (27.8 %)	
		Bachelor in Business Administration	26 (76.5%)	2 (5.9%)	6 (17.6 %)	
		Bachelor in Occupational Safety and Health	23 (74.2%)	3 (9.7%)	5 (16.1 %)	
		Bachelor in Pharmacy	31 (79.4%)	4 (10.3%)	4 (10.3 %)	
		Diploma in Psychology	11 (50.0%)	4 (18.2 %)	7 (31.8 %)	
		Diploma in Information Technology	5 (83.3%)	1 (16.7%)	0 (0.0%)	
		Bachelor in Physiotherapy	8 (57.1%)	0 (0.0%)	6 (42.9 %)	
		Diploma in Graphic Design	2 (40.0%)	0 (0.0%)	3 (60.0 %)	
		Bachelor of Homeopathic Medical Science	2 (28.6%)	0 (0.0%)	5 (71.4 %)	
		Bachelor in Nursing	2 (50.0%)	1 (25.0%)	1 (25.0 %)	
		Diploma in Healthcare	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor of Education in TESL	6 (60.0%)	0 (0.0%)	4 (40.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	

		Diploma in Cosmetics	5 (71.4%)	0 (0.0%)	2 (28.6 %)	
		Bachelor of Information Technology	4 (44.4%)	1 (11.2%)	4 (44.4 %)	
		Bachelor in Traditional Complementary Medicine	0 (0.0%)	0 (0.0%)	3 (100.0 %)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	1 (33.3%)	1 (33.3%)	1 (33.4 %)	
		Bachelor in Early Childhood Education	2 (33.3%)	2 (33.4%)	2 (33.3 %)	
10	Smokers are at increased risk of cardiovascular diseases than non-smokers.	Bachelor of Medicine and Bachelor of Surgery	104 (92.9%)	5 (4.5%)	3 (2.6%)	0.011
		Bachelor of Psychology	47 (81.0%)	3 (5.2%)	8 (13.8 %)	
		Bachelor of Biomedical Engineering Technology	28 (77.8%)	3 (8.3%)	5 (13.9 %)	
		Bachelor in Business Administration	28 (82.3%)	2 (5.9%)	4 (11.8 %)	
		Bachelor in Occupational Safety and Health	25 (80.6%)	3 (9.7%)	3 (9.7%)	
		Bachelor in Pharmacy	34 (87.2%)	3 (7.7%)	2 (5.1%)	
		Diploma in Psychology	15 (68.2%)	4 (18.2 %)	3 (13.6 %)	
		Diploma in Information Technology	3 (50.0%)	1 (16.7%)	2 (33.3 %)	
		Bachelor in Physiotherapy	14 (100.0%)	0 (0.0%)	0 (0.0%)	

		Diploma in Graphic Design	3 (60.0%)	1 (20.0%)	1 (20.0 %)	
		Bachelor of Homeopathic Medical Science	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Nursing	2 (50.0%)	1 (25.0%)	1 (25.0 %)	
		Diploma in Healthcare	7 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor of Education in TESL	6 (60.0%)	1 (10.0%)	3 (30.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Cosmetics	4 (57.1%)	0 (0.0%)	3 (42.9 %)	
		Bachelor of Information Technology	5 (55.6%)	1 (11.1%)	3 (33.3 %)	
		Bachelor in Traditional Complementary Medicine	2 (66.7%)	1 (33.3%)	0 (0.0%)	
		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	6 (100.0%)	0 (0.0%)	0 (0.0%)	
11	Coronary artery diseases is one of the highest cause of death in Malaysia.	Bachelor of Medicine and Bachelor of Surgery	98 (87.5%)	2 (1.8%)	12 (10.7 %)	<0.001
		Bachelor of Psychology	29 (50.0%)	5 (8.6%)	24 (41.4 %)	
		Bachelor of Biomedical Engineering Technology	24 (66.7%)	2 (5.5%)	10 (27.8 %)	
		Bachelor in Business Administration	21 (61.8%)	1 (2.9%)	12 (32.3 %)	

		Bachelor in Occupational Safety and Health	20 (64.5%)	4 (12.9%)	7 (22.6 %)	
		Bachelor in Pharmacy	28 (71.8%)	1 (2.6%)	10 (25.6 %)	
		Diploma in Psychology	9 (40.9%)	3 (13.6 %)	10 (45.5 %)	
		Diploma in Information Technology	1 (16.7%)	0 (0.0%)	5 (83.3 %)	
		Bachelor in Physiotherapy	10 (71.4%)	0 (0.0%)	4 (28.6 %)	
		Diploma in Graphic Design	2 (40.0%)	0 (0.0%)	3 (60.0 %)	
		Bachelor of Homeopathic Medical Science	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor in Nursing	2 (50.0%)	1 (25.0%)	1 (25.0 %)	
		Diploma in Healthcare	6 (85.7%)	1 (14.3%)	0 (0.0%)	
		Bachelor of Education in TESL	6 (60.0%)	0 (0.0%)	4 (40.0 %)	
		Bachelor of Dietetics	5 (55.6%)	0 (0.0%)	4 (44.4 %)	
		Diploma in Cosmetics	3 (42.9%)	0 (0.0%)	4 (57.1 %)	
		Bachelor of Information Technology	1 (11.1%)	1 (11.1%)	7 (77.8 %)	
		Bachelor in Traditional Complementary Medicine	1 (33.3%)	0 (0.0%)	2 (66.7 %)	

		Bachelor in Accounting and Finance	1 (50.0%)	0 (0.0%)	1 (50.0 %)	
		Diploma in Physiotherapy	2 (66.7%)	0 (0.0%)	1 (33.3 %)	
		Bachelor in Early Childhood Education	4 (66.8%)	1 (16.7%)	1 (16.7 %)	
12	Engaging in meditation/exercises, or social activities reduces the chances of getting cardiovascular disease. (T)	Bachelor of Medicine and Bachelor of Surgery	107 (95.5%)	4 (3.6%)	1 (0.9%)	0.033
		Bachelor of Psychology	46 (79.3%)	7 (12.1%)	5 (8.6%)	
		Bachelor of Biomedical Engineering Technology	29 (80.6%)	3 (8.3%)	4 (11.1 %)	
		Bachelor in Business Administration	26 (76.4%)	4 (11.8%)	4 (11.8 %)	
		Bachelor in Occupational Safety and Health	26 (83.9%)	1 (3.2%)	4 (12.9 %)	
		Bachelor in Pharmacy	35 (89.8%)	2 (5.1%)	2 (5.1%)	
		Diploma in Psychology	14 (63.6%)	3 (13.6%)	5 (22.7 %)	
		Diploma in Information Technology	5 (83.3%)	0 (0.0%)	1 (16.7 %)	
		Bachelor in Physiotherapy	13 (92.9%)	1 (7.1%)	0 (0.0%)	
		Diploma in Graphic Design	4 (80.0%)	0 (0.0%)	1 (20.0 %)	
		Bachelor of Homeopathic Medical Science	6 (85.7%)	1 (14.3%)	0 (0.0%)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	0 (0.0%)	
		Diploma in Healthcare	5 (71.4%)	2 (28.6%)	0 (0.0%)	

		Bachelor of Education in TESL	7 (70.0%)	1 (10.0%)	2 (20.0 %)	
		Bachelor of Dietetics	9 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Cosmetics	6 (85.7%)	0 (0.0%)	1 (14.3 %)	
		Bachelor of Information Technology	6 (66.7%)	0 (0.0%)	3 (33.3 %)	
		Bachelor in Traditional Complementary Medicine	1 (33.3%)	1 (33.4%)	1 (33.3 %)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	0 (0.0%)	
		Diploma in Physiotherapy	3 (100.0%)	0 (0.0%)	0 (0.0%)	
		Bachelor in Early Childhood Education	5 (83.3%)	1 (16.7%)	0 (0.0%)	

To assess our respondents' knowledge on awareness of risk factors of cardiovascular disease, we have set our questionnaire based on the requirements.

Our study showed that students of Diploma in Graphics Design, Bachelor of Homeopathic Medical Science and Bachelor in Accounting and Finance scored highest percentage (100%) in which they agree that cardiovascular disease is the leading cause of death followed by Bachelor in Pharmacy (89.7%) and Bachelor of Medicine and Bachelor of Surgery (89.2%).

It also showed that about more than 80% of Bachelor of Medicine and Bachelor of Surgery respondents agree that diabetes, heredity, stress, high cholesterol, obesity and smoking are the risk factors of cardiovascular disease.

Table 3.2b: Awareness of Risk Factors of Cardiovascular Disease (Part II: Multiple Choice Questions Analysis)

	Components	Courses	Frequency		P-value
			Correct answer	Wrong answer	
13	Which gender is at a higher risk of developing cardiovascular diseases?	Bachelor of Medicine and Bachelor of Surgery (MBBS)	72 (64.3%)	40 (35.7%)	0.001
		Bachelor of Psychology	21 (36.2%)	37 (63.8%)	
		Bachelor of Biomedical Engineering Technology	13 (36.1%)	23 (63.9%)	

		Bachelor in Business Administration	9 (26.5%)	25 (73.5%)	
		Bachelor in Occupational Safety and Health	9 (29.0%)	22 (71.0%)	
		Bachelor in Pharmacy	18 (46.2%)	21 (53.8%)	
		Diploma in Psychology	11 (50.0%)	11 (50.0%)	
		Diploma in Information Technology	1 (16.7%)	5 (83.3%))	
		Bachelor in Physiology	8 (57.1%)	6 (42.9%)	
		Diploma in Graphic Design	2 (40.0%)	3 (60.0%)	
		Bachelor of Homeopathic Medical Science	4 (57.1%)	3 (42.9%)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	
		Diploma in Healthcare	5 (71.4%)	2 (28.6%)	
		Bachelor of Education in TESL	2 (20.0%)	8 (80.0%)	
		Bachelor of Dietetics	3 (33.3%)	6 (66.7%)	
		Diploma in Cosmetics	5 (71.4%)	2 (28.6%)	
		Bachelor of Information Technology	6 (66.7%)	3 (33.3%)	
		Bachelor in Traditional Complementary Medicine	1 (33.3%)	2 (66.7%)	
		Bachelor in Accounting and Finance	2 (100.0%)	0 (0.0%)	
		Diploma in Physiotherapy	0 (0.0%)	3 (100.0%)	
		Bachelor in Early Childhood Education	3 (50.0%)	3(50.0%)	
14	Which ethnicity is at a higher risk of developing cardiovascular diseases?	Bachelor of Medicine and Bachelor of Surgery[ ]	24 (21.4%)	88 (78.6%)	0.126
		Bachelor of Psychology [ ]	17 (29.3%)	41 (70.7%)	
		Bachelor of Biomedical Engineering Technology[ ]	8 (22.2%)	28 (77.8%)	
		Bachelor in Business Administration [ ]	8 (23.5%)	26(76.5%)	
		Bachelor in Occupational Safety and Health[ ]	6 (19.4%)	25 (80.6%)	
		Bachelor in Pharmacy[ ]	8 (20.5%)	31 (79.5%)	
		Diploma in Psychology	4 (18.2%)	18 (81.8%)	
		Diploma in Information Technology	3 (50.0%)	3 (50.0%)	

		Bachelor in Physiology	3 (21.4%)	11 (78.6%)	
		Diploma in Graphic Design	1 (20.0%)	4 (80.0%)	
		Bachelor of Homeopathic Medical Science	1 (14.3%)	6 (85.7%)	
		Bachelor in Nursing	1 (25.0%)	3 (75.0%)	
		Diploma in Healthcare	3 (42.9%)	4 (57.1%)	
		Bachelor of Education in TESL	5 (50.0%)	5 (50.0%)	
		Bachelor of Dietetics	3 (33.3%)	6 (66.7%)	
		Diploma in Cosmetics	0 (0.0%)	7 (100.0%)	
		Bachelor of Information Technology	3 (33.3%)	6 (66.7%)	
		Bachelor in Traditional Complementary Medicine	2 (66.7%)	1 (33.3%)	
		Bachelor in Accounting and Finance	1 (50.0%)	1 (50.0%)	
		Diploma in Physiotherapy	1 (33.3%)	2 (66.7%)	
		Bachelor in Early Childhood Education	1 (16.7%)	5 (83.3%)	
15	What kind of fats are related to cardiovascular diseases?	Bachelor of Medicine and Bachelor of Surgery[ ]	30 (26.8%)	82 (73.2%)	0.002
		Bachelor of Psychology [ ]	21 (36.2%)	37 (63.8%)	
		Bachelor of Biomedical Engineering Technology[ ]	6 (16.7%)	30 (83.3%)	
		Bachelor in Business Administration [ ]	6 (17.6%)	28 (82.4%)	
		Bachelor in Occupational Safety and Health[ ]	12 (38.7%)	19 (61.3%)	
		Bachelor in Pharmacy[ ]	8 (20.5%)	31 (79.5%)	
		Diploma in Psychology	1 (4.5%)	21 (95.5%)	
		Diploma in Information Technology	0 (0.0%)	6 (100.0%)	
		Bachelor in Physiology	4 (28.6%)	10 (71.4%)	
		Diploma in Graphic Design	0 (0.0%)	5 (100.0%)	
		Bachelor of Homeopathic Medical Science	0 (0.0%)	7 (100.0%)	
		Bachelor in Nursing	1 (25.0%)	3 (75.0%)	
		Diploma in Healthcare	3 (42.9%)	4 (57.1%)	

		Bachelor of Education in TESL	3 (30.0%)	7 (70.0%)	
		Bachelor of Dietetics	5 (55.6%)	4 (55.4%)	
		Diploma in Cosmetics	1 (14.3%)	6 (85.7%)	
		Bachelor of Information Technology	2 (22.2%)	7 (77.8%)	
		Bachelor in Traditional Complementary Medicine	2 (66.7%)	1 (33.3%)	
		Bachelor in Accounting and Finance	0 (0.0%)	2 (100.0%)	
		Diploma in Physiotherapy	0 (0.0%)	3 (100.0%)	
		Bachelor in Early Childhood Education	0 (0.0%)	6 (100.0%)	
16	Which of the following are the symptoms of heart attack?	Bachelor of Medicine and Bachelor of Surgery[ ]	65 (58.0%)	47 (42.0%)	<0.001
		Bachelor of Psychology [ ]	25 (43.1%)	33 (56.9%)	
		Bachelor of Biomedical Engineering Technology[ ]	12 (33.3%)	21 (66.7%)	
		Bachelor in Business Administration [ ]	13 (38.2%)	21 (61.8%)	
		Bachelor in Occupational Safety and Health[ ]	14 (45.2%)	17 (54.8%)	
		Bachelor in Pharmacy[ ]	17 (43.6%)	22 (56.4%)	
		Diploma in Psychology	6 (27.3%)	16 (72.7%)	
		Diploma in Information Technology	1 (16.7%)	5 (83.3%)	
		Bachelor in Physiology	5 (35.7%)	9 (64.3%)	
		Diploma in Graphic Design	2 (40.0%)	3 (60.0%)	
		Bachelor of Homeopathic Medical Science	3 (42.9%)	4 (57.1%)	
		Bachelor in Nursing	0 (0.0%)	4 (100.0%)	
		Diploma in Healthcare	3(42.9%)	4 (57.1%)	
		Bachelor of Education in TESL	5 (50.0%)	5 (50.0%)	
		Bachelor of Dietetics	1 (11.1%)	8 (88.9%)	
		Diploma in Cosmetics	1 (14.3%)	6 (85.7)	
		Bachelor of Information Technology	1 (11.1%)	8 (88.9%)	
		Bachelor in Traditional Complementary Medicine	3 (100.0%)	0(0.0%)	

		Bachelor in Accounting and Finance	0 (0.0%)	2 (100.0%)	
		Diploma in Physiotherapy	2 (66.7%)	1 (33.3%)	
		Bachelor in Early Childhood Education	1 (16.7%)	5 (83.3%)	
17	Diabetes mellitus is a strong risk factor of cardiovascular diseases?	Bachelor of Medicine and Bachelor of Surgery[ ]	100 (89.3%)	12 (10.7%)	<0.001
		Bachelor of Psychology [ ]	44 (75.9%)	14 (24.1%)	
		Bachelor of Biomedical Engineering Technology[ ]	28 (77.8%)	8 (22.2%)	
		Bachelor in Business Administration [ ]	24 (70.6%)	10 (29.4%)	
		Bachelor in Occupational Safety and Health[ ]	27 (87.1%)	4 (12.9%)	
		Bachelor in Pharmacy[ ]	36 (92.3%)	3 (7.7%)	
		Diploma in Psychology	17 (77.3%)	5 (22.7%)	
		Diploma in Information Technology	1 (16.7%)	5 (83.3%)	
		Bachelor in Physiology	9 (64.3%)	5 (35.7%)	
		Diploma in Graphic Design	2 (40.0%)	3 (60.0%)	
		Bachelor of Homeopathic Medical Science	2 (28.6%)	5 (71.4%)	
		Bachelor in Nursing	3 (75.0%)	1 (25.0%)	
		Diploma in Healthcare	6 (85.7%)	0 (14.3%)	
		Bachelor of Education in TESL	6 (60.0%)	4 (40.0%)	
		Bachelor of Dietetics	3 (33.3%)	6 (66.7%)	
		Diploma in Cosmetics	2 (28.6%)	5 (71.4%)	
		Bachelor of Information Technology	3 (33.3%)	6 (66.7%)	
		Bachelor in Traditional Complementary Medicine	1 (33.3%)	2 (66.7%)	
		Bachelor in Accounting and Finance	1 (50.0%)	1 (50.0%)	
		Diploma in Physiotherapy	0 (0.0%)	3 (100.0%)	
		Bachelor in Early Childhood Education	4 (66.7%)	2 (33.3%)	

Our study showed that respondents from Bachelor in Traditional Complementary Medicine scored the highest percentage with greater than 60% for 3 out of 5 multiple choice questions on the awareness of risk

factors of cardiovascular disease. This is followed by Bachelor of Medicine and Bachelor of Surgery, Bachelor in Nursing and Diploma in Healthcare scored percentage with greater than 60% for 2 out of 5 questions.

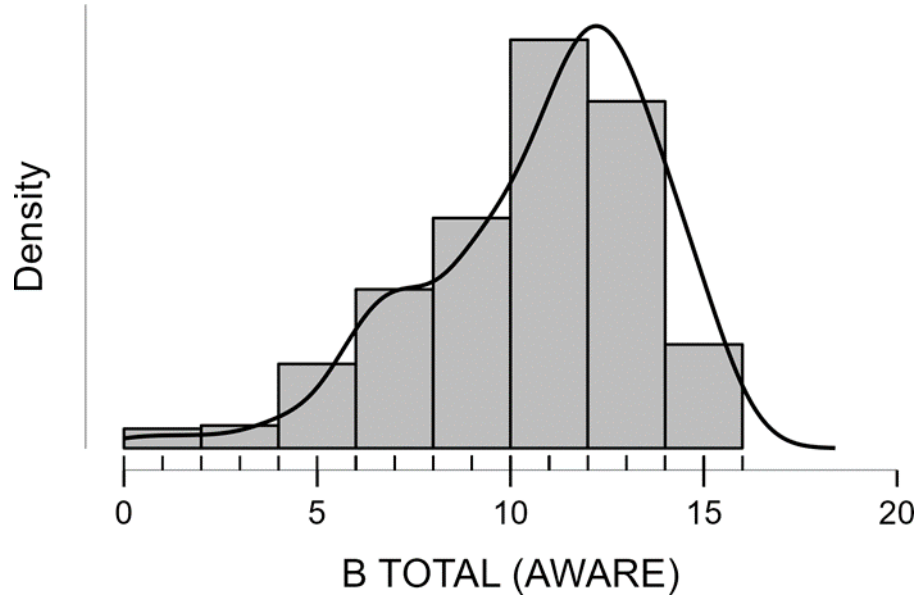
Table 3.2c: Comparison of Mean Awareness Score by Using ANOVA Test and Kruskal-Wallis Test

Courses	Mean Awareness Score	Percentage of Mean (%)	P-value (Kruskal-Wallis)
Bachelor of Medicine and Bachelor of Surgery	12.8	75.3	<0.001
Diploma in Healthcare	12.0	70.6	
Bachelor in Physiology	11.5	67.6	
Bachelor in Pharmacy	11.4	67.1	
Bachelor of Homeopathic Medical Science	10.9	64.1	
Bachelor in Occupational Safety and Health	10.5	61.8	
Diploma in Physiotherapy	10.3	60.6	
Bachelor of Biomedical Engineering Technology	10.2	60.0	
Bachelor of Psychology	10.1	59.4	
Bachelor in Traditional Complementary Medicine	10.0	58.8	
Bachelor in Nursing	10.0	58.8	
Bachelor in Business Administration	10.0	58.8	
Bachelor in Accounting and Finance	10.0	58.8	
Bachelor in Early Childhood Education	9.5	55.9	
Diploma in Graphic Design	9.4	55.3	
Diploma in Cosmetics	9.3	54.7	
Bachelor of Dietetics	9.1	53.5	
Diploma in Psychology	9.0	52.9	
Bachelor of Information Technology	9.0	52.9	
Bachelor of Education in TESL	8.6	50.6	
Diploma in Information Technology	7.3	42.9	

Table 3.2c revealed that the course that has the highest mean for awareness score is Bachelor of Medicine and Bachelor of Surgery (MBBS) with the mean score of 12.8, in which average students from MBBS answered 75.3% of the questionnaire correctly. This highest score was followed by Diploma in Healthcare in the second place, Bachelor in Physiology in third place, Bachelor in Pharmacy in fourth place, and Bachelor of Homeopathic Medical Science in the fifth place. Students from Bachelor in Traditional and

Complementary Medicine, Bachelor in Nursing, Bachelor in Business Administration and Bachelor in Accounting and Finance have all obtained the same mean for awareness score which is 10, with an average student receiving 58.8% score. Lastly, the average students under the course Diploma in Information Technology scored the lowest in awareness of risk factors associated with cardiovascular disease, followed by Bachelor of Education in TESL in the second lowest place. Data analysis revealed P-value of <0.001, which shows that there is significant association between courses and awareness of risk factors associated with cardiovascular disease.

Figure 3.1: Distribution of Awareness



This graph shows the distribution of awareness which is skewed to the left.

3.3 SECTION C: FAMILY HISTORY OF CARDIOVASCULAR DISEASE

Table 3.3a: Family History of Cardiovascular Disease

	COMPONENTS	Frequency	
		Yes/True	No/False
1	Is there any first degree female relative diagnosed to have cardiovascular diseases (high blood pressure, heart attack, angina, stroke, hardening of the arteries)?	207 (48.8%)	217 (51.2%)
2	Is there any first degree male relative diagnosed to have cardiovascular diseases (high blood pressure, heart attack, angina, stroke, and artery hardening) for at most 55 years?	172 (40.6%)	252 (59.4%)
3	Do you have family members with Diabetes Mellitus?	256 (60.4%)	168 (39.6%)
4	Do any of your family members have a history of cardiovascular diseases?	201 (47.4%)	223 (52.6%)

5	Do any of your family members have a history of sudden death?	144 (34.0%)	280 (66.0%)
6	Do you agree that cardiovascular diseases are hereditary?	324 (76.4%)	100 (23.6%)

Our study revealed that more than 70% of respondents agree that cardiovascular diseases are hereditary.

Table 3.3b: Association Between Family History and Awareness Score

Variable		B TOTAL (AWARE)	C TOTAL (FAMILY)
1. B Total (AWARE)	n	-	
	Spearman's rho	-	
	p-value	-	
2. C Total (FAMILY)	n	424	-
	Spearman's rho	0.076	-
	p-value	0.120	-

From this table, it showed that Spearman's rho (0.076) value indicates a very weak positive correlation between awareness (B Total) and family history of cardiovascular diseases (C Total). In other words, as awareness increases, the family history of cardiovascular diseases slightly increases, but the relationship is very weak. The p-value of 0.120 is greater than the common threshold of 0.05, indicating that the correlation is not statistically significant. This means that there is a high probability that the observed weak correlation could be due to chance rather than a real underlying relationship.

3.4 SECTION D: PRACTICE OF AWARENESS IN LIFESTYLE

Table 3.4a: Practice of Awareness in Lifestyle

	Components	Frequency/Percentage	
		Yes/True	No/False
1	I always took less oily food for a healthy lifestyle.	301 (71.0%)	123 (29.0%)
2	I do not smoke as it is bad for my health.	351 (82.8%)	73 (17.2%)
3	I can manage my stress.	327 (77.1%)	97 (22.9%)
4	I seldom take fried food as my main course.	256 (60.4%)	168 (39.6%)
5	I frequently exercise for at least 30 minutes 5 times a week to maintain a healthy lifestyle.	215 (50.7%)	209 (49.3%)
6	I choose to eat and buy fast foods when going out with friends.	257 (60.6%)	167 (39.4%)
7	I do consume alcohol.	86 (20.3%)	338 (79.7%)

8	I do a regular medical checkup.	177 (41.7%)	247 (58.3%)

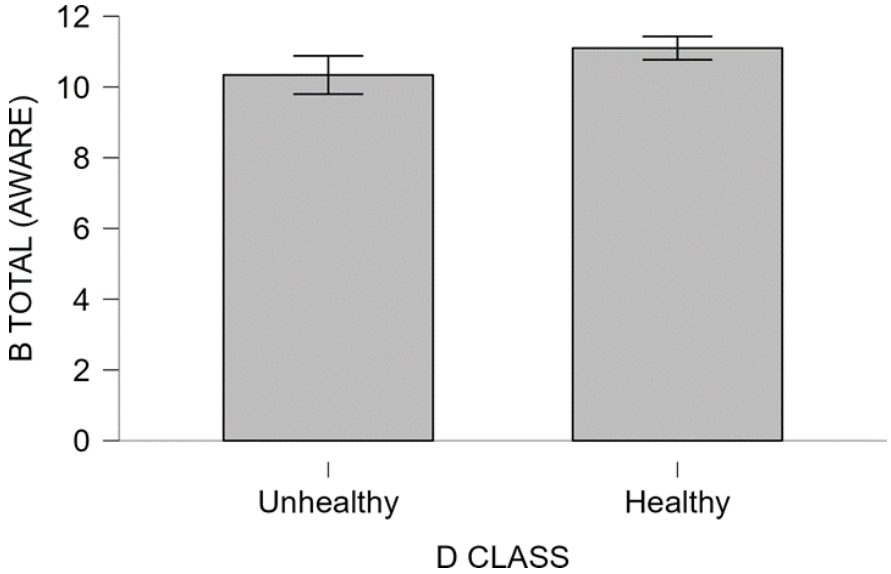
Our study showed that more than 50% of our total respondents have awareness in their lifestyle in terms of diet, smoking, stress, exercise, alcohol and check-up.

Table 3.4b: Association Between Lifestyle Practice Status and Awareness Score

Lifestyle Practice status (D Class)	Awareness Score (B Total)			P-value (Mann-Whitney)
	Mean Score	Frequency, n	Percentage, (%)	
Healthy Lifestyle	11	285	32.8	0.023
Unhealthy Lifestyle	10	139	67.2	

This table shows the association between lifestyle practice and awareness score, whereby the awareness score and lifestyle practice status were obtained from sections B and D, respectively. Mann-Whitney test was used to obtain the P-value for this section. From the results, there is significant difference between the awareness score of Healthy Lifestyle and Unhealthy Lifestyle, with the P-value of 0.023, (<0.05). Therefore, awareness score is significantly associated with lifestyle practice status.

Figure 3.2: Association Between Lifestyle Practice Status and Awareness Score.



From the graph, we can observe that people who have higher total awareness score practice a healthy lifestyle.

CHAPTER 4: DISCUSSION

Ibrahim, et al., (2016) emphasized the cardiovascular disease can be prevented by increasing the awareness of the risk factors. Based on the sociodemographic data there were more female respondents than male respondents. The highest age group in this study was 18 to 22 years old as this study mainly focusing on undergraduate students of UOC, where majority of undergraduates were from this age group. The largest

cohort of students participated in the study was from Bachelor of Medicine and Bachelor of Surgery followed by Bachelor of Psychology with, whereas the other courses were lower. Only 0.7% of students from Bachelor in Traditional Complementary Medicine and 0.5% students from Bachelor in Accounting and Finance participated as the lowest cohort which were not from health science courses. This showed that the results for this research were greatly influenced by female, age group of 18 to 22 years old and students from health sciences courses which can influence the level of awareness of CVD risk factors, family history and lifestyle led by the students.

To discuss the results from table 3.2b, students taking MBBS course may have been able to answer well for the questions on awareness about cardiovascular disease risk factors because they are more exposed to the knowledge regarding cardiovascular diseases. MBBS students learn about cardiovascular system and its disease in their learning course almost every year, they even have a compulsory course block specifically learning about cardiovascular system. In addition, MBBS students, especially students who were doing their clinical postings, were exposed to people who are high risk in developing cardiovascular disease every day in the healthcare center, thus, they would surely be better at remembering the risk factors that they learnt. Because of this situation, the students would also have better risk perception on cardiovascular disease. Students who were studying Diploma in Healthcare, Bachelor in Physiology and Bachelor in Pharmacy were next after MBBS in having a high score for awareness. This can be explained because the courses mentioned were all from a health sciences background. Thus, they have all received formal education about cardiovascular disease, especially in their current undergraduate studies, similar with students from MBBS. However, their knowledge and awareness of cardiovascular disease might have been insufficient compared to MBBS students because even though some of them also had experience and exposure in meeting patients with cardiovascular disease and its risk factors, they were not directly involved in trying to treat the disease. This may affect the risk perception of students in these courses, thus making them less aware of CVD compared to MBBS students.

The results also revealed that the students who received the lowest score for awareness were from Diploma in Information and Technology, followed by Bachelor of Education in TESL. The explanation for this result would be the lack of resources to gain knowledge on CVD. Most students may have received a formal education regarding CVD in school. However, students with different pathway of education may not have received proper and sufficient education on the risk factors associated with CVD. In this case, students under the courses Diploma in IT, Bachelor of Education in TESL, may have taken ‘arts stream’ since their school days in which they did not learn biology subject. Other than that, they might have only understood about CVD and its risk factors from hearsay, social media advertisement and other health promotions which might not always give accurate information. Thus, they were not properly exposed to the risk factors associated with cardiovascular disease since their school days. This results in these students obtaining poor mean score for awareness. Our result is in accordance with a study by Mustaqeem M., et al, (2015), in which they concluded that cardiovascular diseases are not considered as a major risk in non-medical students due to many factors, one of the factors was lack of knowledge.

We would also like to discuss regarding the four courses that received the same mean score for awareness on CVD risk factors. The courses were Bachelor in Traditional and Complementary Medicine (BHMS), Bachelor in Nursing, Bachelor in Business Administration (BA) and Bachelor in Accounting and Finance, while BHMS and Bachelor in Nursing are both health science courses, Bachelor in BA and Bachelor in Accounting and Finance are not of health sciences. BHMS and Bachelor in Nursing students may have learnt regarding CVD in their current undergraduate studies thus were able to answer the awareness

questions quite well. While students in Bachelor of IT and Bachelor in Accounting and Finance might have acquire the information on the risk factors of CVD from other sources as for example health promotional advertisements on the mass media, as presently, information are more easily available everywhere. In addition, the cohort of this study was undergraduate university students, thus they are more accessible to information provided by the media. However, the mean score for BHMS, Bach in Nursing and Bachelor in IT are taken from a small number in the total participants for each course, thus the sample may not entirely represent the whole cohort for each course. Furthermore, even though the awareness score gained by these four courses are within the higher percentage, it is still considered insufficient as they only answered more than half of the questions correctly, as compared to the course with the highest score which was MBBS. This may happen due to the difference in the depth of knowledge about cardiovascular disease and its risk factors among the students of different courses. For courses other than MBBS, they may have knowledge and understanding regarding the topic, however, it might not be as in depth as the knowledge and understanding from MBBS students.

Based on table 3.3a, more than 70% of respondents agree that cardiovascular diseases are hereditary. A significant portion of respondents have a family history of cardiovascular diseases and diabetes, with varying degrees of prevalence among different conditions. This is consistent with the result done by Kim SJ, et al., (2021) explains that individuals with a family history of CVD were more likely to be aware of their condition and engage in preventive health behaviours.

According to table 3.3b, the data suggests that there is no significant correlation between awareness of cardiovascular diseases and having a family history of these diseases among the participants. The weak positive correlation observed is not statistically significant, implying that the relationship between these two variables is not strong enough to draw any meaningful conclusions. A study (Giuseppe Vergero, et al., 2023) explored how family history of heart disease can be influenced by common clinical biomarkers and genetic factors. However, it did not find a significant increase in awareness of cardiovascular risk among individuals with a family history of heart disease compared to those without such a history.

There is not much difference between the frequency of students who have first-degree female relative diagnosed to have cardiovascular diseases and of students who do not have first-degree female relative diagnosed to have cardiovascular diseases. It also found that most of the students have positive family history of cardiovascular diseases indicating cardiovascular diseases are becoming very common among population. They are also aware that cardiovascular diseases are hereditary.

The data in section D indicates mixed patterns in the lifestyle choices and health behaviours of undergraduate students at the University of Cyberjaya concerning cardiovascular disease risk factors. While a majority (71.0%) opt for less oily food, a significant portion (39.6%) still consume fried food regularly, suggesting room for improvement in dietary choices. A substantial majority (82.8%) abstain from smoking, reflecting a positive attitude towards avoiding a major cardiovascular disease risk factor. A notable percentage (77.1%) feel capable of managing stress effectively, which is crucial for cardiovascular health. Roughly half (50.7%) engage in regular exercise, indicating some adherence to recommended guidelines, but improvement is needed as nearly half do not meet these standards. Over half (60.6%) choose fast food when socializing, suggesting a potential concern for unhealthy dietary habits and cardiovascular disease risk. A minority (20.3%) report consuming alcohol, which, when excessive, can contribute to cardiovascular disease risk. A relatively low proportion (41.7%) undergo regular medical check-ups, highlighting a need for improved health monitoring practices.

To conclude, the findings underscore the importance of targeted interventions to promote healthier lifestyles among undergraduate students, emphasizing dietary improvements, increased physical activity, and regular health monitoring to mitigate cardiovascular disease risk factors effectively.

To balance the sample collection, the list of courses has been expanded between Health science and non-health science courses. However, these results did not reflect the awareness of risk factors of CVD of whole population of undergraduate student in UOC. The number of participants from non-health science courses was smaller compared to health science courses which became the limiting factor in our study. Use of medical terms also affected the respondents understanding of the questionnaire, even though we have listed the definitions to provide guidance in the process. The data were analysed by using JASP, however due to the number of variables being large, which might need reassessment of measures used to collect and analyse the data.

CHAPTER 5: CONCLUSION

We can conclude from our research that there is significant differences in cardiovascular diseases risk awareness among undergraduate students at the University of Cyberjaya. There is a high but incomplete awareness of risk factors associated with cardiovascular disease among undergraduate students at University of Cyberjaya. Most of the students are aware of the more commonly known risk factors compared to the less well-known ones. Students from healthcare related courses have more awareness compared to those from other faculties. We reject our null hypothesis (H0) which states that the prevalence of awareness of risk factors for cardiovascular disease is similar among undergraduate students of various faculties at the University of Cyberjaya. We accept our alternative hypothesis (H1), which is the prevalence of awareness of risk factors for cardiovascular disease is not similar among undergraduate students of various faculties at the University of Cyberjaya.

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