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Hypertension self-management and anti-hypertensive prevalence amid patients in Saudi Arabia via knowledge, attitude, and practice assessment

Abstract

Background: Diagnosed cases with hypertension (HT) are elevating worldwide and in Saudi Arabia (SA). HT self-management amid patients is important for controlling the disease and its complications. The aim of this study is to perform an HT KAP evaluation amid patients with HT in SA.

Subjects and methods: This Cross-sectional study was performed between January and April 2021. An administered validated online survey was presented to the patients via the Survey Monkey website-link. Data collectors contacted possible patients in several sites comprising; hospitals, shopping malls, and leisure-centers. The associations amid categorical variables were assessed via the chi-square test application. The Pearson correlation coefficient (r) measured potential correlations between the patients' KAP and outcome variables.

Results: This study surveyed 410 patients with HT with mean systolic blood pressure (SBP) of 144.1 mmHg ± 15.4 and diastolic blood pressure (DBP) 90.2 mmHg ± 10.2, mean age 56 ± 11 years, range 18–80 years. Generally, 73% of patients showed good HT knowledge and 78% showed good HT attitude, whereas 77% revealed poor HT practice. Significant positive linear correlations were found amid attitude versus (with) knowledge (r= 0.40, P <0.001), practice with knowledge (r= 0.26, P <0.001), practice with attitude (r= 0.26, P <0.001), SBP with DBP (r= 0.57, P <0.001), whereas significant negative linear correlations were found amid SBP with knowledge (r= −0.13, P <0.05), SBP with attitude (r= −0.11, P <0.05), SBP with practice (r= −0.10, P <0.05), DBP with knowledge (r= −0.10, P <0.05), DBP with attitude (r= −0.14, P <0.05), and DBP with practice (r= −0.10, P <0.05). Surprisingly, 59% of patients didn't administer any prescribed anti-hypertensives.

Conclusion: The patients showed a very good attitude and knowledge regarding HT; however, these were not mirrored in their practice towards HT. Unproper administration of prescribed anti-hypertensive medicines without a proper healthy diet and exercise caused a direct contribution resulted in poor HT practice despite increased HT knowledge and awareness. Consequently, patients are advised to participate in the free HT health education programs provided by the ministry of health (MOH) to increase their knowledge of the importance of drug compliance and applications for improving HT self-management to better manage HT and its complications.

Keywords: hypertension, knowledge, attitude, practice, anti-hypertensive medicines, Saudi Arabia, self-management, blood pressure, complications

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Introduction

Hypertension (HT) is a commonly diagnosed chronic disease in the world. It is developed due to specific factors that narrow the blood vessels (the arteries), force the heart to exert excessive pressure against vessel walls, and push the heart to work harder to maintain the blood circulation in the body.[1,2] Therefore, uncontrolled chronic HT leads to extreme pathological complications.[1,2] These include; blood vessel wall damage involving wall thickening, hardening, and fat accumulation, which were developed from atherosclerosis.[1,2] This will lead to narrowing the blood vessel that could cause ischemia or stroke by forming blood clots that could cause potential damage.[3] In addition, HT can cause blindness due to reduced blood supply to the eye's tissue area, leading to blurred vision or complete loss of sight.[4] In addition, increased workload on the myocytes will lead to actin and myosin filaments of the ventricular parts of the heart gradually enlarge which may lead to ventricular cardiac hypertrophy, which is a significant sign of HT.[5] Also, HT leads to impairing the glomerular filtration process and damage the glomeruli in the kidneys, which leads to a decrease in the ability of protein retention. Therefore, the protein appears in the urine, leading to chronic kidney disease (CKD).[6] In addition, HT can cause cardiovascular disease (CVD), comprising coronary artery disease (CAD), which will contribute to heart failure (HF).[5] Therefore, uncontrolled HT is directly contributed to the increased global mortality and morbidity rates.[7]

HT is one of the most common factors for deaths worldwide, affecting all income clusters of all countries.[8] It spreads about 29.2% in males and 24.8% in females, according to world health statistics in 2012.[9] Also, HT was responsible for 7.5 million deaths out of 58.8

million deaths worldwide in 2004, a major cause of premature deaths worldwide.[9,10] The levels of HT is highly elevated in Saudi Arabia (SA),[11] which have been reported between 1995 to 2000 to range from 26.1% amid the 30 – 70 years age group, and in 2005 have been stated to range from 25.5% amid the 15–64 years old age group.[12,13] In SA, HT was categorized as the main mortality risk factor according to 2010 estimates.[14] Patients with uncontrolled HT can cause a major challenge to the health system, and therefore further solutions are required to lessen the potential liability of HT in SA.[11]

Increasing the self-management in patients with HT regarding the effective adherence of proper medication, weight loss, a healthy, well-balanced diet, increased physical activity, behavior changes, alcohol, and smoke cessation are essential strategies to prevent HT complications and/or manage the risk of CVD.[15] The national HT education program in America aids awareness regarding HT has enhanced from 51% within 1976 -1980 to 70% in 1999-2000, and the result improved hypertension-linked mortality and morbidity.[9] Age-adjusted death rates from coronary heart disease and stroke have decreased by 60% and 50 %, respectively, since 1972.[9] As a result, the Ministry of Health (MOH) in SA included the guidelines for the management of HT to provide a comprehensive directing health program for clinicians, such as clinical pharmacists and family-medicine physicians, to improve prevention and early detection and HT management.[16] As a result, HT self-management, awareness, and interventions are important treatment routes and have substantial roles in managing HT complications.[17-19] Studies comprising knowledge, attitude, and practice (KAP) can measure HT self-management[20] as KAP levels may reflect current self-management status. Though there are various global studies on HT KAP,[20-24] rare studies were published in SA, such as the studies performed by Siddiqua et al. in Asir region[25] and the study by Bakhsh et al., 2017 in King Abdulaziz University Hospital in Jeddah city.[26] Therefore, the aim of this study is to assess the KAP of HT and the prevalence of anti-hypertensive medicines use by Saudi patients.

Subjects and methods

Ethical opinion

This study was unconditionally permitted by the institutional review board (IRB) of King Abdullah Medical City (KAMC) in the Holy Capital with a registration number: 20-728.

Sample size

Slovin's formula was applied to calculate the sample size estimating a population size of around 4.5 million,[27] a margin of error of 5%, and a confidence interval (CI) of 0.95.[28] Accordingly, a sample size of 384 patients was required to accomplish the needed CI. Therefore, 410 patients were requested to participate in this study after acquiring informed consent to allow possible dropouts.

Survey preparation and study design

This cross-sectional questionnaire-based study was performed in four months between January and April 2021. Possible patients were surveyed at local private and governmental hospitals, recreational parks, shopping malls, and leisure centers. Qualified and well-trained senior pharmacy students who received essential certification for performing clinical research were directed and appointed for data collection. Potential patients received a thorough explanation of the aims and objectives of the study before receiving their consent for participating in this study. A pilot study was performed using 39 randomly chosen patients with HT to validate the survey.[29,30] While 19 patients were enrolled from KAMC, the outstanding 20 were enrolled from Al-Noor Specialist Hospital, and they delivered voluntary informed consent.

The sampling method and survey design and development, presentation to the potential patients, structure, validation, reliability test, and the correcting scheme were performed as previously done in similar published studies conducted by Sharaf, 2021.[30,31]

To assess HT KAP and prevalence use of anti-hypertensives, a self-developed survey in the clinical research administration (CRA) at KAMC was used after revising related validated surveys from published studies.[20-25] The survey was constructed to assess the patients' KAP concerning HT and linked risk factors, complications, management, and prevalence of anti-hypertensives via an online software supporting survey cloud-based (Survey Monkey). The final part comprised anti-hypertensive prevalence use of the five key prevalent anti-hypertensive classes permitted by the Saudi Food and Drug (FDA) Agency: calcium channel blockers (CCB) (i.e., Amlodipine [amlor] 5 mg or Nifedipine Retard-[Adalat-La] 30 mg); Angiotensin-II receptor blockers (RB) (i.e., Telmisartan-[micardis] 40 mg or Losartan potassium-[cozaar] 50 mg); Angiotensin-Converting Enzyme (ACE) Inhibitors (i.e., Captopril-[acetab] 25 mg or Lisinopril-[zestril] 10 mg; Beta-blockers (BB) (i.e., Metoprolol Tartrate-[Lopresor] 50 mg or Atenolol-[Tenormin] 100 mg ; and Diuretics (i.e., Hydrochlorothiazide-[esidrex] 25 mg or Furosemide-[Lasix] 40 mg.[32]

Study population (inclusion/exclusion criteria)

The selection criteria comprised; Saudi patients who live in Makkah Region aged between 18 and 80 years. The enrollment of the patients was carried out after HT diagnosis confirmation by their clinical diagnosis with a current measurement of raised blood pressure (BP) of (systolic blood pressure (SBP) ≥ 130 / diastolic blood pressure (DBP) ≥ 80 mmHg) as stated by the Saudi MOH and US HT parameters for HT stage I and stage II,[16,33] and they were using prescribed anti-hypertensive medicines. The exclusion criteria comprised non-Saudis, non-hypertensive patients, incapability to consent, and patients with health-related education. The received data responses were held on an electronic-secure server. All patients who presented unfinished responses were disqualified from the study.

Statistical analysis

The data handling, management, and analysis were performed as shown in previously published studies conducted by Sharaf, 2021.[30,31] Statistical significance was determined at a *P*-value ≤0.05.

Results

Socio-demographic variables and BP evaluation

An overall number of 435 surveys were received, of which 25 were disqualified as they provided inadequate survey responses. The outstanding 410 surveys were used for data analysis, delivering a 94.3% response rate. Table 1 demonstrates the socio-demographic participant's features. Male patients were higher (57.6%, n=236) than females (42.4%, n=174), and the majority of old patients aged 41–80 years (88.8%, n=364) compared with younger patients aged 18–40 years (11.2%, n=46). Most of the patients had obtained a high school education only (41.5%, n=170), followed by university education

(31.7%, n=130), while the outstanding patients hadn't obtained any certified education (26.8%, n=110). The majority of unemployed patients (78.1%, n=320) was greater than the remaining employed patients (21.9%, n=90). Most of the patients (53.7%, n=220) were diagnosed with stage I HT (SBP 130-139/ DBP 80-89), while the remaining patients were diagnosed with stage II HT (SBP ≥ 140 / DBP ≥ 90) (46.3%, n=190). The number of patients with HT family history was higher (64%, n=263) than those without a family history (36%, n=147). Table 2 displays the mean ± SD of SBP and DBP. SBP was measured with a mean value of (144.1 mmHg ± 15.4) and a DBP mean (90.2 mmHg ± 10.2).

Table 1 Socio-demographic features of patients with HT

Variables	n (%)
Gender	
Male	236 (57.6%)
Female	174 (42.4%)
Age	
18-40 years	46 (11.2%)
41-80 years	364 (88.8%)
Education	
None	110 (26.8%)
High school	170 (41.5%)
University	130 (31.7%)
Employment	
Working	90 (21.9%)
Not working	320 (78.1%)
Hypertension/BP measurements	
Stage I: SBP 130-139/ DBP 80-89 mmHg	220 (53.7%)
Stage II ≥ SBP 140/ DBP 90 mmHg	190 (46.3%)
Family history of Hypertension	
Yes	263 (64%)
No	147 (36%)

BP, blood pressure; DBP, Diastolic blood pressure; SBP, Systolic blood pressure; Data is shown as the number of patients and their percentage out of the total n=410

HT knowledge and awareness

The KAP of HT levels for the patients in this study are indicated in Figure 1. The patients showed good HT knowledge as 73% (n=299) of the patients provided correct responses to the HT knowledge questions (Figure 1).

Table 3 demonstrates the incidence distribution of HT knowledge amid patients in this study. The definition of HT was accurately stated by 78.3% (n=321) of the patients, and 69% (n=283) knew the normal measurements of BP. Additionally, 67.8% (n=278) of patients knew that smoking contributes to HT complications. Furthermore, 93.2% (n=382) patients knew that eating a healthy diet with less table salt helps manage HT. Moreover, 88% (n=361) of patients knew that weekly exercises for 150 minutes help manage HT, and the majority of patients 93.9% (n=385) knew that regular consumption of prescribed anti-hypertensive medicines contributes to HT management.

Table 2 BP measurements amid patients with HT

Blood pressure measurements	Mean ± SD
SBP	144.1 mmHg ± 15.4
DBP	90.2 mmHg ± 10.2

SBP, systolic blood pressure; DBP, diastolic blood pressure; SD, standard deviation

Table 3 HT knowledge frequency distribution amid patients

Knowledge questions	Answers	Count (n)	Percent %
Do you know HT?	Yes	321	78.3
	No	79	19.3
	I don't know	10	2.4
What is the normal measurement of BP?	Yes	283	69
	No	110	26.8
	I don't know	17	4.2
Does smoking contribute to HT?	Yes	278	67.8
	No	122	29.8
	I don't know	10	2.4
Does healthy eating with less salt help manage HT?	Yes	382	93.2
	No	18	4.4
	I don't know	10	2.4
Does Weekly exercise for 150 minutes help manage HT?	Yes	361	88
	No	40	9.8
	I don't know	9	2.2
Regular consumption of prescribed anti-hypertensive medicines contributes to HT management?	Yes	385	93.9
	No	15	3.7
	I don't know	10	2.4

The patients' awareness measurements concerning HT symptoms and complications are shown in Figures 2 and 3, respectively. Most of the patients were aware that headaches are the major symptoms of HT (82%, n=369), shadowed by dizziness, with a response rate of 68% (n=282). More than half of the patients knew that blurry vision is another symptom of HT (56%, n=235). The lowermost response rate was regarding dyspnoea (42%, n=175) and nose bleeding (20%, n=82) as symptoms of HT.

Furthermore, most of the patients showed suitable awareness levels concerning HT and linked medical conditions/defects as follows: 82% (n=335) patients know that HT is linked to brain strokes, 81% (n=330) showed that HT is linked to myocardial infarction, 62% (n=254) know that HT is linked to blood vessels defects (BVD) in the kidneys, and 58% (n=238) were aware that HT is associated with BVD in the

eyes. However, the awareness levels were not acceptable concerning potential association of HT with aneurysms (47%, n=191), Dementia (39%, n=160), Metabolic syndrome (37%, n=153), and memory defects (34%, n=142).

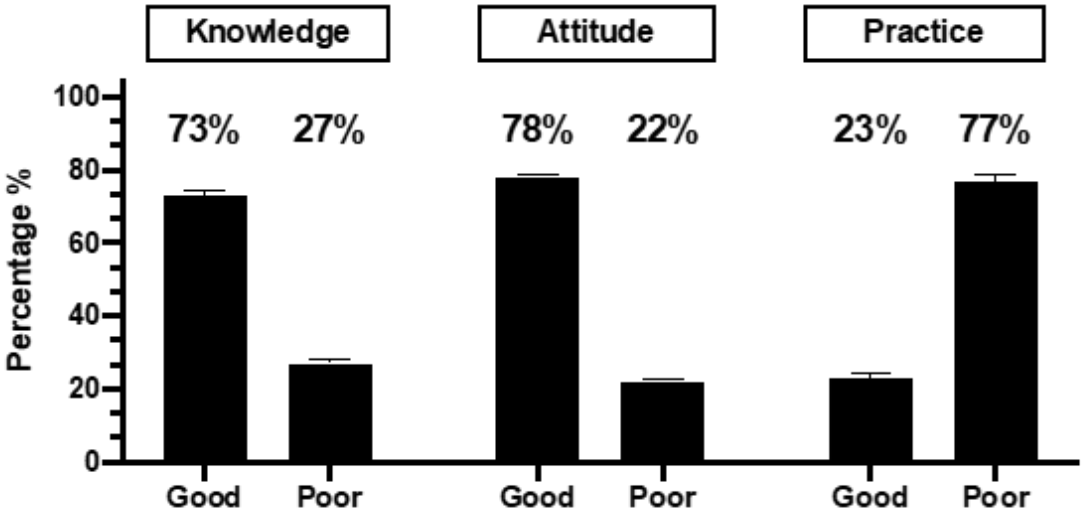

Figure 1 KAP of HT measurements amid patients.

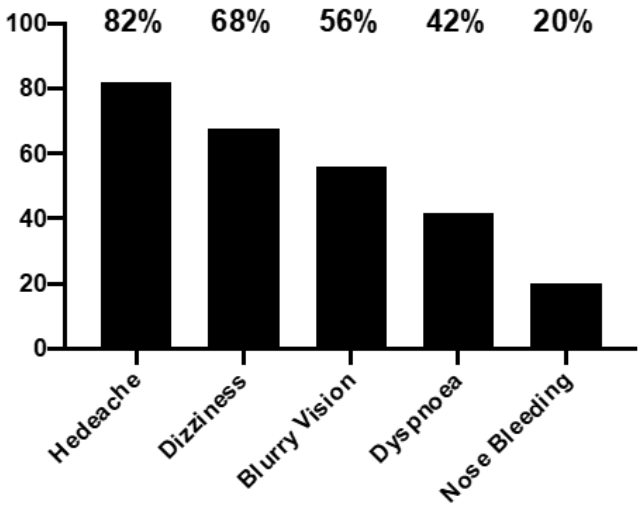

Figure 2 Frequency distribution of HT symptoms amid patients.

The relation concerning the knowledge questions and the patients' variables is indicated in Table 4. Patients with HT family history delivered the highest significant responses concerning normal BP measurements (75%, *P*=0.05) compared to patients without HT family history. Additionally, patients in the old age cohort (41-80 years old) with a university education delivered a higher significant response concerning the management of HT following a healthy diet with less salt (90% and 97% respectively, *P*=0.05) compared to patients of the young age cohort with no or high-school education. Furthermore, patients in the old age cohort (41-80 years old) with a university education and a HT family history provided a higher significant response regarding the management of HT with regular consumption of prescribed anti-hypertensive medicines (90%, 92%, and 90% respectively, *P*=0.05) compared to patients of the young age cohort with no or high school education and without a HT family history.

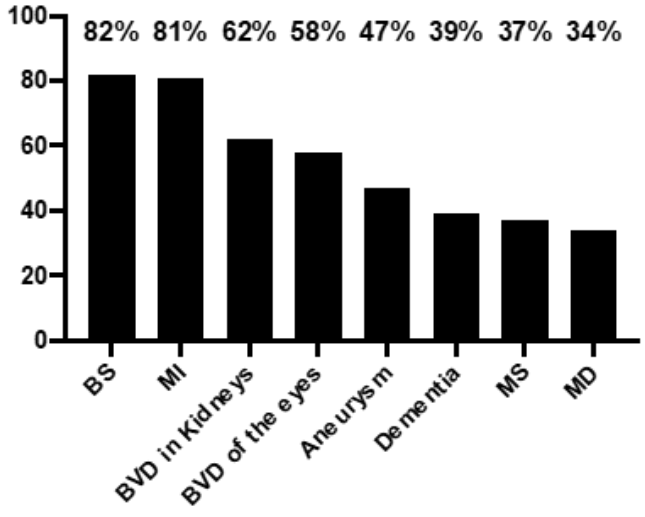

Figure 3 Frequency distribution of HT complications amid patients.

BS, brain stroke; MI, myocardial infarction; BVD, Blood vessels defects; MS, metabolic syndrome; MD, memory defects.

HT attitude

The patients provided good levels of HT attitude (78%, n=320) established by their responses, as shown in Figure 1. The rate distribution of HT attitudes of the patients in this study is shown in Table 5. Most of the patients (94.4%, n=387) agreed that patients with

HT must know more concerning HT self-management. Additionally, 77.6% of the patients (n=318) disagreed that HT is a temporary disease and it is not a major health problem, and almost a parallel figure of patients (73.2%, n=300) disagreed that prescribed anti-hypertensive medicines can be stooped the moment BP is normalized. Likewise, 78.6% of the patients (n=322) disagreed that anti-hypertensive medicines cannot be replaced with herbal products to manage HT. Moreover, most of the patients (97.1, n=398) agreed that sustaining a healthy lifestyle and anti-hypertensive medicines will safely manage HT.

Table 4 Relation between HT knowledge questions and patient's variables

Knowledge questions	Gender		Age		Educational background			Employment		Family history	
	Male	Female	18-40	41-80	None	High	University	Working	Not working	Yes	No
	n=236(%)	n=174(%)	n=46(%)	n=364(%)	n=110(%)	n=170(%)	n=130(%)	n=90(%)	n=320(%)	n=263(%)	n=147(%)
Do you know HT?	85	75	86	80	75	83	80	81	78	80	79
What is the normal measurement of BP?	70	66	80	90	49	65	86	80	75	75*	60
Does smoking contribute to HT?	66	67	83	93	68	65	66	67	66	66	67
Does healthy eating with less salt help manage HT?	92	90	75	90*	75	80	97*	92	91	92	91
Does Weekly exercise for 150 minutes help manage HT?	80	71	80	85	49	70	80	91	86	86	88
Regular consumption of prescribed anti-hypertensive medicines contributes to HT management?	85	80	74	90*	50	69	92*	85	80	90*	75

*: Significant difference (P≤0.05)

The relation between the attitude questions and patients' variables is indicated in Table 6. Patients in the old age cohort (41-80 years old) with a university education and a HT family history provided a higher significant response regarding the importance of HT self-management to the patients (96%, 97%, and 97% respectively, *P*=0.05) compared to patients of the young age cohort with no or high-school education and without a HT family history. Moreover, patients with a university education delivered a higher significant response concerning HT being a temporary disease and not a major health problem (92%, *P*=0.05) compared to patients with no or high-school education.

HT practice

The patients' practice replies weren't as satisfactory as anticipated and mirrored poor HT practice (77%, n=316), as shown in Figure 1. The frequency distribution of HT practice amid patients of this study is shown in Table 7. Most of the patients (74.2%, n=304) did not measure their BP regularly, either daily or weekly. Moreover, 54.2% of patients (n=222) did not adopt a healthy lifestyle to manage HT. Additionally, 52.4% of patients (n=215) did not follow any exercise programs for managing HT, and 54.9% of patients (n=225) did not follow a food diet program for managing HT. Furthermore, 89.5%

of patients (n=367) did not take their anti-hypertensive medicines regularly, while 86.3% of patients (n=354) were not smoking any type of Tobacco products, including electronic smoking. Also, 56.1% of patients (n=230) were consuming daily more than 4 cups of caffeinated drinks (approximately more than 946 ml, and more than 400 mg of caffeine), including caffeinated Tea and Coffee.[34,35]

Table 5 HT attitude frequency distribution amid patients

Attitude questions	Answers	Count (n)	Percent %
Do you think patients should know more about HT self-management?	Agree	387	94.4
	Disagree	16	3.9
	Neutral	7	1.7
HT is a temporary disease and is not a major health problem?	Agree	82	20
	Disagree	318	77.6
	Neutral	10	2.4
Can you stop anti-hypertensive medication once your blood pressure is normalized?	Agree	101	24.6
	Disagree	300	73.2
	Neutral	9	2.2
Should patients take their anti-hypertensive medication regularly as prescribed?	Agree	389	94.9
	Disagree	10	2.4
	Neutral	11	2.7
Can you replace anti-hypertensive medication with Herbal products to manage HT?	Agree	78	19
	Disagree	322	78.6
	Neutral	10	2.4
Maintaining a healthy lifestyle with anti-hypertensive medication will manage HT safely?	Agree	398	97.1
	Disagree	3	0.7
	Neutral	9	2.2

Table 6 Relation between HT attitude questions and patient's variables

Attitude questions	Gender		Age		Educational background			Employment		Family history	
	Male	Female	18-40	41-80	None	High	University	Working	Not working	Yes	No
	n=236 (%)	n=174(%)	n=46(%)	n=364(%)	n=110(%)	n=170(%)	n=130(%)	n=90(%)	n=320(%)	n=263(%)	n=147(%)
Do you think patients should know more about HT self-management?	95	93	80	96*	70	80	97*	95	94	97*	82
HT is a temporary disease and is not a major health problem?	75	88	82	86	70	75	92*	79	78	81	72
You can stop anti-hypertensive medication once your blood pressure is normalized?	73	72	92	93	75	68	77	76	73	75	71

Table Continued

Attitude questions	Gender		Age		Educational background			Employment		Family history	
Should patients take their anti-hypertensive medication regularly as prescribed?	95	94	87	86	96	94	95	96	95	95	96
Can you replace anti-hypertensive medication with Herbal products to manage HT?	78	80	88	90	82	75	80	78	79	80	79
Maintaining a healthy lifestyle with anti-hypertensive medication will manage HT safely?	98	96	81	87	97	98	95	95	98	96	97

Table 7 HT practice frequency distribution amid patients

Practice questions	Answers	Count (n)	Percent %
Do you measure your BP regularly? On a daily or weekly basis.	Yes	101	24.6
	No	304	74.2
	I don't know	5	1.2
Have you embraced a healthy lifestyle for HT management?	Yes	181	44.1
	No	222	54.2
	I don't know	7	1.7
Do you take your anti-hypertensive medication regularly?	Yes	37	9
	No	367	89.5
	I don't know	6	1.5
Do you smoke using any Tobacco products? including ES	Yes	48	11.7
	No	354	86.3
	I don't know	8	2
Do you follow any exercise programs for HT management?	Yes	186	45.4
	No	215	52.4
	I don't know	9	2.2
Do you follow any food regimen for HT management?	Yes	175	42.7
	No	225	54.9
	I don't know	10	2.4
Do you drink too many caffeinated drinks? Including Coffee and Tea, more than 4 cups a day.	Yes	230	56.1
	No	171	41.7
	I don't know	9	2.2

Citation: Sharaf SE, Alharbi YS, Alsharif RS, et al. Hypertension self-management and anti-hypertensive prevalence amid patients in Saudi Arabia via knowledge, attitude, and practice assessment. *Int J Fam Commun Med.* 2021;5(4):123–133. DOI: 10.15406/ijfcm.2021.05.00233

Table 8 indicates the relations between the practice questions and patients' variables. Patients in the old age cohort with a university education delivered a higher significant response concerning regular measurements of BP (59% and 65% respectively, *P*=0.05) compared to the patients in the young age cohort with no or high school education only. Additionally, patients with a university education delivered a more significant response concerning; regular consumption of anti-hypertensive medicines (65%, *P*=0.05) and following an exercise to manage HT (59%, *P*=0.05) in contrast with patients with no or high-school certification only.

Table 8 Relation between HT practice questions and patient's variables

Practice questions	Gender		Age		Educational background			Employment		Family history	
	Male	Female	18-40	41-80	None	High	University	Working	Not working	Yes	No
	n=236(%)	n=174(%)	n=46(%)	n=364(%)	n=110(%)	n=170(%)	n=130(%)	n=90(%)	n=320(%)	n=263(%)	n=147(%)
Do you measure your BP regularly? On a daily or weekly basis.	70	64	42	59*	47	52	65*	65	70	79	66
Have you adopted a healthy lifestyle for HT management?	56	48	55	59	39	51	60	55	49	52	54
Do you take your anti-hypertensive medication regularly?	70	60	65	75	45	50	65*	66	77	76	60
Do you smoke using any Tobacco products? including ES	76	85	78	84	80	81	85	75	85	83	85
Do you follow physical exercise for HT management?	51	46	55	53	37	46	59*	57	49	50	48
Do you follow a current food regimen for HT management	49	59	52	48	44	50	53	50	49	49	48
Do you drink too many caffeinated drinks? Including Coffee and Tea, more than four cups a day.	48	58	48	49	51	50	53	54	51	51	52

*: Significant difference (P≤0.05)

Table 9 Correlation coefficient (r) between HT KAP variables and BP measurements

Variables	Pearson correlation coefficient (r) value	P-value
Attitude with Knowledge	0.4	≤ 0.001**
Practice with Knowledge	0.26	≤ 0.001**
Practice with Attitude	0.26	≤ 0.001**
SBP with Knowledge	-0.13	≤ 0.05*
SBP with Attitude	-0.11	≤ 0.05*
SBP with Practice	-0.1	≤ 0.05*
DBP with Knowledge	-0.1	≤ 0.05*
DBP with Attitude	-0.14	≤ 0.05*
DBP with Practice	-0.1	≤ 0.05*
SBP with DBP	0.57	≤ 0.001**

DBP, diastolic blood pressure; SBP, systolic blood pressure; P-value to determine the significance of the r-value as (P*= ≤ 0.05 and P**= ≤ 0.01).

Correlation measurements

Correlation coefficient (r) values between HT KAP, participant variables, and BP measurements are shown in Table 9. There was a positive significant linear correlation amid attitude with knowledge (r= 0.40, P <0.001), practice with knowledge (r= 0.26, P <0.01), practice with attitude (r= 0.26, P <0.05), and SBP with DBP (r= 0.57, P <0.01). Moreover, there was a negative significant linear correlation amid SBP with knowledge (r= −0.13, P <0.05), SBP with attitude (r= −0.10, P <0.05), SBP with practice (r= −0.10, P <0.05), DBP with knowledge (r= −0.14, P <0.05), DBP with attitude (r=−0.14, P <0.05), and DBP with practice (r= −0.10, P <0.05).

Anti-hypertensives prevalence

Figure 4 shows the prevalence of anti-hypertensive medicines used by the patients of this study. Surprisingly, most patients (59%, n=242) did not administer their prescribed anti-hypertensive medicines. The most prevalent anti-hypertensive medication used amid patients (41%, n=178) was the CCB, followed by Diuretics (32%, n=140). The remaining anti-hypertensive classes that were used by less than 30% of patients were as follows; ACE inhibitors (27%, n=118), Angiotensin II RB (21%, n=92), and BB (15%, n=66).

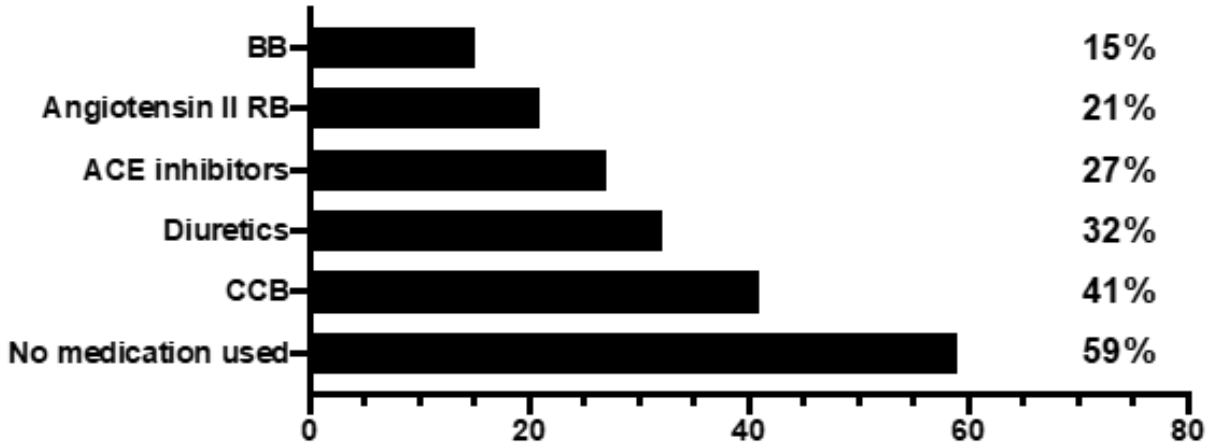

Figure 4 Prevalence use of the prescribed anti-hypertensive medicines.

CCB, calcium channel blockers; BB, Beta-blockers; ACE, Angiotensin-converting enzyme; RB, receptor blockers

Discussion

Proper HT awareness and self-management amongst patients with HT is vital to manage HT and lessen the potential risk of obtaining HT complications and the occurrence of linked medical defects.[17] Consequently, this study measured HT self-management by applying HT KAP and the prevalence of anti-hypertensives used to assess HT self-management amid 410 Saudi patients in Makkah region, SA. the patients provided very good HT attitude and knowledge; however, they reflected a poor HT practice. Parallel findings were observed in previous similar studies.[25,26]

The study results indicate that university-educated patients provided better correct responses to most of the HT KAP questions. This indicates that increasing the education levels can improve the HT knowledge and attitude levels primarily practice. In addition, SBP and DBP were significantly associated with the HT KAP responses. Moreover, Knowledge was significantly associated with attitude and practice. Therefore, improving the HT knowledge by providing more HT awareness will improve the attitude and practice levels and manage elevated SBP and DBP.

Conversely, good levels of HT knowledge may not necessarily guarantee a patient's adequate levels of practice as various influences can contribute to the patient's practice state despite the existence of elevated HT knowledge and awareness levels amid the patients. These contributing factors could be modifiable and unsustainable such as time management, drug compliance, self-efficacy, physical exercise, HT diet compliance, psychological influences such as depression and motivation. The other non-modifying factors can be expressed in race, age, and sex.

Interesting findings in this study are the majority of the patients; did not take their prescribed anti-hypertensive medicines and were not taking their medicines regularly, did not measure their BP regularly, did not follow an exercise program or a food diet regime to manage HT, and they were consuming increased daily caffeine intake. Intervention plays a vital role in managing HT and decreasing the risk of HT complications and the occurrence of linked medical conditions.[36,37] In addition, conducting moderate intensity exercises for 150 minutes or vigorous-intensity exercises for 75 minutes can help manage HT and improve BP sustainability.[38] Moreover, following a diet regimen known as dietary approaches to stop hypertension (DASH) and decreasing salt ingestion can contribute to managing and/or lowering elevated BP.[39,40] Also, regular monitoring of BP measurements is crucial for monitoring HT and predicting potential CVD risk.[41] As a result, patient's practice levels in this study, despite current elevated HT knowledge levels, were directly affected by; unproper anti-hypertensive drug compliance, the lack of physical exercise and proper food diet regimen, and unproper regular measurements of BP.

Therefore, it is highly recommended that patients with HT are encouraged by their physicians and clinicians to obtain more HT knowledge and awareness from the MOH primary clinics, which provide sufficient international HT health programs to educate patients on HT. Furthermore, MOH local authorities could use the help of clinical pharmacists to update the current HT health program with the importance of drug compliance, use, and safety for single and combined anti-hypertensive medicines. The detected points with incorrect responses from the HT KAP from the previous findings along with other parallel findings in SA[25] can help the clinicians and clinical pharmacist for the HT health program updating process to fill the knowledge and awareness gaps regrinding HT and the anti-hypertensive medicines. As a result, an enhanced HT health program with sufficient knowledge on how to manage HT by proper diet, physical exercise, and anti-hypertensive medicines will improve HT self-management and improve HT practice which will lead to better management of HT and its complications along with reducing potential incidence of CVD and strokes.

Study limits

This research work was performed in Makkah Region, SA; consequently, the current findings might not necessarily represent all Saudi population. Moreover, the sample size was not illustrative of the focused area as the overall population of Makkah Region is predicted to be higher than 4.5 million (18). However, it is a statistically considerable illustrative random sample. Additionally, the prevalence of five main classes of anti-hypertensives was assessed. In contrast, other anti-hypertensives and herbal (natural) products with a validated potential effect on HT management were not assessed.

Conclusion

This study demonstrates that Saudi patients with HT have a very good attitude and knowledge towards HT; however, this was insufficient to improve their current poor HT practice. Significant correlations were detected between HT KAP BP measurements, indicating that KAP improvement will enhance and contribute to better BP management and reduce the risk of HT complications.

An interesting key outcome was that the majority of the current patients with HT did not administer any of their prescribed anti-hypertensives for HT management, did not follow a recommended HT food diet and physical exercise for HT management. These outcomes caused a significant contribution to the reduced practice levels despite the good knowledge and attitude responses towards HT. Therefore, patients with HT must be encouraged to visit the MOH local primary health care centers to enroll with HT health program to increase their HT self-management, especially the practice part. In addition, the local MOH authorities could use the help of clinical pharmacists to update the current HT health program with anti-hypertensive medicines in terms of proper drug compliance, use, and safety.

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Disclosure

The author declares no conflicts of interest in this study.

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