Asian Journal of Medicine and Health Sciences Vol 5 Issue 1 June 2022

ORIGINAL ARTICLE

Knowledge, Attitude and Practice towards Cardiovascular Disease Risk Factors and Preventive Measures among Preclinical Medical Students in UniKL RCMP.

Padmavathy K.M[1*], Fadhil Imran Bin Yuhaznel[2], Kriishor U[2], Krishant U[2], Nor Fatin Amylia Binti Abdul Salam[2], Saravaana kumaar M[2], Wanna Thaqeefah Binti Muhamad Herman[2], Rohith Sharan S[3].

[1]Cluster for Integrative Physiology and Molecular Medicine (CIPMM), Faculty of Medicine, Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP), Ipoh, Malaysia.*
[2]Faculty of Medicine, UniKL RCMP, Ipoh, Malaysia.
[3]Yerevan State Medical University, Armenia.

Corresponding Author
Prof Dr Padmavathy Kathamuthu Masilamani
Preclinical Department, Faculty of Medicine
Universiti Kuala Lumpur Royal College of Medicine Perak,
No 3, Jalan Greentown, 30450, Ipoh, Malaysia.
Email: padmavathy@unikl.edu.my

Abstract

Background: Cardiovascular Disease (CVD) is one of the leading causes of morbidity and mortality in Malaysia. The awareness about the disease and the factors affecting cardiovascular health among the younger generation is decisive in reducing the prevalence of CVD. The aim of the study was to explore and to compare the differences of the knowledge, attitude and practice (KAP) towards cardiovascular disease risk factors and preventive measures among preclinical medical students in Universiti Kuala Lumpur-Royal College of Medicine Perak (UniKL-RCMP).

Methods: A cross-sectional survey was conducted among pre-clinical MBBS students of Year 1 and 2. The participants were randomly selected to participate in this study and were required to answer the survey questionnaire regarding the risk factors and preventive measures of CVD on Google™ Forms platform. The questionnaire was adapted from previously published papers that explored the parameters of interest. The responses were recorded as 'Yes', 'No', and 'I don't know' for knowledge parameters, while the attitude and practice parameters followed a 5-point Likert scale. The data entry, cleaning, and analysis was done in the SPSS. Questions that had reverse scoring were appropriately adjusted during analysis.

Results: In total 168 preclinical students (84 students from Year 1 and 84 students from Year 2) participated in this study. The composite mean scores of the knowledge, attitude, and practice parameters were 8.23 ± 2.46, 47.38 ± 9.24, and 22.73 ± 6.53, respectively. There were no significant ($p>0.05$) differences in the KAP scores between Year 1 and Year 2 students.

Conclusion: The study was successful in exploring the knowledge, attitude and practice towards cardiovascular disease risk factors and preventive measures among preclinical medical students. The findings could be used to compare the study parameters with students of higher courses in the undergraduate medical program or the longitudinal change of the parameters among the same group of students.

Keywords: cardiovascular, risk factors, young adults, medical students, Malaysia.

Introduction

Cardiovascular Diseases (CVD) include group of disorders involving the heart and blood vessels such as coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, according to the World Health Organization (WHO). CVD being one of the non-communicable diseases, has become the ultimate cause of death worldwide [1]. There are modifiable and non-modifiable risk factors for cardiovascular diseases. Modifiable risk factors include high blood pressure, cigarette smoking, high cholesterol level, diabetes mellitus, obesity associated with physical inactivity, stress, intake of sex hormones or oral contraceptives and alcohol intake [1]. Mainly modifiable risk factors such as smoking, obesity and physical inactivity can be controlled and changed [1]. Non-modifiable risk factors include age, gender and heredity [1].

Among Malaysians, CVD has been identified as the major cause of mortality and morbidity since early 1970s; mainly ischaemic heart diseases remain the principal causes of deaths in Malaysia, with hypertension at the top of the list [2]. In spite of recent advances in technologies for the diagnostic and therapeutic aspects, the risks of developing CVD in Malaysia still exist. The mean age of Malaysians for the development of acute coronary syndrome (ACS) was 58.5 years, according to the 2011-2013 registry [3]. The data of National Health and Morbidity Surveys (NHMS) revealed the prevalence of overweight or obesity was 63.6% for men and 64.5% for women; smoking among men was 43% and 59% of the smokers were between the ages 21- 30; 30.8% of men and 29.7% of women had hypertension which began to peak from the age of 30 [3].

There are studies that show an increasing prevalence of cardiovascular health risk behaviours among medical students, such as smoking (22%), episodic heavy drinking (35%), and being overweight (15.7%); though 53% of students were concerned about these risk factors, only 38% of the surveyed participants adopted preventive practices [4,5].

The increasing incidence of CVD among young individuals is due to the prevalence of risk factors, which become a major concern in the developing countries, including Malaysia, since the transition to urbanization [1]. Hence, the awareness of CVD among the younger generation is very imminent to reduce its prevalence in the future. The aim of the study was to explore and to compare the differences of the knowledge, attitude and practice towards cardiovascular disease risk factors and preventive measures among preclinical medical students in University Kuala Lumpur Royal College of Medicine Perak (UniKL-RCMP).

Materials and methods

This quantitative study on the knowledge, attitude and practices (KAP) towards cardiovascular disease risk factors and preventive measures followed a cross-sectional design. The survey was conducted during the period of one month from 1.2.2021 to 3.3.2021 among preclinical MBBS students (Year 1 and Year 2) at the Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL- RCMP) using the questionnaires adapted from previously published studies [4,6,7]. The survey questions were administered through Google™ Forms platform due to the Movement Control Order (MCO) during COVID-19 pandemic.

The sample size was calculated using OpenEpi™ with a proportion sample and a population size of 302 as the total number of preclinical medical students at RCMP. An 80% frequency of good knowledge on cardiovascular risk factors according to previous article, 5% of absolute precisions, and 1.0 for standard sampling was considered for sample size calculation. The sample size of 136 students was calculated for the 95% of confidence level, with addition of another 10% as some students may refuse to take the survey. Therefore, the final sample size was calculated to be 168. The students pursuing MBBS in preclinical years (Year 1 and Year 2) were selected by simple random sampling method.

There were 84 students from Year 1 and another 84 students for Year 2 of both genders were chosen to participate in the study.

The inclusion criteria included preclinical medical students of both genders from UniKL RCMP who were willing to take part in the survey. The exclusion criteria were preclinical medical students disagree to participate in the study or could not be contacted due to the pandemic situation.

The institutional ethical clearance was obtained for the study. The participant was required to give informed consent before the survey. The data collection was done by using standardized questionnaire on the Google™ Forms platform by sending the link through WhatsApp™ group for the Year 1 and Year 2 MBBS students. Three students from each year were randomly chosen for the pre-test and then the questions were revised and finalized based on their feedback. This survey took about five minutes to answer, and the questionnaire consisted of four sections: first section included demographics details including year of study; other sections were on the 'knowledge', 'attitude', and 'practices' regarding the risk factors and preventive measures of cardiovascular diseases. Subjects needed to answer either 'true' 'false', 'I don't know' or in Likert-scale appropriately. The questions that were scored using Likert scale measurement followed: 1 for 'strongly disagree' and 5 for 'strongly agree' except in question numbers 4, 8 and 10 where scores were reversed as 5 for 'strongly disagree' and 1 for 'strongly agree'. All information collected were kept confidential and each participant was assigned a serial number to ensure anonymity. After cleaning the collected data from the questionnaire responses, it was entered into the Statistical Package for the Social Science (SPSS™) software and was analyzed for mean ± SD, total number, and percentage. The nonparametric analysis done using t-test to compare the mean scores of KAP between Year 1 and Year 2 MBBS students. The p-value less than 0.05 was taken as statistically significant.

Results

In total, 168 preclinical medical students (84 students from Year 1 and 84 students from Year 2) from UniKL-RCMP participated in this cross-sectional study. Table 1 shows frequency distribution of knowledge regarding risk factors and preventive measures for CVD among preclinical medical students. Also, the mean ± SD scores for each question are provided. The total (composite) score for all the 12 questions was 8.23 ± 2.46 where correct answers were scored 1 and wrong answers were scored '0'. The responses with 'I don't know' were also scored '0'.

Table 2 shows the frequency and mean ± SD scores on attitude towards the risk factors and preventive measures of CVD among preclinical medical students. The total composite score of all questions on attitude was 47.38 ± 9.24.

Table 3 shows the values of frequency and mean ± SD on practice towards risk factors and preventive measures of CVD among preclinical medical students. There were seven questions which were scored 1-5 by Likert scale as '1 for 'Never', 2 for 'Once', 3 for '2-3 times', 4 for '4-6 times' and 5 for 'Everyday' except question numbers 2,4,5,6 were reverse scored as 5 for 'Never', 4 for 'Once', 3 for '2-3 times', 2 for '4-6 times' and 1 for 'Everyday'. Total composite score of all seven questions was 22.73 ± 6.53.

The mean scores of KAP between Year 1 and Year 2 students were compared and were found not statistically significant ($p>0.05$).

Discussion

Our research was done to evaluate the knowledge, attitude and practice towards CVD risk factors and preventive measures among preclinical students in UniKL-RCMP. The mean total score on knowledge for preclinical students was 67 % (Table 1), indicated that students were able to answer normal generic questions correctly and had moderate knowledge on cardiovascular disease risk factors. Similar study conducted

among medical students in India showed that the mean CVD risk factor knowledge score was 70%, which was comparable to our study [6]. In our study, the awareness of CVD occurrence in young people, such as the effects of irregular eating patterns, and association of obstructed blood vessels with CVD were answered correctly. Whereas, the knowledge on availability of tobacco or smoking cessation program in their hometown was not satisfactory. Similar finding was found in another study where students had suboptimal knowledge on lifestyle behaviours [6]. About half of our students had less knowledge of exercise (50%) and believed that 'most of the CVDs are hereditary' (41 %). In another study on the knowledge among medical students showed that physical inactivity, obesity, smoking, and hypertension were perceived as not very important CVD risk factors by the study participants [8]. According to previous studies, about 30% of medical students had low physical activity. smoked tobacco, and had alcohol intake [7].

The respondents of this study showed good attitude towards avoiding carbonated drinks and oily foods, healthy eating habits, stress control, maintenance of normal body weight, more walking and avoiding smoking help in reducing CVD. About 47% of the study's participants strongly agreed to avoid carbonated drinks. Previous studies revealed a clear association between carbonated drink intake and body weight [9]. Thus, increasing body weight can also increase the risk of developing cardiovascular diseases as age advances [10]. The increasing prevalence of obesity, hypertension and high cholesterol level increase the CVD risk among medical students [11,12].

However, students' attitude toward eating fast food, late-night eating habits, and usage of laptop for entertainment rather than actual physical exercise had an approximate mean score 3 out of 5, which needs to be addressed as it can be early sign of CVD risk.

During our research the mean scores on attitude of preclinical students for CVD risk factors and preventive measures was 47 for the maximum possible total score of 60. In Kuantan Malaysia, a research conducted on attitude towards cardiovascular disease risk factors resulted in a mean score of 54 of a maximum possible scoring of 65, designating a positive attitude [7].

In this study, two-thirds of the students (66%) consume a high glycaemic diet as the main course of meals every day of the week. Regarding the risk factors related to fast food intake, enough sleep, and stress exposure, our respondents had a moderate mean score of 3.4 out of 5. Only about 20% of our students consume low calories. Whereas, most of them (46%) take low calorie diets less frequently but consume fried food as a main course most frequently (85%). Studies show that the high-fat content and the composition of fatty acids in the fast food is the main dietary risk factor for cardiovascular disease [13]. In contrast to our study, a study done in Saudi Arabia showed that about 91% of the students, mainly males, consumed fast foods 3 times or more per week and 60% of them lacked exercise [14].

Regarding the frequency of exercise, about 33% of our participants exercise once a week; most chose 2-3 times a week for exercise (43%). Only 14% had increased frequency of about 4-6 times a week . About 5% of the participants had regular daily exercise. while 5% of participants never did exercise. It is very important to exercise regularly as frequent exercise corresponds to a decrease in cardiovascular mortality and the risk of developing cardiovascular disease [15]. Individuals who are physically active have a lot of benefits, such as lower blood pressure, higher insulin sensitivity and a more favourable plasma lipoprotein profile [15,16]. About 15% of medical students were overweight or obese and majority of them had modified their diet which is a very important preventive measure against CVD [16,17]

Conclusion

The study explored the knowledge, attitude, and practice towards cardiovascular disease risk factors and preventive measures among

preclinical medical students using a questionnaire adopted from previously published studies. The implications of this study are that the findings could be used to compare the parameters with students of higher courses in the undergraduate medical programme or the longitudinal change of the parameters among the same group of students that were included in the study. This study, either standalone or with the academic evaluation, can be used to improve the teaching curriculum of cardiovascular medicine and promote a healthy lifestyle.

Authors' Contributions

P-KM guided the students throughout the student research project. FI-Y, K-U, K-U, NFA-AS, SK-M, WT-MH were responsible for data collection and analysis. P-KM and RS-S contributed to the manuscript by writing and critically reviewing it .

Conflicts of interest

The authors declare no conflicts of interest in the publication of this article.

Table 1. Knowledge towards risk factors and preventive measures of cardiovascular disease among preclinical medical students

No	STATEMENTS	FREQUENCY n(%) (n=168)			Mean ± SD
		True	False	Don't know	
1.	Cardiovascular disease (CVD) is the leading cause of death in Malaysia	**148(88.1)***	7(4.2)	13(7.7)	0.89 ± 0.32
2.	CVD is not related to obstructed blood vessels	11(6.5)	**151(89.9)***	6(3.6)	0.10 ± 0.02
3.	Eating fruits or vegetable can prevent from CVD	**111(66.1)***	15(8.9)	42(25.0)	0.66 ± 0.05
4.	Most CVD cases are hereditary	**69(41.1)**	57(33.9)*	42 (25.0)	0.41 ± 0.05
5.	Irregular eating patterns bring harm	**150(89.3)***	3(1.8)	15(8.9)	0.89 ± 0.31
6.	Cardiovascular disease can occur to young people	**164(97.6)***	2(1.2)	2(1.2)	0.98 ± 0.11
7.	BMI > 30 is considered obese	**158(94.0)***	2(1.2)	8(4.8)	0.94 ± 0.27
8.	If you have a slim body, you do not need to exercise	1(0.6)	**167(99.4)***	0(0)	0.99 ± 0.01
9.	High density lipoprotein (HDL) is a good type of cholesterol	**113(67.3)***	30(17.9)	25(14.9)	0.68 ± 0.42
10.	Tobacco/ Smoking cessation program is available in your hometown	35(20.8)*	60(35.7)	**73(43.5)**	0.21 ± 0.05
11.	Cardiovascular disease is a disease that is related to heart	**164(97.6)***	4(2.4)	0(0)	0.98 ± 0.15
12.	Doing housework as an exercise is enough for a day	57(33.9)	**84(50.0)***	27(16.1)	0.50 ± 0.70

*Expected answer: Score = 1; others Score = 0; **Bold**: Maximum number of responses

Table 2. Attitude towards risk factors and preventive measures of cardiovascular disease among preclinical medical students.

No	STATEMENTS	FREQUENCY n (%) (n=168)					Mean ± SD
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1.	I should avoid drinking carbonated drinks	5(3.0)	2(1.2)	18(10.7)	63(37.5)	**80(47.6)***	4.26 ± 0.89
2.	I should take fruit or vegetable in diet for maintaining health	0(0)	1(0.6)	2(1.2)	48(28.6)	**117(69.0)***	4.68 ± 0.53
3.	I should control my stress to avoid from getting any disease	0(0)	0(0)	7(4.2)	72(42.9)	**89 (53.0)***	4.49 ± 0.58
4.	I should eat or buy fast food when going out with friends	11(6.5)*	32(19.0)	**74(44.0)**	46(27.4)	5(3.0)	2.99 ± 0.92
5.	I should maintain weight according to body mass index	1(0.6)	1(0.6)	11(6.5)	**73(43.5)**	82(48.8)*	4.39 ± 0.69
6.	I know that smoking is bad for health.	0(0)	0(0)	1(0.6)	16(9.5)	**151(89.9)***	4.90 ± 0.33
7.	I would rather choose walk than taking any transportation to go to nearby places	5(3.0)	23(13.7)	56(33.3)	**47(28.0)**	37(22.0)*	3.52 ± 1.07
8.	I prefer to play with laptop instead of doing exercise	9(5.4)*	40(23.8)	**67(39.9)**	42(25.)	10(6.0)	2.97 ± 0.97
9.	I read the nutrition information of each product that intended to buy	2(1.2)	35(20.8)	**64(38.1)**	45(26.8)	22(13.1)*	3.30 ± 0.98
10.	I eat supper late at night before sleep	13(7.7)*	27(16.1)	33(19.6)	**83(49.4)**	12(7.1)	2.70 ± 1.08
11.	I should take less oily food for healthy lifestyle	0(0)	1(1.2)	8(4.8)	**69(41.1)**	90(53.6)*	4.48 ± 0.61
12.	I think walking a lot can give benefits to health	0(0)	1(0.6)	4(2.4)	48(28.6)	**115(68.5)***	4.70 ± 0.59

Likert scale: Strongly Disagree = 1; Disagree = 2; Neutral = 3; Agree = 4 ; Strongly Agree =5
Reverse score: Strongly Disagree = 5; Disagree = 4; Neutral = 3; Agree = 2 ; Strongly Agree =1 (Question No: 4,8,10)
*Expected answer; **Bold**: Maximum number of responses

Table 3. Practice towards risk factors and preventive measures of cardiovascular disease among preclinical medical students

No.	STATEMENTS	FREQUENCY n(%) (n=168)					Mean ± SD
		Never	Once	2-3 times	4-6 times	Everyday	
1.	How frequent exercise in a week	8(4.8)	56(33.3)	**72(42.9)**	23(13.7)	9(5.4)*	2.81 ± 0.91
2.	How often eat fast food in a week	8(4.8)*	**81(48.2)**	66(39.3)	10(6.0)	3(1.8)	3.48 ± 0.76
3.	How often consume high glycemic diet as main course of meal in a week	2(1.2)	6(3.6)	21(12.5)	27(15.1)	**112(66.6)***	4.44 ± 0.88
4.	How often take low caloric diet in a week	34(20.2)*	56(33.3)	**57(33.9)**	15(9.0)	6(3.6)	2.43 ± 1.02
5.	How often consume fried food as a main course in a week	**0(0)***	25(14.9)	**83(49.4)**	44(26.1)	16(9.5)	2.70 ± 0.84
6.	How often feel stressed out due to personal or study related issues	6(3.6)	27(15.1)*	**74(44.0)**	26(15.5)	35(20.8)	3.34 ± 1.09
7.	How often get enough sleep in a week	5(3.0)	18(10.7)	**63(37.5)**	47(27.9)	35(20.8)*	3.53 ± 1.03

Likert scale: Never=1; Once=2; 2-3 times=3; 4-6 times=4; Everyday=5
Reverse score: Never=5; Once=4; 2-3 times=3; 4-6 times=2; Everyday=1 (Question No: 2,4,5,6)
*Expected answer; **Bold**: Maximum number of responses

References

1. Masoud Mohammad Nezhad, Tamara Mangum, William May, Joshua Jeffrey Lucas, Stanley Ailson. Common Modifiable and Non-Modifiable Risk Factors of Cardiovascular Disease (CVD) among Pacific Countries. World Journal of Cardiovascular Surgery, 2016, 6, 153-170.
2. Sazlina SG, Sooryanarayana R, Ho BK, Omar M.A, Krishnapillai AD, Mohd Tohit N, et al. Cardiovascular disease risk factors among older people: Data from the National Health and Morbidity Survey 2015. 2020; PLoS ONE 15(10): e0240826.
3. Abd Kadir Abu Bakar, Abdul Aiman Abd Ghani, Abu Bakar Rahman. Institute for Public Health (IPH) 2015. National Health and Morbidity Survey 2015. Vol. II: Non-Communicable Diseases, Risk Factors & Other Health Problems; 2015.
4. Giri S, Sharma SR, Timalsina S, Yadav V, Koirala S, Kumar A, et al. Cardiovascular health risk behavior among medical students in a teaching hospital. J Nepal Health Res Counc. 2012;10(22):187-91.
5. Aslam F, Mahmud H, Waheed A. Cardiovascular health--behaviour of medical students in Karachi. J Pak Med Assoc. 2004;54(9):492-5.
6. Sadasivam K, Nagarajan PK, Ramraj B, Chinnasami B, Nedunchezhian K, Aiyyavoo S. Cardiovascular disease risk factor knowledge assessment among medical students. National Journal of Physiology Pharmacy and Pharmacology 2016;6(3):1-7.
7. Nursyafiza B Mohammad 1, Nor Azlina A Rahman 1, Mainul Haque. Knowledge, Attitude, and Practice regarding the risk of cardiovascular diseases in patients attending outpatient clinic in Kuantan, Malaysia. J Pharm Bioallied Sci. 2018;10(1):7-14.
8. Maksimovic M.Z, Marinković J.M, Vlajinac H.D. et al. Awareness and knowledge of cardiovascular disease risk factors among medical students. Wien Klin Wochenschr 2017;129: 458–463.
9. Lenny R. Vartanian, Marlene B. Schwartz, Kelly D. Brownell. Effects of soft drink consumption on nutrition and health: A Systematic Review and Meta-Analysis. Am J Public Health. 2007l; 97(4): 667–675.
10. Somnath M, Anindya M, Dibbendhu K, Biaus S. et al. Cardiovascular disease risk factors among undergraduate medical students in a tertiary care centre of eastern India: a pilot study. Egypt Heart J . 2021 ;73(1):94.
11. Kvetoslava R, Erik D, Jana D. et al. Prevalence of lifestyle and cardiovascular risk factors in a group of medical students. Cent Eur J Public Health. 2018; 26 Suppl:S12-S18.
12. Takele Tadesse, Henok Alemu. Hypertension and associated factors among university students in Gondar, Ethiopia: a cross-sectional study. BMC Public Health. 2014;14:937.
13. Mohsen Mazidi, John R. Speakman. Association of fast-food and full-service restaurant densities with mortality from cardiovascular disease and stroke, and the Prevalence of Diabetes Mellitus. J Am Heart Assoc. 2018;7: e007651.
14. Mohammad H Al-Qahtani. Dietary Habits of Saudi Medical Students at University of Dammam. Int J Health Sci. 2016;10(3):353-362.
15. Matthew A.N, Aruni Bhatnagar. Cardiovascular effects and benefits of exercise. Front. Cardiovasc. Med., 2018;5:135.

16. Sajjad R, Muhammad A.S, Muhammad Fawwad A.H, Saad Ebrahim S. et al. Dietary modification, body mass index (BMI), blood pressure (BP) and cardiovascular risk in medical students of a government medical college of Karachi . J Pak Med Assoc. 2010;60(11):970-974.
17. Reena K.J, Abhyuday K.Y, Sneha S, Pramit R.S. et al. Study of body mass index among medical students of a medical college in Nepal: A Descriptive Cross-sectional Study. J Nepal Med Assoc. 2021;59(235):280-283.