

KNOWLEDGE OF CARDIOVASCULAR DISEASE AMONG UNDERGRADUATE STUDENTS OF MANAGEMENT AND SCIENCE UNIVERSITY

***Muhammad Qamar^{1,2}, Saw Qiang Ling², Jiyauddin Khan², Ahmad Mahmud¹,
Amiruddin Ahmad¹**

¹Faculty of Pharmacy, MAHSA University, Bandar Saujana Putra, 42610 Jenjarom, Kuala
Langat, Selangor, Malaysia.

²School of Pharmacy, Management & Science University, Shah Alam, 40100 Selangor,
Malaysia.

ABSTRACT

Cardiovascular diseases (CVD) are a group of disorders of the heart and blood vessels which are the leading cause of death in Malaysia. CVD will continue to be a leading cause of death to the young generation unless they clearly understand the development of the disease and having the knowledge to encounter it. The aim of this study was to determine the overall knowledge of CVD among undergraduate university students and to compare the knowledge between health sciences base and non health sciences base students as well as their year of studies. A self-administered cross-sectional survey was conducted involving 373 undergraduates students from medicine, pharmacy, business, hospitality and others courses at MSU by using pre validated Heart Disease knowledge questionnaire developed by Bergman et al, 2011. From this study it was analysed that total 81.2%

of the participants were 18 to 23 years old and 74.8% of the participants were female. Results from the data analysis revealed that 71.3% of the respondents scored between 11-20. Among which health sciences base students achieved a better mean score than non health sciences base students. Besides this, senior health sciences base students have better knowledge than junior health sciences base students. The overall knowledge about cardiovascular disease among undergraduate university students was moderate.

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*Correspondence for Author

Muhammad Qamar

Faculty of Pharmacy,
MAHSA University,
Bandar Saujana Putra,
42610 Jenjarom, Kuala
Langat, Selangor,
Malaysia.

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1 INTRODUCTION

MOH Malaysia data showed the leading cause of death in hospital is the diseases of the circulatory system which is around 25.10%.^[1] Alteration in the normal functioning of circulatory cycle leads to circulatory system diseases, which includes both heart disease and vascular disorders that constitutes the leading cause of the death all over the world ("Circulatory System Diseases," 2013). An estimated 17.5 million people died from CVDs in 2012, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke.^[2]

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels which include coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism.^[2]

The prevalence of CVD risk factors has increased among subsets of young adults³. Health behaviour models propose that knowledge of the negative health consequences of a behaviour is a necessary condition for behaviour change, because without knowledge there is no motivation to change.^[3,4] Therefore, knowledge is an important prerequisite for an individual to implement behavioural changes towards CVD prevention.^[5]

However, the Coronary Artery Risk Development in Young Adults (CARDIA) study found that overall CVD knowledge among young adults is very low³. Another research study revealed the majority of young adults and adolescents think heart disease prevention is important for them.^[6] On the other hand, many research studies suggested university students have low level of knowledge regarding CVD.^[7, 8, 9]

CVD will continue to be a leading cause of death to the young generation unless they clearly understand the development of the disease and having the knowledge to encounter it. The objective of this study is to determine the overall knowledge about CVD among undergraduate university students and comparing the knowledge level between health sciences base and non health sciences base students as well as their year of studies.

2. MATERIALS AND METHOD

2.1 Study Type

Cross-sectional study with convenience sampling method had been used for this study by distributing face to face pre validated questionnaires to MSU undergraduate students in order to assess the knowledge among the cardiovascular disease. The questionnaire was adapted from Heart Disease knowledge questionnaire developed by Bergman et al, 2011.

2.2 Population and Area

The population selected was undergraduate students (healthcare and non-healthcare courses) of Management and Science University. Sample size was calculated by using Raosoft[®] sample size calculator with confidence level needed is 95% error of margin accepted is 5%, sample size was 373 students.

2.3 Inclusion and exclusion criteria

Inclusion criteria were adult age 18 years old and above, able to read and understand Malay or English language and aware of the term Cardiovascular Disease. Other than these criteria were excluded.

2.4 Questionnaire

Questionnaire consists of 2 parts which was a) demographic characteristics, b) knowledge about cardiovascular.

2.5 Statistical Analysis

Only fully completed questionnaires were included for analysis. The numerical data were analysed by inferential statistics. Each correct response was given „1“ score and incorrect or “Don’t know” response were given „0“ score. The total knowledge scores were categorized into three levels indicated by poor (0-10), moderate (11-20) and good (21-30). Subsequently, data were evaluated by using Software Package for Social Science 18 (SPSS 18). Descriptive statistics was used to present the data in frequency and percentage. The association between CVD knowledge and course (health science base and non health science base) were analyzed by using Chi-square test.

3. RESULTS

3.1 Demographic data

A total of 450 questionnaires were distributed in whole university. Among which 401 completed surveys return back to researcher. After analyzing the inclusion and exclusion criteria, 28 surveys were excluded; finally 373 surveys were used for the statistical analysis. Among the participants, 74.8 % (n=279) were females and 25.2% (n=94) were males. The majority of the participants were 18 to 23 years old (n=303, 81.2%), 15.8 % (n=59) were 24 to 26 years old, and the remaining 2.9 % (n=11) were 27 to 30 years old. The average age of the participants was 21.86 (SD \pm 2.152), median age was 22, and range was 18 - 30. There were 64.9% (n=242) health sciences base students which were year 1 (n=68, 18.2%), year 2 (n=54, 14.5%), year 3 (n=87, 23.3%), year 4 (n=33, 8.8%) and 35.1% (n=131) non health sciences base students which were year 1 (n=80, 21.4%), year 2 (n=26, 7.0%), year 3 (n=20, 5.4%) and year 4 (n=5, 1.3%).

Table 1: Demographic Characteristics of Study Participants (n=373 total)

Demographic Variables	Frequency (n)	Percentage (%)
Gender		
Male	94	25.2
Female	279	74.8
Age Category		
18-20	106	28.4
21-23	197	52.8
24-26	59	15.8
27-30	11	2.9

Course		
Health sciences base year 1	68	18.2
Health sciences base year 2	54	14.5
Health sciences base year 3	87	23.3
Health sciences base year 4	33	8.8
Non health sciences base year 1	80	21.4
Non health sciences base year 2	26	7.0
Non health sciences base year 3	20	5.4
Non health sciences base year 4	5	1.3

Research Question No. 1: What are the overall levels of knowledge about CVD among undergraduate university students?

Thirty questions assessed general knowledge of CVD. Overall 51.52% of the participants answered knowledge questions correctly, 24.24% answered incorrectly, and 24.22%

responded “do not know”. The mean for total knowledge score was 16 out of 30, standard deviation 4.826, and range 1-26. All knowledge questions were divided into dietary, epidemiological, medical, risk factors, and symptoms. Among these, 58.58% of participants correctly responded to the dietary knowledge questions, especially for the questions such as cholesterol content of vegetables (n=298, 79.9%), cholesterol in the yellow part of egg (n=276, 74.0%) and dietary fiber’s role in blood cholesterol (n=262, 70.2%) showed higher correct responses. Besides, there were 54% of participants answered the risk factor knowledge questions correctly. Majority of the participants answered the question of walking and gardening lowers CVD risk (n=335, 89.8%) correctly which this question also achieved the highest correct rate from these 30 knowledge questions. Questions such as diabetes increases CVD risk (n=276, 74.0%), eating red meat increases CVD risk (n=275, 73.7%), and high fiber diet decreases the risk of developing CVD (n=256, 68.6%). From all of the risk factor knowledge questions, knowledge about smoking (n=46, 12.3%), taking aspirin (n=105, 28.2%) and stress (n=115, 30.8%) were found to be low correct rate among the participants. Less than half of the participants correctly answered the symptoms, epidemiology and medical knowledge questions. There were 47.93% of the participants answered CVD symptoms knowledge questions correctly. Majority of the participants responded correctly to the question of similar experiences among men and women about the heart attack (n=228, 61.1%). However, more than half of the participants do not know whether sudden trouble seeing in one eye is a common symptom of having a heart attack or not (n=188, 50.4%), thus only 28.2% (n=105) answered correctly. There were average 47.18% participants correctly responded to epidemiological knowledge questions which CVD is the leading cause of death in the Malaysia (n=287, 76.9%) showed the highest rate of correct. More than half of the participants thought most women are more likely to die from breast cancer than heart disease (n=216, 57.9%) but this was a wrong statement. Therefore, only 20.9% (n=78) answered this question correctly. The medical knowledge questions showed the lowest correct responses from the participants among these five major categories of questions (46.83%). Majority of the participants able to identify high and low density lipoproteins (HDL and LDL) as being good or bad cholesterol (n=239, 64.1%) but mistaken atrial defibrillation is a procedure where hardened arteries are opened to increase blood flow which only 25.5% (n=95) responded correctly.

The total correct answers given by participants determined the knowledge level. The knowledge level divided into three category which were poor (1-10 correct), moderate (11-20

correct) and good (21-30 correct). There were 71.3% (n=266) participants scored range 11-20, 15.3% (n=57) scored at range 1-10 questions correct and 13.4% (n=50) scored range 21-30 questions correct. The knowledge scores and overall knowledge for all respondents were summarized in figure 1 and figure 2.

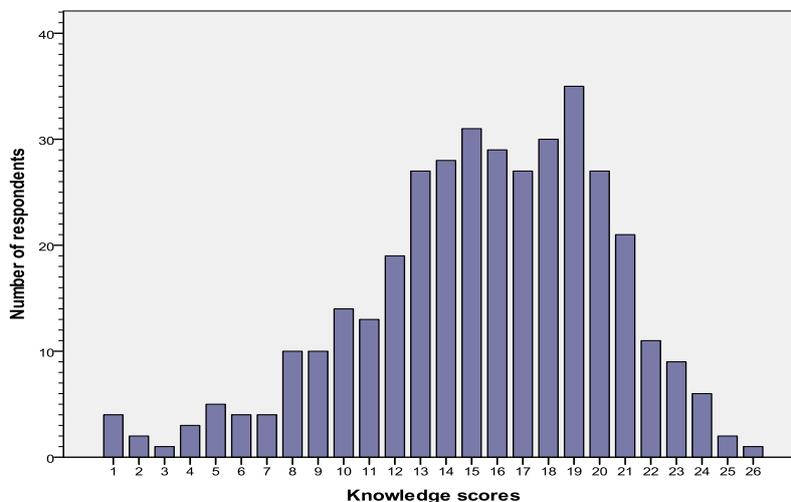


Figure 1: The knowledge scores for all respondents (n=373)

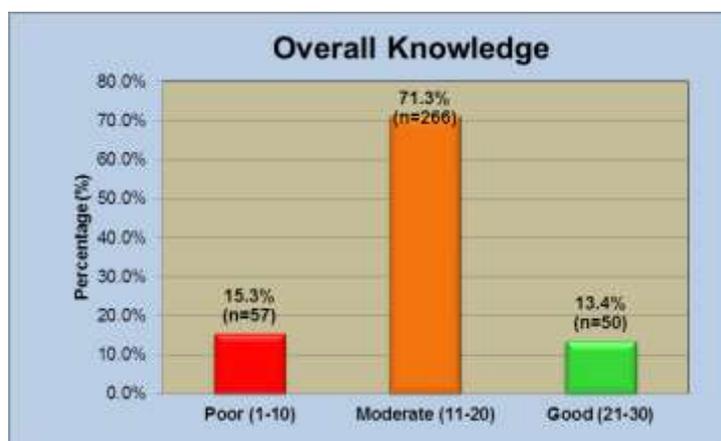


Figure 2: The overall knowledge of respondents (n=373)

Research Question No. 2: Health sciences base or non health sciences base students have better knowledge about CVD? Which year are they?

There were 75.2% (n=182) health sciences base participants scored at range 11-20 questions correct, 19.0% (n=46) scored 21-30 questions correct and 5.8% (n=14) scored 1-10 questions correct. For the non health sciences base participants, 64.1% (n=84) obtained knowledge scores at range 11-20 questions, 32.8% (n=43) scored 1-10 questions correct and 3.1% (n=4) scored 21-30 questions correct. The mean for total knowledge scores of health sciences base participants was 17 out of 30 which were higher than the mean for overall participants'

knowledge scores and range of knowledge scores was 1-26. For non health sciences base participants was 12 out of 30 correct which this value was lower than the overall mean, and range 1-23. Chi-square test was used to examine the association between course (health science base or non health science base) and knowledge level. There was statistically significant association between knowledge and course which $p < 0.001$. The health science base participants have better knowledge than non health science base which gave higher mean score than non health science base participants. Third year and fourth year of studies for the health sciences base participants achieved the highest mean knowledge scores which was 18 out of 30 questions correct. The results were summarized in figure 3 and figure 4.

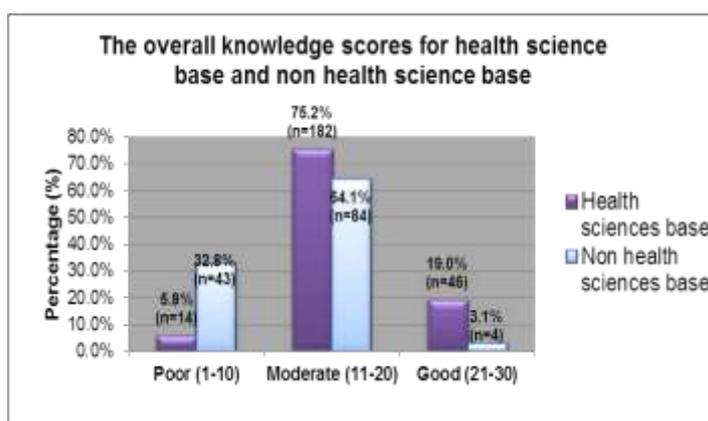


Figure 3: Overall knowledge scores for health sciences base and non-health sciences base.

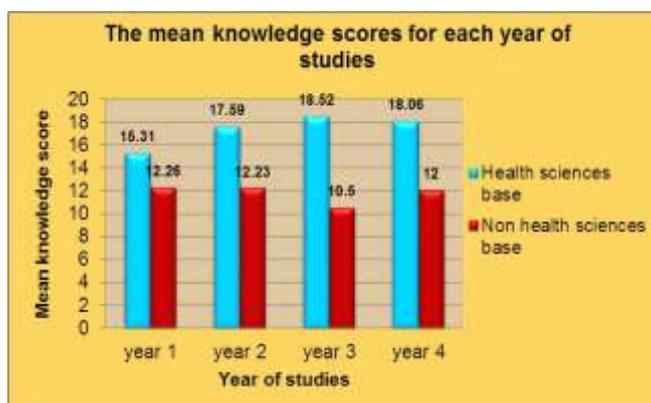


Figure 4: Mean knowledge scores for each year of studies for health sciences and non health sciences base

4. DISCUSSIONS

4.1 Knowledge of CVD and University Students

Overall, general knowledge of CVD among undergraduate university students was moderate as 71.3% (n=266) participants scored range 11-20 out of 30 questions correct. However,

previous researches on CVD knowledge found that young adults and college students were low CVD knowledge.^[3, 7, 8, 9, 10] In contrast, Donna M Winham and Kathleen M Jones (2011) reported the college students had a significantly higher CVD knowledge than the people who were not college educated.^[4]

4.2 Dietary Knowledge

Among the knowledge subtype questions, 58.58% of participants correctly responded to dietary knowledge questions. Dietary knowledge questions ranked number one among the correctly answered knowledge subtype questions. These mean students are knowledgeable about some food that good for heart.^[7] In contradiction to the findings of this study, studies from Bogdańska (2005) reported low nutritional knowledge among the younger population.^[11]

4.3 Risk Factor Knowledge

Risk factors knowledge of CVD was the second most correctly answered response by 54% of the participants. Previous studies conducted found that young adults had low knowledge about CVD risk factors and unaware the CVD risk on themselves.^[3,8,9,10,12] However, Bogdańska (2005) reported high CVD risk factors knowledge in younger population and Gautam (2012) found high correct response from university students.^[7,11] Although university students have knowledge of risk factors, their actual behaviour does not necessarily reflect assimilation of these concepts, this put them at risk of developing CVD.^[13,14] From all the risk factor knowledge questions, majority of the undergraduate university students were aware about CVD risk factors such as eating red meat increase heart disease risk and diabetic person are high risk of getting heart disease but their knowledge on smoking were found to be very low. Majority of the undergraduate university students associate smoking with lung cancer but did not know that smoking is one of the major cause of CVD, as high as 76.7% (n=286) participants answered the question of smokers are more likely to die due to lung cancer than heart disease wrongly. This finding was consistent with the research finding conducted by Gautam^[7] in which university students students less likely graded smoking as the top risk factor of CVD development, but the research conducted by Almas (2008) reported the university students graded smoking as the top most risk factor.^[5,7] Cigarette smokers are 2-4 times more likely to develop coronary heart disease than non-smokers and non-smokers who are exposed to second hand smoke increase their heart disease risk by 25–30% (Centers for Disease Control and Prevention, 2012).^[15]

4.4 Symptoms Knowledge

Less than half correct response received from question subtype of symptoms (47.93%). Around 61.1% (n=288) of the participants responded correctly to the symptom knowledge question of similar experiences among men and women about the heart attack but majority of them failed to recognize the exact symptoms of having CVD such as turning pale and feeling weak. This research findings were consistent with others worldwide research finding that done in university students and general population.^[7,16,17,18,19]

4.5 Epidemiology Knowledge

There were only 47.18% participants correctly responded to epidemiological knowledge questions among which 76.9% (n=287) of participants identified CVD is the leading cause of death in Malaysia. This is a good finding that majority of the undergraduate university students knew about it this is because CVD knowledge is a prerequisite in order to promote healthy behaviour change.^[20] However, more than half of the participants mistaken believed that most women die from breast cancer than heart disease and as the top health problem in women. Such finding was similar to others researches.^[9,17,18]

4.6 Medical Knowledge

Participants in this study demonstrated lower knowledge on medical subtype (46.83%) which was consistent to the studies conducted by Gautam.^[7] Reiner et al (2012) also reported that even medical graduating students also showed insufficient knowledge on CVD.^[21] Majority of the participants in this study able to identify HDL as good cholesterol and LDL as bad cholesterol (n=239, 64.1%). This finding is inconsistent to others researches' findings.^[7,12] Study by Gautam (2012) also found that only 43.5% of undergraduate university student able to identify good and bad cholesterol.^[7] However, this is a good phenomenon because elevated blood cholesterol is one of the major risk factor for the development of CVD, ability to identify good and bad cholesterol is beneficial for the prevention of CVD risk.^[7]

4.7 CVD Knowledge and Students of Health Sciences or Non Health Sciences

Health sciences based participants showed a higher overall mean knowledge score (mean=17.37) than non health sciences based participants (mean=11.75). The chi-square test revealed there was statistically significant association between knowledge and course taken (health science base and non health science base) ($P < 0.001$). The health science base undergraduate university students have better knowledge of CVD than non health science base undergraduate university students. This findings was consistent with the research

conducted by Jones^[20] (2010) but Gautam (2012) found no significant difference.^[7] From the health sciences base participants, there were also found third year and fourth year of studies achieved the highest mean score which is 18 out of 30 correct. The higher year of studies had better knowledge than lower year of studies. This finding also consistent to the previous research conducted.^[21]

5. CONCLUSION

In general, undergraduate university students have moderate knowledge (n=266, 71.3%) about cardiovascular diseases that are leading cause of death in Malaysia. The health education practice should focus on improving cardiovascular knowledge among university students by including this topic in the curriculum regardless health science and non health science course. Some workshops, trainings, social networking and use of other media to disseminate health information should be conducted in university more frequently to improve students' CVD knowledge.

Moreover, health science base students have better knowledge of CVD than non health science base students along with year 3 and year 4 health science base students achieved higher mean score of 18 questions correct. There was statistically significant association between CVD knowledge and course taken (health science and non health science).

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7. COMPETING INTEREST

The authors declare no competing interest, in part or whole. No funding was received for this study.

8. AUTHORS CONTRIBUTION

MQ and SQL carried out the literature review and draft the manuscript. MQ and SQL participated in collection of data and MQ, SQL, JK, AM and AA arranged in tabular form. All authors read and approved the final manuscript.

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