ORIGINAL ARTICLE

Knowledge, Attitude, and Practice Regarding Hypertension among Hypertensive Patients in a Teaching Hospital in Selangor

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ABSTRACT

Introduction: Hypertension, a significant health problem affecting around 1.28 billion persons aged 30 to 79 years and when not treated causes life-threatening complications which can damage vital organs leading to death. Knowledge, attitude, and practice (KAP) are important influential factors towards the treatment process of hypertension and lack of these may dangerously affect the health status of hypertensive patients. The main aim of this study was to determine the level of KAP regarding hypertension among hypertensive patients in an outpatient clinic in a teaching hospital, Selangor. **Materials and methods:** A cross-sectional study was carried out among 101 hypertensive patients using self-administered questionnaires. Data was analyzed by using the SPSS version 27.0 and presented in frequencies, percentages and Pearson chi-square. **Results:** This study found that the scores for the level of knowledge (good = 51.5%; fair = 25.7%; poor = 22.8%), attitude (good = 84.84%; fair = 8.9%; poor = 6.9%), and practice (good = 65.3%; fair = 26.7%; poor = 7.9%) among the participants were averagely high. In addition, there was an association between the level of knowledge and practice ($p = 0.042$) and attitude and practice ($p = 0.000$). **Conclusion:** Although the result showed positive outcomes, it is very important for healthcare personnel to continuously assess these levels as the prevalence of hypertension is still on the rise and the need arises to develop more appropriate educational and self-management programs to improve the health status and prevent complications among these patients.
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Keywords: Knowledge, Attitude, Practice, Hypertension, Hypertensive patients

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INTRODUCTION

Hypertension, the 'silent killer' and a significant health problem in developed and developing countries, affects around 1.28 billion persons aged 30 to 79 years [1]. It is diagnosed when the systolic blood pressure is at least 140 mmHg and/or the diastolic blood pressure is at least 90 mmHg [2]. In the previous two decades high-income countries witnessed a moderate decline in the incidence of hypertension whereas low and middle-income countries suffered significant rises whereby the global prevalence had doubled between the years 1990 till 2019 [3]. Hypertension is one of the most significant risk factor for cardiovascular diseases, cerebrovascular accident, and renal failure [4] and when not treated causes life-threatening complications which can damage vital organs leading to death [5]. Although non-modifiable risk factors such as age and genetics can increase the risk of hypertension, the modifiable risk factors such as high sodium intake, sedentary lifestyle, obesity, alcohol consumption, and smoking, when managed effectively can control hypertension [4]. Hypertension is manageable through both non-pharmacological lifestyle behaviors and pharmacological interventions effectively. Therefore, proper assessments and understanding of knowledge, attitude and practice regarding hypertension are important factors in its treatment and control.

The prevalence of hypertension among Malaysian adults aged 18 years and above in 2015 was 35.3% [6], among adults aged 30 years and above in 2016 was 47.9% [7], 30.0% among adults aged 18 years and above in 2019 [8], and 49.4% among adults in 2021 [9]. This reveals that hypertension is on the rise and a significant health problem among Malaysians.

Knowledge, attitude, and practice (KAP) are important influential factors towards the treatment process of hypertension, and these are related to decision-making and behavioral adjustments towards treatment initiation, medication compliance and lifestyle changes [10]. Lack of knowledge, bad attitude, and inappropriate practices may dangerously affect the health status of

hypertensive patients while on the other hand exposure to health information may prevent life threatening complications. In a study in 2019 [11], only 48.6% have a good understanding regarding hypertension, 47.8% showed positive attitude and 39.5% had excellent practice towards the management of hypertension and in a Malaysian study in 2021 [12], it was identified that 51.3% had moderate knowledge, 31.9% expressed fair awareness and 48.8% showed moderate attitude. Therefore, this study was carried out to determine the KAP regarding hypertension among hypertensive patients in an outpatient clinic in a teaching hospital as these actors influence the future health status of these hypertensive patients.

MATERIALS AND METHODS

Study design, setting and participants

This was a cross-sectional study aimed to identify the KAP regarding hypertension among hypertensive patients in the outpatient clinic of a teaching hospital, University Putra Malaysia, situated in Selangor, Malaysia, from June to August 2023. The study was conducted with the approval of the Ethics Committee (JKEUPM-2022-373) and an informed consent was obtained from the participants prior to data collection. A total of 101 patients attending the outpatient clinic participated in this study through convenience sampling fulfilling the inclusion criteria. Patients excluded from the study were pregnant mothers and patients with mental health issues. Convenience sampling was selected based on the availability of participants. The sample size was determined through the Cochran's sample size formula [13].

Study instrument

Self-administered questionnaires to determine the KAP regarding hypertension among hypertensive patients were adopted from Paczkowska et al. [14] which consisted of eighteen items to examine knowledge, Ikasaya et al. [15] which consisted of seven items for attitude and Cheong et al. [16] which consisted of 18 items for practice. Scoring for the knowledge and attitude items were performed by grading one to the correct answer and zero to the incorrect answer. The scores of the participants were then transformed into percentages. A 4-point Likert scale was used to collect data for the practice items and the participants had to choose one from four responses (all the time, most of the time, some of the time, none of the time). The scores were then transformed to percentages. The socio-demographic information of the participants included age, gender, ethnicity, education level, employment status, family history of hypertension, and years of diagnosed hypertension.

Data collection

Data collection was carried out by the researcher after an informed consent was obtained from the participants. The self-administered questionnaires were then distributed to the participants and were collected immediately after they had answered them. The researcher then examined the answered questionnaires to ensure all the items were answered.

Data Analysis

The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive data were presented as frequency and percentage and Pearson Chi-square was used to analyze the inferential data. The p value < 0.05 was considered statistically significant which indicated the existence of association between variables.

RESULTS

A total number of 101 hypertensive patients took part in this study and most of them were from the age group 50 years and above (53.5%), male participants (52.5%) and government/ non-government employees (53.5%). This study was dominated by the Malay ethnicity (n=91, 90.1%), and most of the participants had tertiary education (86.1%, n=87). There were 76 (75.2%) participants who had a family history of hypertension and 44 (43.6%) were diagnosed as hypertension for 5 years and above. The details regarding the distribution of participants' socio-demographic characteristics are reported in Table I.

Table I: Frequency and percentage of socio-demographic data among participants

Variables	n	%
Age group		
18-29 years old	2	2.0%
30-49 years old	45	44.6%
50 years old and above	54	53.5%
Gender		
Female	48	47.5%
Male	53	52.5%
Ethnicity		
Malay	91	90.1%
Chinese	5	5.0%
India	5	5.0%
Highest education qualification		
Primary Education	1	1.0%
Secondary Education	13	12.9%
Tertiary Education	87	86.1%
Employment status		
Government/ Non-government	54	53.5%
Self-employed	3	3.0%
Retired	31	30.7%
Unemployed	13	12.9%

CONTINUE

Table I: Frequency and percentage of socio-demographic data among participants (CONT.)

Variables	n	%
Family history of hypertension		
Yes	76	75.2%
No	25	24.8%
Years of diagnosed hypertension		
Less than 1 year	35	34.7%
1-2 years	11	10.9%
3-4 years	11	10.9%
5 years and above	44	43.6%

According to Table II, 51.5% of the participants were found to have good knowledge followed by fair knowledge (25.7%) and poor knowledge (22.8%) regarding hypertension.

Table II: Level of knowledge regarding hypertension among hypertensive patients

Variables	N=101, (%)		
	Poor	Fair	Good
Knowledge	23 (22.8%)	26 (25.7%)	52 (51.5%)

As illustrated in Table III, 84.84% of the participants had a positive attitude regarding hypertension, followed by fair attitude (8.9%) and poor attitude (6.9%).

Table III: Level of attitude regarding hypertension among hypertensive patients

Variables	N=101, (%)		
	Poor	Fair	Good
Attitude	7 (6.9%)	9 (8.9%)	85 (84.84.2%)

Table IV depicted that 65.3% of the participants had a good level of practice followed by fair level of practice (26.7%) and poor level of practice (7.9%) regarding hypertension.

Table IV: Level of practice regarding hypertension among hypertensive patients

Variables	N=101, (%)		
	Poor	Fair	Good
Practice	8 (7.9%)	27 (26.7%)	66 (65.3%)

There was a statistically significant association (p = 0.042) between the level of knowledge and practice regarding hypertension among hypertensive patients in the outpatient clinic as presented in table V.

Table V: Association between the level of knowledge and practice regarding hypertension among hypertensive patients

Variables	Level of practice regarding hypertension among hypertensive patients	
	χ^2	p-value
Level of knowledge regarding hypertension among hypertensive patients	9.899	0.042

*χ^2 shows Pearson Chi-Square value and p-value value ≤ 0.05 indicates statistical significance.

Table VI depicted that there was an association (p = 0.000) between the level of attitude and practice.

Table VI: Association between the level of attitude and practice regarding hypertension among hypertensive patients

Variables	Level of practice regarding hypertension among hypertensive patients	
	χ^2	p-value
Level of attitude regarding hypertension among hypertensive patients	51.936	0.000

*χ^2 shows Pearson Chi-Square value and p-value value ≤ 0.05 indicates statistical significance.

Table VII showed that there was an association between the socio-demographic characteristics and the level of practice by gender (p = 0.036), employment status (p = 0.012), and years of diagnosed hypertension (p = 0.013).

Table VII: Association between socio-demographic characteristics and the level of practice regarding hypertension among hypertensive patients

Variables		Level of practice (%)			
		Poor	Fair	Good	χ^2; p-value
Age (years)	18- 29 years	0 (0.0%)	1 (50.0%)	1 (50.0%)	6.237; 0.182
	30- 49 years	3 (6.7%)	17 (37.8%)	25 (55.6%)	
	50 years and above	5 (9.3%)	9 (16.7%)	40 74.1%)	
Gender	Female	1 (2.1%)	17 (35.4%)	30 (62.5%)	6.629; 0.036
	Male	7 (13.2%)	10 (18.9%	36 (67.9%)	
Ethnicity	Malay	8 (8.8%)	24 (26.4%)	59 (64.8%)	1.487; 0.829
	Chinese	0 (0.0%)	2 (40.0%)	3 (60.0%)	
	Indian	0 (0.0%)	1 (20.0%)	4 (80.0%)	
	Others	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Highest education qualification	Primary education	0 (0.0%)	1 (100.0%)	0 (0.0%)	6.584; 0.160
	Secondary education	0 (0.0%)	6 (46.2%)	7 (53.8%)	
	Tertiary education	8 (9.2%)	20 (23.0%)	59 (67.8%)	
Employment	Government/ Non-government employee	8 (14.8%	15 (27.8%)	31 (57.4%)	16.325; 0.012
	Self-employee	0 (0.0%)	1 (33.3%)	2 (66.7%)	
	Retired	0 (0.0%)	4 (12.9%	27 (87.1%	

CONTINUE

Table VII: Association between socio-demographic characteristics and the level of practice regarding hypertension among hypertensive patients (CONT.)

Variables		Level of practice (%)			
		Poor	Fair	Good	χ^2; *p*-value
Employment	Unemployed	0 (0.0%)	7 (53.8%)	6 (46.2%)	16.325; 0.012
	Student	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Family history of hypertension	Yes	5 (6.6%)	20 (26.3%)	51 (67.1%)	0.863; 0.649
	No	3 (12.0%)	7 (28.0%)	15 (60.0%)	
Years of diagnosed hypertension	≤ 1 year	7 (20.0%)	8 (22.9%)	20 (57.1%)	16.175; 0.013
	1-2 years	1 (9.1%)	5 (45.5%)	5 (45.5%)	
	3- 4 years	0 (0.0%)	1 (9.1%)	10 (90.9%)	
	≥ 5 years	0 (0.0%)	13 (29.5%)	31 (70.5%)	

*χ^2 shows Pearson Chi-Square value and p-value value ≤ 0.05 indicates statistical significance.

DISCUSSION

The study aimed to determine the level of KAP regarding hypertension among hypertensive patients in an outpatient clinic in a teaching hospital, University Putra Malaysia. Results revealed that more than half of the participants were from the age group 50 years and above and dominated by the Malay ethnicity (90.1%) which is similar to another study done in Malaysia in 2021 [12]. Globally, the male participants have a slightly higher prevalence of hypertension as compared to the female counterparts [17] which is in conjunction with the findings of this study but contradicted with the study in Sri Lanka [18] where the prevalence was higher among females. Most of the participants in this study had tertiary education (86.1%) which contradicted with other studies where most of them did not have tertiary education [11, 15, 18, 19] but the results of the present study can be related with the study carried out in Malaysia in 2021 [12] where most of the hypertensive patients had completed tertiary education. Results also showed that 53.5% of the participants were employees which is similar to the finding in Sri Lanka [18]. Almost 75% of the participants in this study had a family history of hypertension compared to 53% and 21.1% in Sri Lanka [18] and Ethiopia [11] respectively which indicated that hypertension is very prevalent among Malaysians.

Among the 101 participants, 43.6% had been diagnosed with hypertension for five years and above. These findings were comparable to the research in Zambia [15] and Sri Lanka [18], where the majority of the participants were diagnosed with hypertension for five years and above, however, both the studies were contrary to the results from a research in Ethiopia [11], whereby the majority of the participants were those who had been diagnosed with hypertension for five years and below.

Knowledge, attitude and practice

The finding of this study is considered satisfactory whereby nearly 75% participants had good and fair knowledge and only about 20% had low level of knowledge. The good level of knowledge (50%) was similar to some other studies (11, 19, 20, 21, 22, 23), which reported that the knowledge level among hypertensive patients was about 50% or slightly lower. In contrast to these studies, the studies in Sudan [22] and Etiopia [24] have reported participants having good knowledge regarding hypertension. It may be concluded that since the literacy rate among the participants in this study is high, this has contributed to them achieving high level of knowledge regarding hypertension. The low and fair level of knowledge among these patients is a cause for concern eventhough the low level depicted 20% in this study because if the sample size had been bigger the number of participants in this group will may considerably be a larger number. equalling to one quarter of participants.

The present study demonstrated that more than 80% of the participants portrayed positive attitude towards hypertension. These findings corresponded with the results in Zambia [15], Benin [19] and the rural areas in Indonesia [25] where the results also showed more than 80% of the participants portrayed good attitude. Although studies from these countries had positive results, two studies conducted in India [21] and Ethiopia [11] had opposing results whereby the participants had poor attitude regarding hypertension. The positive findings may be attributed to the fact that when there is an increased level of knowledge regarding hypertension among hypertensive patients, the attitude may also change positively in view of improving their health status and preventing life endangering complications.

According to the present study more than 60% of the participants had a high level of practice regarding hypertension and these findings are identical to the studies done in Zambia [15] and India [26]. Although the overall scores revealed that the participants had average scores for knowledge and practice, the score for attitude was high. The differences in the findings of these studies can be related to the difference in the literacy of the participants, the questionnaire tools used or the availability of educational programs regarding hypertension in different countries.

There was a statistically significant association (p = 0.042) between the level of knowledge and practice regarding hypertension among hypertensive patients and this as in conjunction to the finding in Zambia (p = 0.023) [15]. This suggested that better level of knowledge will improve practice and lead to healthy lifestyle practices. There was also a statistically significant association

between the level of attitude and practice (p = 0.000) regarding hypertension among hypertensive patients. This result coincided with the findings from studies in Lebanon [20], Ethiopia [24] and Iran [23]. The likely explanation to these findings is that when there is good level of knowledge and understanding through education it may motivate the hypertensive patients towards good attitude and effective practice. There was a statistically significant association between practice and gender (p = 0.036), employment (p = 0.012), and years of diagnosed hypertension (0.013). The association between gender and practice coincided with the result in a study in Ethiopia [24]. It was also discovered that the duration of hypertension had an effect on practice and the participants who were diagnosed with hypertension for at least five years had better practice than those less than five years [27]. However, a study in Iran [28] found that there was no association between duration of diagnosed hypertension and practice.

CONCLUSION

The prevalence of hypertension is on the increase in Malaysia and there is a need to decrease the burden of this disease. It is imperative for the healthcare personnel to continuously assess the knowledge, attitude and practice levels of the hypertensive patients so as to develop more appropriate educational and self-management programs to improve the health status and prevent complications of this disease among these patients.

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REFERENCES

1. World Health Organization. Hypertension. 2021. Available from: https://www.who.int/news-room/fact-sheets/detail/hypertension.
2. Mahdavi M, Parsaeian M, Mohajer B, Modirian M, Ahmadi N, Yoosefi M, et al. Insight into blood pressure targets for universal coverage of hypertension services in Iran: The 2017 ACC/AHA versus JNC 8 hypertension guidelines. BMC Public Health, 2020; 20:347.
3. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants. Lancet, 2021; 398(10304):957–980. Available from: https://doi.org/10.1016/S0140-6736(21)01330-1
4. World Health Organization. A global brief on Hypertension: Silent killer, global public health crisis. 2023.ISBN: 978-92-4-008106-2
5. Buang NFB, Rahma NAA, Haque M. Knowledge, attitude and practice regarding hypertension among residents in a housing area in Selangor, Malaysia. Medicine and Pharmacy Reports, 2019; 92(2):145–152. Availabble from: https://doi.org/10.15386/mpr-1227
6. Ab Majid NL, Omar MA, Khoo YY, Mahadir Naidu B, Ling Miaw Yn J, Rodzlan Hasani WS, et al. Prevalence, awareness, treatment and control of hypertension in the Malaysian population: findings from the National Health and Morbidity Survey 2006-2015. J H Hypertens. 2018;32(8-9):617-24.
7. Abdul-Razak S, Daher AM, Ramli AS, Ariffin F, Mazapuspavina MY, Ambigga KS, et al. Prevalence, awareness, treatment, control and socio demographic determinants of hypertension in Malaysian adults. BMC Public Health. 2016;16:351.
8. National Institutes of Health. NCDs - Non-Communicable Diseases: Risk Factors and other Health Problems. In: National Institutes of Health, ed. National Health and Morbidity Survey 2019: Non-Communicable Diseases, Healthcare Demand and health Literacy (Vol I). Kuala Lumpur: Ministry of Health Malaysia; 2019
9. Zaki NAM, Ambak R, Othman F, Ibrahim Wong N, Cheong SM, Morad MFA, et al. The prevalence of hypertension among Malaysian adults and its associated risk factors: data from Malaysian Community Salt Study (MyCoSS). Journal of Health, Population and Nutrition 2021;40(8). Available from: https://doi.org/10.1186/s41043-021-00237-y
10. Ariffin F, Isa MR, Mat Nasir N, Md Yasin M, Abd Majid F, Palafox B, et al. Understanding knowledge of hypertension among affected individuals in low-income (B40) communities in Malaysia: The RESPOND study. Med J Malaysia, 2022; 77(5):542-551.
11. Bacha D, Abera H. Knowledge, Attitude and Self-Care Practice towards Control of Hypertension among Hypertensive Patients on Follow-up at St. Paul's Hospital, Addis Ababa. Ethiopian Journal of Health Sciences, 2019; 29(4):421–430. Available from:https://doi.org/10.4314/ejhs.v29i4.2
12. Mohammed AH, Hassan BAR, Suhaimi AM, Ali AHHD. Hypertension knowledge, awareness, and attitude among the hypertensive population in Kuala Lumpur and rural areas in Selangor, Malaysia. Journal of Public Health, 2021; 29(2):443–450. Available from: https://doi.org/10.1007/s10389-019-01160-7
13. Cochran WG. Sampling techniques (3rd ed.). New York: John Wiley & Sons; 1977.
14. Paczkowska A, Hoffmann K, Kus K, Kopciuch D, Zaprutko T, Ratajczak P. Impact of patient knowledge on hypertension treatment adherence and efficacy: A single-centre study in Poland.

International Journal of Medical Sciences, 2021;3:852–860. Availabble from: https://doi.org/10.7150/ijms.48139
15. Ikasaya I, Mwanakasale V, Kabelenga E. Knowledge, Attitudes and Practices of Hypertension among Hypertensive Patients at Buchi Clinic, Kitwe, Zambia. International Journal of Current Innovations in Advanced Research Citation, 2018; 1(7):78–89. Available from: https://www.researchgate.net/publication/330103194
16. Cheong AT, Sazlina SG, Tong SF, Azah AS, Salmiah S. Poor blood pressure control and its associated factors among older people with hypertension: A cross-sectional study in six public primary care clinics in Malaysia. Malaysian Family Medicine, 2015; 10(1):19-25.
17. WHO. *Raised Blood Pressure*, Geneva, Switzerland, 2017. Available from: http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en.
18. Ralapanawa U, Bopeththa K, Wickramasurendra N, Tennakoon S. Hypertension knowledge, attitude and practice in adult hypertensive patients at a tertiary care hospital in Sri Lanka. International Journal of Hypertension, 2020; 2020:1-6.
19. Nadège CYH, Ariyoh SA, Arnaud JDS, Gwladys G, Latifath I, Philippe L, et al. Knowledge, Attitudes and Practices towards Hypertension among Hypertensive Patients in Rural Area, Tanvè (Benin). Universal Journal of Public Health, 2020; 8(4):120-126. DOI: 10.13189/ujph.2020.080402.
20. Estrada D, Sierra C, Soriano R, Jordán A, Plaza N, Fernández C. (2019). Grade of knowledge of hypertension in hypertensive patients. Enfermerна Clнnica (English Edition), 2019;30. 10.1016/j.enfcle.2018.11.003.
21. Das AK, Lahiri G, Bos, A, Sarkar DK. (2020). Assessment of patients' knowledge, attitude and practice regarding hypertension in a tertiary care hospital. International Journal Of Community Medicine And Public Health, 2020; 7(12):4967. Available from: https://doi.org/10.18203/2394-6040.ijcmph20205171
22. Abdalla AA. Knowledge, attitude and practice towards therapeutic lifestyle changes in the management of hypertension in Khartoum State. Cardiovasc J Afr. 2021;32(4):198–203. doi: 10.5830/CVJA-2021-011
23. Zinat Motlagh SF, Chaman R, Ghafari SR, Parisay Z, Golabi MR, Eslami AA, Babouei A. Knowledge, treatment, control, and risk factors for hypertension among adults in Southern Iran. Int J Hypertens 2015;2015:897070. doi: 10.1155/2015/897070.
24. Bogale S, Mishore KM, Tola A, Mekuria AN, Ayele Y. Knowledge, attitude and practice of lifestyle modification recommended for hypertension management and the associated factors among adult hypertensive patients in Harar, Eastern Ethiopia. SAGE Open Med. 2020;8:2050312120953291. doi: 10.1177/2050312120953291
25. Kurnia AD, Melizza N, Ruhyanudin F, Masruroh NL, Prasetyo YB, Setyowati CI, et al. The Effect of Educational Program on Hypertension Management Toward Knowledge and Attitude Among Uncontrolled Hypertension Patients in Rural Area of Indonesia. International Quarterly of Community Health Education, 2020; 42(2):181–188. Availaable from: https://doi.org/10.1177/0272684X20972846
26. Patnaik L, Paul K, Pattnaik S, Sahu T. Lifestyle Pattern and Hypertension Related Knowledge, Attitude and Practices among Diagnosed Patients of Hypertension Attending a Tertiary Care Hospital. Journal of Cardiovascular Disease Research, 2017; 8:108-111.
27. Machaalani M, Seifeddine H, Ali A, Bitar H, Briman O, Chahine MN. Knowlede, attitude, and practice toward hypertension among hypertensive patients residing in Lebanon. Vasc Health Risk Manag, 2022; 18:541-553.
28. Rashidi Y, Manaflouyan H, Pournaghi Azar F, Nikniaz Z, Nikniaz L, Ghaffari S. (2018). Knowledge, attitude and practice of Iranian hypertensive patients regarding hypertension. Journal of Cardiovascular and Thoracic Research, 2018; 10(1):14–19. Available from: https://doi.org/10.15171/jcvtr.2018.02