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Knowledge, Attitude, Practice and Awareness on Hypertension among Students and Staffs in Faculty Of Medicine and Health Sciences (Fmhs), Universiti Putra Malaysia

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Introduction

The number of patients diagnosed with hypertension among the population is rising rapidly. Its inherent risk of mortality is a grave cause of concern. Therefore, this study aims to determine the level of knowledge, attitude, practices and awareness on hypertension and associated factors among students and staff in the FMHS, Universiti Putra Malaysia.

Methods

A cross sectional study was done at the FMHS, Universiti Putra Malaysia for 17 weeks duration in 2020. Through stratified random sampling, students and staff selected from the faculty answered a questionnaire distributed in Google Documents form via Whatsapp. The data was analyzed using the SPSS v25.

Results

340 students and 87 staff participated in our study. Overall, majority of the students and staffs demonstrated a good level of knowledge, attitude, practice and awareness of hypertension. In multivariate analysis, ethnicity shows a significant association with awareness among students. There was significant association between age with the level of practice of hypertension among staff, and between the field of staff with the level of practice and awareness of hypertension among the staff in multivariate analysis.

Conclusion

Majority of the students and staffs demonstrated a good level of knowledge, attitude, practices and awareness among both staffs and students. This augurs well for this current and future health professionals in their battle in reducing the prevalence of hypertension.

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INTRODUCTION

The World Health Organization (2019) stated that hypertension can be defined as a systolic blood pressure reading ≥140 mmHg and a diastolic blood pressure reading ≥90 mmHg on each occasion when blood pressure measurementswas taken on two or more separate occasions. There are two types of hypertension, which are essential hypertension and secondary hypertension. High blood pressure wheresecondary causes such as renal failure, renovascular disease, hyperaldosteronism, pheochromocytoma or other causes of secondary hypertension or Mendelian forms (monogenic) are absent are known as essential or primary hypertension. Secondary hypertension is high blood pressure due to another condition or disease such as chronic kidney disease, obstructive sleep apnea, primary hyperaldosteronism, pheochromocytoma, Cushing syndrome, acromegaly, and drug related causes such as birth control pills consumption.

According to the World Health Organization (2019), unhealthy diets like a diet rich in saturated fat and trans fats, excessive intake of salt, tobacco and alcohol consumption, lack of physical activity, and an overweight or obese condition are some of the modifiable risk factors for hypertension. Non-modifiable risk factorsmeanwhile, may comprise of a family history of hypertension, presence of existing diseases such as diabetes, ethnicity and an age of 65 years or above.

Knowledge can be defined as the comprehension of a community on any topic that is being studied among them, which in the case of this research, is hypertension.[1] Attitude can be defined as the community's outlook on the topic being studied together with any predetermined notions about it.[1]Practice, on the other hand, is the method by which the community shows their knowledge and attitude by their activities.[1] Awareness can be defined as the community's understanding of a topic or subject in the contemporary period founded on facts or experience.[2]

In this day and age, the number of patients diagnosed with hypertension is rising rapidly. The World Health Organization (WHO) has stated that Malaysia had the highest rate of obesity and overweight cases among the nations in Asia with both 64 percent and 65 percent of the male and female population, respectively being obese or overweight cases. The National Health and Morbidity Survey of 2015 by the Ministry of Health Malaysia showed that the participants aged 18 years and above in that survey had an overall prevalence of hypertension (known and undiagnosed) of 30.3% (95% CI: 29.3, 31.2). An overall rising trend in prevalence with age was observed, from 6.7% (95% CI: 4.7, 9.4) in the age group of 18-19 years, to achieving a peak of 75.4% (95% CI: 70.5, 79.7) for participants in the 70-74 years age group. The low knowledge level on the clinical practice guidelines among the people will further aggravate these phenomena, particularly since hypertension can be asymptomatic. Despite the advancements of modern technology for the diagnosis and treatment of hypertension, the rate of detection of hypertension remained poor. For every one patient who was diagnosed with hypertension, two were not diagnosed with it. Similarly, for every three hypertension patients undergoing treatment, only one patient was successfully treated for hypertension and its coherent risk of cardiovascular events[3]

In addition, there was a lack of research conducted into the degree of knowledge, awareness, attitude and practice on hypertension among medical students and staff, who make up the current and future health personnel. As the prevalence of the disease increases, it is crucial to assess the degree of knowledge of future and current health personnel who will be disseminating information to the patients and providing care for them as well. The objective of the research was to determine the level knowledge, attitude, practices and awareness on hypertension among students and staff in the Faculty of Medicine and Health Sciences (FMHS), Universiti Putra Malaysia. This research also aimed to determine the factors associated with the level of knowledge, attitude, practice and awareness on hypertension among students and staff of FMHS, Universiti Putra Malaysia. It wastherefore crucial to assess the level of knowledge, attitude, practice and awareness on hypertension among students and staff of FMHS, Universiti Putra Malaysia to determine their degree of readiness to handle the rising number of hypertension cases in the country as well as to provide quality care to the hypertension patients.

MATERIALS AND METHODS

A cross sectional study was carried out at the FMHS, Universiti Putra Malaysia for a 17 week's duration. The total number of staff and students of FMHS, Universiti Putra Malaysia was 2585 consisting of 537 staffs and 2321 students, respectively. Based on this numbers, it was concluded that the total number of staff was almost a quarter from the students; therefore, from the sample size, total respondent was ¼ from staff and ¾ from students. The estimated sample size was calculated using the formula for sample size estimation in cross sectional study to compare proportion between two groups, giving a required sample size of 426 respondents to cover for both students and staffs considering a 10% non-respondent rate.

Through stratified random sampling, the name list of medical students from the first to fifth year, students from other courses from the first to fourth Year and staffs working at the FMHS, Universiti Putra Malaysia was prepared. The questionnaire was distributed in

Google Documents form via WhatsApp for the respondents to answer. The questionnaire consisted of a consent form, followed by Section A where it provided information on socio-demographic characteristics of the respondents. Section B was divided into four parts consisting of knowledge, attitude, practice and awareness respectively. Each part consisted of eight questions and the total marks of each part was calculated for every respondent. The questionnaire was obtained from a previously similar study that was conducted by a group of researchers consisting of lecturers from the Faculty of Medicine and Defense Health, National Defense University of Malaysia and Kuliyyah of Allied Health Sciences, International Islamic University Malaysia.[5] Approval to use the questionnaire was obtained through email to. Face and content validation was done for the questionnaire. Face validation was done with 10% of the intended study population. Content validation was done with an expert panel of 5 experts including 2 family physicians, 1 internal medicine specialist, 1 public health specialist and 1 statistician.

Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 25 software. First, normality was checked by using Kolmogorov-Smirnov method. Next, descriptive analysis was used to obtain the frequency and percentage of the obtained data followed by multiple logistic regression test that was used to determine any association between the independent and dependent variables which were the domains of knowledge, attitude, practice and awareness on hypertension among students and staffs in FMHS, Universiti Putra Malaysia. The level of significance was set at $p < 0.05$. If these domains were normally distributed, those participants scoring ≥ the mean scores of these domains were classified as having a good score and those otherwise as poor scores. If these domains were not normally distributed, those participants scoring ≥ the median scores of these domains were classified as having a good score and those otherwise as poor scores.

Approval from JKEUPM (Ethic Committee for Research Involving Human Subject) Universiti Putra Malaysia had been obtained prior to proceeding with the research. Data and information from respondents were kept confidential. All the respondents were instructed to fill in the consent form so that they are aware of their participation in research.

Table 1 *Socio-demographic distribution of students' respondents in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia*

Variables	Frequency (%)
Age	
19	1(0.3)
20	131(38.5)
21	126(37.1)
22	38(11.1)
23	22(6.5)
24	18(5.3)
25	2(0.6)
30	1(0.3)
34	1(0.3)
Gender	
Male	96(28.3)
Female	244(71.7)
Ethnicity	
Malay	227(66.8)
Chinese	45(13.2)
Indian	58(17.1)
Others	10(2.9)
Year of study	
Year 1	129(37.9)
Year 2	139(40.9)
Year 3	34(10)
Year 4	24(7.1)
Year 5	14(4.1)

RESULTS

A total of 427 respondents answered the questionnaire that consisted of 340 (79.6%) students and 87(20.4%) staff. Table 1 shows the distribution of the student respondents by their socio-demographic characteristics and year of study. The majority of the respondents were between the ages of 20-21 (75.6 %), were female (71.7 %), were of Malay ethnicity (66.8 %), and were 1st year or 2nd year students (78.8 %). Table 2 shows the distribution of the staff respondents by their socio-demographic characteristics of staff. The majority of the respondents were of the ages 36 and 43 (18.4 %), were female (70.1 %) were of Malay ethnicity (83.9 %), had tertiary education (98.9 %) and were academic staffs (71.3%).

The score obtained by respondents for each section which is knowledge, attitude, practice and awareness were categorized into good or poor based on median score respectively. Table 3 shows total of good scores obtained for each of the dependent variable for both the students and the staff. As for knowledge, median score was 7 for both students and staff. There were more students 274(80.6%) and staff 72(82.8%) with good scores. In terms of attitude score, the median score was 7 and majority of respondents obtained a good score on attitude questions where 183(53.8%) students and 55(63.2%) staff obtained a good score.

Table 2 *Socio-demographic distribution of staff respondents in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia*

Variables	Frequency (%)
Gender	
Male	26(29.9)
Female	61(70.1)
Ethnicity	
Malay	73(83.9)
Chinese	7(8.0)
Indian	6(6.9)
Others	1(1.1)
Educational level	
Secondary and below	1(1.1)
Tertiary	86(98.9)
Field of staff	
Academic Staff	62(71.3)
Non-academic staff	25(28.7)

#The median age (interquartile range, IQR) was 40.0(10.0) years.

Similarly, most of respondents had a good score for both the practice and awareness sections. Median score for practice and awareness was 11 and 6, respectively. As for practice, 206(60.6%) of students and 67(77.0%) staff obtained good score while 202(59.4%) of students and 68(78.2%) of staff got a good score on awareness. There was no significant difference in the domain scores of knowledge, attitude, practice and awareness between this two categories of staff and students (p>0.05).

There was no significant association between socio-demographic factors (age, gender, ethnicity, year of study for student, educational level and field of staff for staff) with knowledge for both students and staff in both univariate and multivariate analysis. Likewise, there was no significant association between socio-demographic factors (age, gender, ethnicity, year of study for student, educational level and field of staff for staff) with attitude for both students and staffs both univariate and multivariate analysis.

Nevertheless, Table 4 that shows the practice level of hypertension among staff noted that there was a significant association between age and level of practice on hypertension for staff (p-value = 0.002). In the multivariate analysis, it was found that older staffs had a 10.426 higher odd of having poor level of practice as compared to younger staffs (p-value = 0.001). In terms of field of staff, non-academic staffs hada 0.237 lower odd of having poorer practice as compared to academic staffs (p-value = 0.046).

In terms of awareness, Table 5 and 6 showed the association between socio-demographic factors with awareness on hypertension among students and staff, respectively. It was found that there was no association between socio-demographic factors (age, gender, ethnicity and year of study) and the level of awareness among students. In the multivariate analysis in which variables that had a p value of less than 0.25 were entered into the multiple logistic regression model, Chinese students had a 0.454 lower odd of having poor awareness level as compared to Malays (p=0.028). Meanwhile, among staff, there was an association between field of staff and level of awareness (p-value = 0.012) in univariate analysis. Following multivariate analysis, in terms of field of work, it was found that non-academic staffs hada 3.666 higher odd of having poorer level of awareness as compared to academic staffs (p-value = 0.019).

DISCUSSION

The majority of students (78.8%) who participated were from preclinical years (Year 1 and Year 2). There were a smaller number of clinical year students (Year 3 to Year 5) participated as they were having an examination during data collection period. Meanwhile, there was a huge different in educational level among the staffs. Among the participants, there was only one staff with secondary and below

Table 3 *Distribution of good and poor score on knowledge, attitude, practice and awareness*

Dependent Variables	Median (IQR)	Category	Students (%)	Staff (%)	p-value
Knowledge	7(1)	good	274(80.6)	72(82.8)	0.239
Attitude	7(1)	good	183(53.8)	55(63.2)	0.334
Practice	11(2)	good	206(60.6)	67(77.0)	0.789
Awareness	6(2)	good	202(59.4)	68(78.2)	0.277

Table 4   *Association between socio-demographic factors with level of practice among staff*

Variables	Practice level		Univariate Analysis			Multivariate Analysis		
	Poor (n=20) (%)	Good (n=67) (%)	Odds Ratio	Confidence Interval	p-value	Odds Ratio	Confidence Interval	p-value
Age Median (IQR)	36 (6%)	43 (11%)	0.84	2.24 - 31.45	0.002	10.43	2.68 - 40.60	0.001
Gender								
Male	7 (27%)	19 (73%)		1.00 (reference)				
Female	13 (21%)	48 (79%)	0.74	0.25 - 2.13	0.57			
Ethnicity								
Malay	17 (28%)	56 (77%)	1.00 (reference)					
Chinese	2 (22%)	5 (78%)	1.14	0.23 - 7.41	0.75			
Indian	0 (0%)	6 (100%)	0.00	0.00 - 0.00	1.00			
Others	1 (100%)	0 (0%)	>0.05	0.00 - 0.00	1.00			
Educational level								
Secondary & below	0 (0%)	1 (100%)	0.00	0.00 - 0.00	1.00			
Tertiary	20 (23%)	66 (77%)	1.00 (reference)					
Field of staff								
Academic staff	17 (27%)	45 (73%)	1.00 (reference)			1.00 (reference)		
Non-academic	3 (12%)	22 (88%)	0.36	0.10 - 1.36	0.13	0.24	0.058 - 0.98	0.046

#As the practice domain was not normally distributed, those participants scoring ≥ the median score of this domain were classified as having a good score and those otherwise as poor scores.

Table 5   *Association between socio-demographic factors with level of awareness among students*

Variables	Awareness level		Univariate Analysis			Multivariate Analysis		
	Poor (n=138) (%)	Good (n=202) (%)	Odds Ratio	Confidence Interval	p-value	Odds Ratio	Confidence Interval	p-value
Age Median (IQR)	21 (1%)	21 (2%)	0.82	0.68 - 0.98	0.32			
Gender								
Male	38 (40%)	58 (60%)		1.00 (reference)				
Female	100 (41%)	144 (59%)	1.06	0.66 - 1.72	0.81			
Ethnicity								
Malay	103 (45%)	24 (55%)	1.00 (reference)			1.00 (reference)		
Chinese	13 (29%)	32 (72%)	0.49	0.24 - 0.98	0.044	0.45	0.22 - 0.92	0.028
Indian	19 (33%)	39 (67%)	0.59	0.32 - 1.08	0.09	0.57	0.31 - 1.07	0.08
Others	3 (30%)	7 (70%)	0.52	0.13 - 2.05	0.35	0.51	0.16 - 2.05	0.34
Year of study								
Year 1	54 (42%)	75 (58%)	2.64	0.70 - 9.92	0.15	3.15	0.83 - 11.97	0.09
Year 2	64 (46%)	75 (54%)	3.13	0.84 - 11.71	0.09	3.59	0.95 - 13.55	0.06
Year 3	14 (41%)	20 (59%)	2.58	0.60 - 10.92	0.20	2.74	0.64 - 11.77	0.17
Year 4	3 (13%)	21 (88%)	0.52	0.09 - 3.04	0.47	0.60	0.10 - 3.52	0.57
Year 5	3 (21%)	11 (79%)	1.00 (reference)			1.00 (reference)		

#As the awareness domain was not normally distributed, those participants scoring ≥ the median scores of this domain were classified as having a good score and those otherwise as poor scores.

Table 6 *Association between socio-demographic factors with level of practice among staff*

Variables	Practice level		Univariate Analysis			Multivariate Analysis		
	Poor (n=19) (%)	Good (n=68) (%)	Odds Ratio	Confidence Interval	p-value	Odds Ratio	Confidence Interval	p-value
Age Median (IQR)	39 (15%)	42 (10%)	2.59	0.88 - 7.61	0.08	2.34	0.77 - 7.16	0.13
Gender								
Male	6 (23%)	20 (77%)		1.00 (reference)				
Female	13 (21%)	48 (79%)	0.90	0.30 - 2.71	0.86			
Ethnicity								
Malay	18 (25%)	55 (75%)	1.00 (reference)					
Chinese	0 (0%)	7 (100%)	0.00	0.00 - 0.00	1.00			
Indian	1 (17%)	5 (83%)	0.61	0.07 - 5.58	0.66			
Others	0 (0%)	1 (100%)	0.00	0.00 - 0.00	1.00			
Educational level								
Secondary & below	1 (100%)	0 (0%)	>0.05	0.00 - 0.00	1.00			
Tertiary	18 (21%)	68 (79%)	1.00 (reference)					
Field of staff								
Academic staff	9 (15%)	53 (86%)	1.00 (reference)			1.00(reference)		
Non-academic	10 (40%)	15 (60%)	3.93	1.35 - 11.42	*0.012*	3.66	1.24 - 10.85	0.019

#As the awareness domain was not normally distributed, those participants scoring ≥ the median score of this domain were classified as having a good score and those otherwise as poor scores.

educational level while the rest had tertiary educational level. It is understandable as staffs working in university must have higher educational qualification.

Association between sociodemographic factors with knowledge, attitude, practice and awareness on hypertension.

Firstly, age had no association with level of knowledge, attitude, practice and awareness among students but there was a significant association between age and the level of practice of hypertension for staff. In contrast, a study stated that age was associated with the level of knowledge about hypertension. It shows that participants between 36 to 45 years old had 3.6 times better knowledge as compared to those from 76 to 85 years old.[4] In the same study, it shows that age was not associated with the level of attitude of participants which similar as findings in this research.[4] Another study observed that there was a strong association between age and the level of knowledge, attitude and practice regarding hypertension.[5] It stated that an increase in age will also increase the level of knowledge, attitude, practice and awareness about hypertension, thereby disagreeing with our study as many and frequent exposures to continuous medical education on hypertension over the years would have led to a better practice among the staffs regarding hypertension. However, for our study the results

were contrary as possibly some of the respondents were not involved in clinical work i.e., working as basic medical sciences lecturer, and therefore contributing to a poorer practice level.

Moreover, gender showed no significant association with knowledge, attitude, practice and awareness for both students and staff. However, a study stated that there was an association between gender and the level of knowledge, attitude, practice and awareness of hypertension.[6] Another study done in public universities also found that there was an association between the level of knowledge, attitude, practice and awareness with gender.[7] Both studies stated that females had better attitude and practice than males. However, our study finding is contradictory with the previous study. Possibly this means that students and staffs of both gender in these faculty are well versed in hypertension related knowledge and skills due to emphasis during undergraduate study and frequent continuous medical education on this disorder.

As for ethnicity, there was no association between ethnicity and the level of knowledge, attitude, and practice of hypertension. However, it was noted that there was a significant association between being a Chinese and the level of awareness among students. In terms of staffs, it was observed that there was no association between the ethnicity and the level of knowledge, attitude, practice and awareness of hypertension. A study reported that there was an

association between ethnicity and the level of knowledge, attitude, practice and awareness. Based on that study, it was found that being Chinese and Other ethnicity have better practices than those who are Malays(8). In other studies, it was shown that Malays had a better knowledge on cardiovascular diseases as compared to other ethnicities.[9] However, our findings did not meet the similarities with the past study probably because students and staff of all ethnicities in our faculty were equally exposed on hypertension related knowledge.

In addition, there was no significant association between year of study with knowledge, attitude, practice and awareness on hypertension. There was a study done among students in local university regarding knowledge, attitude and practise on risk factor of cardiovascular disease concluded with same findings as well[7]

There was no association between educational level and knowledge, attitude, practise and awareness among staff. A study in largest state in Malaysia, Selangor reported no significant association between educational level and KAP on hypertension(5). However, in Iran, a study stated that there was a significant association between educational level with knowledge but no association with attitude and practice.[10] The result was different from our study, with possible reasons of uneven distribution between those with secondary and below educational level and those with a tertiary educational level.

There was a significant association between field of staff with practice and awareness but no association with knowledge and attitude. A study in Isfahan State Institution, Irna stated that there was a significant association between institutional positions which are teacher, student and staff with the level of awareness. The result found out that prevalence of hypertension was higher among staff as compared to teachers and students.[11]However, a study in Ethiopia reported that there was a significant association between occupation and level of knowledge on hypertension.[12] Possibly our finding agrees with the known fact that academics working in a medical based faculty are well versed with hypertension related knowledge and skills, and therefore shows a significant association with practice and awareness on hypertension.

Our study had a few limitations. Our study only focused on the students and staff at the FMHS, so the validity and reliability of our study was only limited to the students and staff at the faculty. Secondly, our study was a cross-sectional study, which has disadvantages of unable to determine a causal and temporal relationship. Furthermore, there was also a non-respondent bias as some students and staff did not participate in our study due to personal reasons.

CONCLUSION

Overall majority of the students and staffs demonstrated a good level of knowledge, attitude, practices and awareness among both staffs and students. In our study done on 427 students and staff in the FMHS, Universiti Putra Malaysia, there was no significant association between age, gender, ethnicity and year of study with the level of knowledge, attitude, practice and awareness of hypertension among the students. As for the staff, there was no significant association between the socio-demographic factors of age, gender, ethnicity and level of education with the level of knowledge, attitude and awareness of hypertension among the staff. However, it was found that there was a significant association between age and the level of practice of hypertension among the staff, showing a p-value of less than 0.05. Meanwhile, the field of staff was significantly associated with practice and awareness but not associated with knowledge and attitude.

Based on the research we conducted, we would like to suggest to other researchers to extend their research to students and staff in other faculties of Universiti Putra Malaysia. The research could also be extended to the medicine and health sciences faculties in other universities as well.

In addition, information regarding hypertension, its negative effects and how to overcome it should be widely disseminated among the students and staff. The faculty can organize interesting activities such as campaigns, put up posters and have exhibition to educate and persuade this category of the population to join in the battle against this great silent killer.

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