Original Article :

Adherence To Lifestyle Modifications As A First-Line Therapy In Hypertension Management In Primary Health Care Setting, Medina, Saudi Arabia

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Abstract

Background & Aims:

Adherence to lifestyle management is an essential first-line step in treating hypertension due to its benefits in reducing hypertension, delaying the use of pharmacological medications, and reducing the incidents of complications. The current study aimed to assess the patients' compliance to the use of lifestyle modification, to identify the factors affecting the patients' compliance to the use of lifestyle modifications, and to assess the physician's use of lifestyle modification as first-line management in hypertension

Methods:

This observational cross-sectional study was conducted among randomly chosen participants from 06 June 2020 to 06 July 2020, in Primary health care centers of Medina region. The questionnaire was formulated and designed with a consistent structure and relations between the questions to meet the study goal. All data analyses were performed using SPSS version 21.

Results:

We found that out of the 1569 hypertensive patients, 90.4% had a good level of knowledge towards lifestyle modifications in hypertension management,

الملخص

الخلفية و الاهداف :

تهدف هذه الدراسة الى قياس مستوى التزام مرضى ارتفاع ضغط الدم بتغييرات أسلوب الحياة وما يماثلها من نصائح طبية متعلقة بالسلوك اليومي المساعد على خفض مستوى ضغط الدم. كما تهدف الدراسة بالعثور على العوامل المختلفة المؤثرة على مستوى التزام المرضى. وأيضا تهدف الدراسة بقياس مدى استعمال الأطباء للنصائح المتعلقة بتعديل أسلوب الحياة كجزء أساسي من الخطة العلاجية لمرضى ارتفاع ضغط الدم.

طريقة البحث :

هذه الدراسة هيا دراسة مستعرضة مقطعية على مشاركين تم اختيارهم بشكل عشوائي من تاريخ السادس من شهر خمسة ميلادي لعام ٢٠٢٠ لمدة شهر واحد. المشاركين هم من مراجعي مراكز الرعاية الصحية بمنطقة المدينة المنورة. تم تصميم الاستبيان بشكل متناسق ومترابط بحيث تسهل قراءته وتتمكن الأسئلة من تحقيق هدف الدراسة. كما تم تحليل البيانات باستخدام برنامج متخصص في المجال.

النتائج :

لقد وجنا بأنه من بين الالف ١٥٦٩ مشارك في الاستبيان النتائج التالية. ٩٠,٤٪ كان لديهم مستوى معرفة جيد بالتعديلات المهمة في أسلوب الحياة المساعدة على خفض مستوى ضغط الدم. ٥٤٪ كان لديهم ممارسة جيدة لهذه التغييرات في أسلوب الحياة. و٦٦,٣٪ من الأطباء قاموا بتوفير النصائح والارشادات للوسائل المختلفة لتغيير أسلوب الحياة بشكل يساعد على خفض ضغط الدم.

54.0% had good practice towards lifestyle modifications in hypertension management, and 66.3% of the doctors provided lifestyle modification advice to their patient.

Conclusion:

There is a gap between the level of knowledge and practice towards lifestyle modifications among hypertensive patients, which could be due to cultural, social, and environmental factors. Physician's adherence to prescribing lifestyle modifications was found to be at a moderate level. Multiple health disciplinary efforts are needed to improve compliance to lifestyle modification in hypertensive management.

Keywords:

lifestyle, hypertension, Medina, Saudi Arabia, management.

الخلاصة :

بينت الدراسة بان معرفة المرضى بطرق تغيير أسلوب الحياة للخفض من مستوى ضغط الدم (٩٠,٤٪) اعلى من ممارستهم لها (٥٤٪). هذا الفرق قد يكون ناتجا لعوامل اجتماعية وثقافية وبيئية مختلفة. معدل ممارسة الأطباء للتوصية بتغيير أسلوب الحياة لمرضى ارتفاع ضغط الدم كان منخفضا بالمقارنة لدراسات أخرى مشابهة. نحتاج الى بذل جهود من عدة مجالات في القطاع الصحي للتحسين من التزام مرضى ارتفاع ضغط الدم بتغيير سلوكيات الحياة اليومية.

الكلمات المفتاحية:

أسلوب الحياة، ارتفاع الضغط، المدينة المنورة، السعودية، الخطة العلاجية

Introduction

Adherence to lifestyle management is an important first-line step in hypertension management due to its benefits in reducing hypertension (HTN) and delaying or avoiding the use of pharmacological medications [1]. It can also play a major role in reducing the incidence of complications related to hypertension, such as atherosclerosis and stroke [1].

Lifestyle modifications are recommended for individuals with above optimal blood pressure, they are used as a first-line therapy or initial step for management of patients diagnosed with stage [1] of hypertension [2]. For patients who are treated with antihypertensive agents, they are used as adjunctive therapy along with modifications [2]. These modifications include weight reduction, dietary reduction of sodium intake, reduction of alcohol consumption, and following a Dietary Approaches to Stop Hypertension (DASH) diet.

Modifying a patient's lifestyle can play a major role in the management of hypertension and lower the incidence of complications [1]. Weight reduction can decrease Systolic Blood Pressure (SBP) by 5-20mmHg/10Kg [1]. Adapting the (DASH) diet can lower SBP by 8-14mmHg. Reducing dietary salt intake can lower SBP by 2-8mmHg. Limiting alcohol intake can lower SBP by 2-4 mmHg [1]. Maintaining aerobic exercises for 30 minutes/day can

lower SBP by 4-9mmHg [1]. With the provided benefits of cheap, easy, and simply adaptable lifestyle modifications, the use of pharmacological medications can be minimized or delayed. Following these steps would reduce the occurrence of many problems associated with polypharmacy and spread the culture of having a healthy lifestyle in the community [1].

According to multiple studies, population between 15-24 years has a HTN prevalence of 3.2%, those aged between 55-64 years has a prevalence of 51.2%, and up to 70% among the individuals above the age of 65 and older [3]. The prevalence among men is 28.6% and 23.9% among women [4]. In addition, 15.2% of adults in Saudi Arabia are hypertensive, 57.8% of those adults were unaware of their diagnosis and 78.9% of those who are aware of their diagnosis reported compliance with their medication[5]. We need to find out whether patients adhere to lifestyle modifications or not. We also need to determine the main factors and pitfalls to why some patients do not adhere to lifestyle modifications and which modifications are difficult to adhere to and why? By achieving this, we can assist healthcare providers in developing targeted self-management educational programs for people with hypertension. Covering these factors will ensure more success in enhancing the use of lifestyle modifications as the first-line management in hypertension.

This study aims to detect the adherence of hypertensive patients to lifestyle modifications in the management of their hypertension in Medina, Saudi Arabia. And to assess the adherence of primary care physicians to prescribing lifestyle modifications. We hope that this will help in guiding future studies, guidelines, or protocols related to the management of hypertension.

Materials and methods:

Study Setting:

Medina is a province in western Saudi Arabia along with the Red Sea coast. It has a population of 2,239,923 according to the 2019 census. It is the third-largest region in the Kingdom in terms of surface area and is the fifth largest in terms of population [6].

Study design:

This is an observational cross-sectional study. Data collection was conducted from June 06, 2020, to July 06, 2020. We used convenient sampling method and the target population consisted of 2,239,923 people living in Medina Region. The sample size was calculated to be 1561 with a 95% confidence level and 2.48% margin of error. We included 1569 participants for data analysis who met our inclusion criteria.

Data Collection:

An online questionnaire was given to experienced data collectors with a background

in the medical field who in their turn used different social media platforms to find eligible participants and interview them.

Inclusion criteria: Patients with primary hypertension, aged 18 years and above, both sexes, who were being followed up by a family physician at PHC clinics.

Exclusion criteria:

Patients who have secondary hypertension and patients who were diagnosed or followed up at a secondary or tertiary care hospitals.

Variables:

The questionnaire was formulated and designed with a consistent structure and relations between the questions to meet the study goal. It contains four main sections, the first section contains demographic data (gender, age, nationality, occupation status, residency, and educational level). The second section includes the current management plan of the patients, the compliance, and complications. The third section includes the patient's awareness about the health benefits of lifestyle management and the doctor's adherence to providing lifestyle modification advice. The last section assesses the adherence to non-pharmacological and pharmacological management of high blood pressure.

The criteria for awareness about lifestyle modifications in hypertension management were drawn from 5 questions designed on a five-grade scale starting from 0–5 points which generally means that the higher the score, the higher the awareness toward lifestyle modifications in hypertension management.

Meanwhile, the criteria for the knowledge toward hypertension control and the knowledge provided by the doctor were drawn from 5 questions and 3 questions, respectively, and had been presented in Table 2. Each question has a response of "yes" coded as 1 and "no/I don't know" coded as 0. The total score was generated by adding all questions related to the knowledge toward HTN control and related to the knowledge provided by the doctor. The total score of the knowledge toward HTN control has a score range from 0–5 points while the knowledge provided by the doctor has a score range of 0–3 points which generally means that the higher score, the higher the knowledge toward HTN control and information provided by the doctor. We used the mean score as the cut off points to determine the level of knowledge. A score above the mean was considered as good knowledge and a score equal to or below the mean was considered as poor knowledge.

Statistical Analysis:

Quantitative data are presented using means, Standard Deviation (SD), and median (min-max) as appropriate. Qualitative

data are presented using counts and proportions (%). In comparisons, the Chi-square test, Mann-Whitney U test, and Kruskal Wallis test were applied. Normality tests were conducted using the Shapiro-Wilk test as well as the Kolmogorov-Smirnov test. The data follow an abnormal distribution. Thus, non-parametric tests were applied. Furthermore, the correlation between the knowledge and practices score was also performed to determine each linear relationship. A p-value of <0.05 (two-sided) was used to indicate statistical significance. All data analyses were performed using the statistical package for social sciences, version 21, Armonk, New York, IBM Corporation, USA.

Ethical Consideration:

A statement of ethical approval has been granted by the Scientific Research Ethics committee at Taibah University with the number (IORG0008716 – IRB00010413).

Results:

We included 1569 hypertension patients who fulfilled our inclusion criteria. Among them, 91.8% were Saudi and 8.2 were non-Saudi. Majority of the participants were female (61.4%). Most of them were in the age group 41–60 years (54.7%), 27.1% of the patients were under 40 and 18.3% were older than 60.

Regarding the level of education, 59% of the participants had a degree of higher education. 35% had a secondary school degree and 6% were illiterate. Employees represented 36.5% of participants, while 28% were housewives, 23.2% of the participants were retired, and 8.5% were students as shown in Table 1.

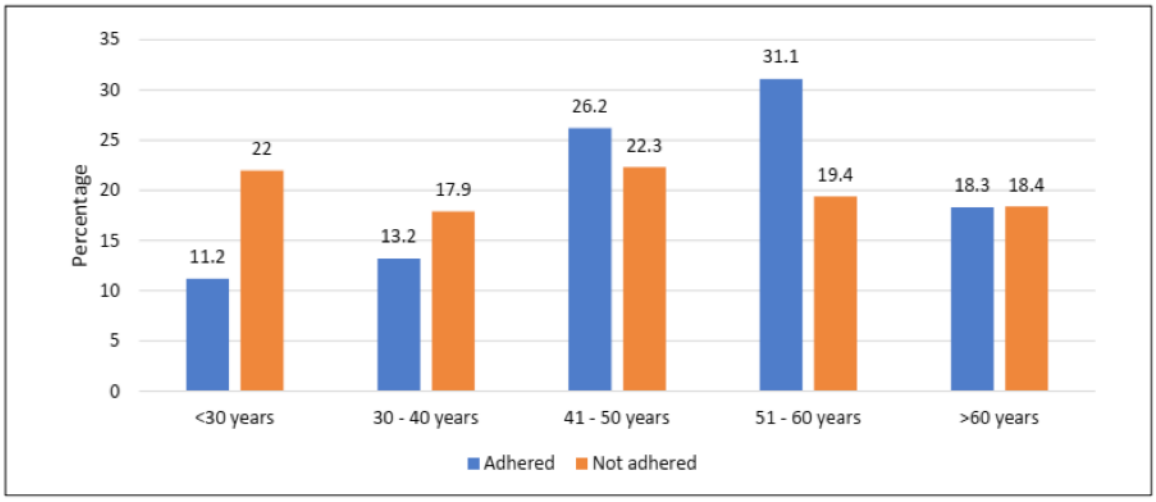
Table 1: Sociodemographic characteristics of patients (n=1569)

Study data	Overall N (%)
Age group	
<30 years	205 (13.1%)
30 – 40 years	220 (14.0%)
41 – 50 years	401 (25.6%)
51 – 60 years	456 (29.1%)
>60 years	287 (18.3%)
Gender	
Male	606 (38.6%)
Female	963 (61.4%)
Nationality	
Saudi	1440 (91.8%)
Non-Saudi	129 (08.2%)
Educational level	
High school or below	643 (41.0%)
University degree or higher	926 (59.0%)
Occupational status	
Unemployed	61 (03.9%)
Housewife	439 (28.0%)
Employed	572 (36.5%)
Retired	364 (23.2%)
Student	133 (08.5%)

HBP - High blood pressure.

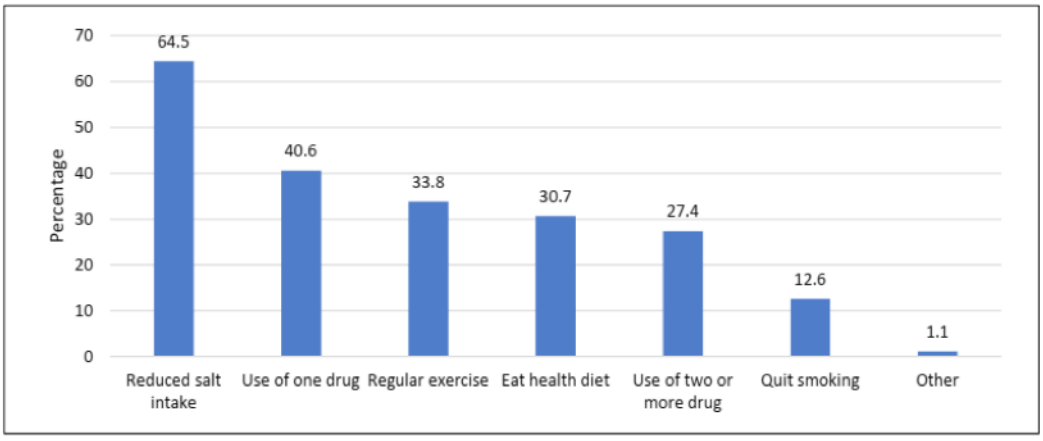
Figure 1 shows that the age group 51–60 years old (31.1%) followed more advice from the doctor regarding lifestyle management of HBP than the other age groups while the advice to the <30 years old group was significantly less (11.2%). Figure 2

Figure 1: Comparison between age groups regarding adherence to physician's advice in lifestyle management



shows different ways to control blood pressure. It was found that the most commonly known ways to control blood pressure were reducing salt intake (64.5%), followed by the use of one drug (40.6%) and regular exercise (33.8%) while the least of them was to quit smoking (12.6%). Table 2 shows the assessment of knowledge toward lifestyle modifications in hypertension management and the knowledge provided by the doctor. It was shown that nearly all patients were aware that eating healthy food and reducing salt intake could help in controlling HBP (89.7% and 92.9%, respectively). Also, 86% and 88.1% were aware that weight reduction and regular exercises could further help in regulating HPB. 93.5% agreed that reducing exposure to stress levels could also help in controlling HBP.

Figure 2: level of knowledge about the different methods of controlling blood pressure



With regards to the knowledge provided by the doctor, 73.2% reported that their

(Table 2: Assessment of knowledge toward hypertension control and the knowledge provided by the doctor (n=1569

Knowledge toward controlling HTN	**Yes (%)**
1.Is having a healthy diet an important factor in controlling HBP?	1408 (89.7%)
2. Do you consider reducing dietary salt intake as a factor in controlling HBP?	1458 (92.9%)
3. Do you believe that losing weight might help in controlling hypertension?	1350 (86.0%)
4. Do you consider regularly exercising a factor in controlling HBP and preventing its complications?	1382 (88.1%)
5. Is controlling stress levels and reducing exposure to stressors a factor in controlling HBP?	1467 (93.5%)
Knowledge provided by the doctor	
1. Did the doctor provide general information about HBP?	1149 (73.2%)
2. Has your doctor provided you with information about the first line management of HBP?	1103 (70.3%)
3. Did you do a trial of LSM with your doctor to lower your blood pressure at the start without using drugs?	654 (41.7%)

LSM – Lifestyle Modification.

doctor provided them with the general information about HBP, 70.3% indicated that their doctor provided them with information regarding the non-pharmacological treatment options to control HBP, while participation in a trial to lower down blood pressure before taking medication was lacking (41.7%).

According to the results of the assessment of practice toward hypertension management 24.9% had tried to take the recommended daily fiber intake all the time. However, the majority only did it sometimes (56%). Also, 54.7% of the participants were exercising some time, while 19.2% exercised regularly. Besides, 71.4% of the patients had attempted to lose weight while 74.6% had tried to manage their stress levels.

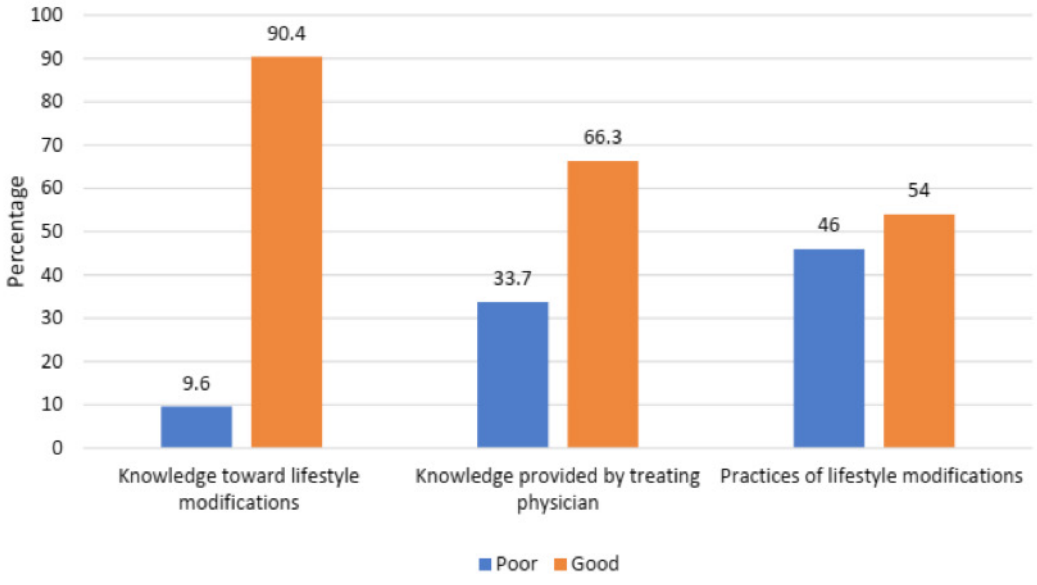
The descriptive statistics of the knowledge and practices toward lifestyle modifications in HTN management have been described in Fig. 3. and Table 3. Based on the results, it was found that the score of knowledge towards lifestyle modifications was 3.57 (SD 0.75) out of 5 points. Poor and good practice were identified among 9.6% and 90.4% of patients, respectively. In regard to the knowledge provided by the doctor; the mean score was 1.85 (SD 1.08) out of 3 points. Out of this score, 33.7% and 66.3% were classified into a poor and good level respectively. Finally, with regards to the practice of lifestyle modifications in HTN management, the mean score was 3.45 (SD 1.55) out of 6 points. 46% and 54% were classified as poor and good levels of practices towards HTN control, respectively.

When measuring the association between the knowledge toward lifestyle modification in HTN control and the practices toward lifestyle modification in HTN control

(Table 3: Descriptive statistics of the knowledge and practices regarding hypertension management and compliance (n=1569)

Variables	N (%)	Mean ± SD	Median (min-max)
Knowledge toward lifestyle modifications in hypertension management score	--	3.57 ± 0.75	4 (0 – 5)
Level of knowledge toward lifestyle modifications in hypertension management control			
Poor	150 (09.6%)	--	--
Good	1419 (90.4%)	--	--
Knowledge provided by the doctor score	--	1.85 ± 1.08	2 (0 – 3)
Level of knowledge provided by the doctor			
Poor	529 (33.7%)	--	--
Good	1040 (66.3%)	--	--
Practices toward lifestyle modifications in hypertension management score	--	3.45 ± 1.55	4 (0 – 6)
practice toward lifestyle modifications in hypertension management			
Poor	721 (46.0%)	--	--
Good	848 (54.0%)	--	--

Figure 3: Level of knowledge towards lifestyle modifications, knowledge provided by the treating physician, and practice of lifestyle modifications (Data provided as %)



in relation to the socio- demographic characteristics of the patients, we found that being older than 50 years (P-value 0.021), having a high school degree (P-value <0.001), or being unemployed (P-value <0.001) are all significant factors that might decrease one's practices towards lifestyle modification in HTN control as shown in Table 4.

Table 4: Statistical difference between the knowledge toward lifestyle modification in HTN Control and the practices toward lifestyle modification in HTN control in relation to the Sociodemographic characteristics of patients

Factor	Knowledge toward lifestyle modification in HTN Control		Practices toward lifestyle modification in HTN control	
	Total Score (4) Mean ± SD	F/T test; P-value	Total Score (6) Mean ± SD	F/T test; P-value
Age group [a]				
≤50 years	3.61 ± 0.71	T=2.362; 0.021 **	3.68 ± 1.53	T=6.284; <0.001 **
>50 years	3.52 ± 0.78		3.19 ± 1.54	
Gender [a]				
Male	3.53 ± 0.79	T=0.125; 0.153	3.49 ± 1.54	T=0.857; 0.432
Female	3.59 ± 0.72		3.42 ± 1.57	
Nationality [a]				
Saudi	3.58 ± 0.74	T=1.751; 0.085	3.47 ± 1.55	T=1.891; 0.034 **
Non-Saudi	3.46 ± 0.84		3.20 ± 1.54	
Educational level [b]				
High school or below	3.44 ± 0.82	T=-5.900; <0.001 **	3.05 ± 1.56	T=-8.613; <0.001 **
University or higher	3.66 ± 0.68		3.72 ± 1.49	
Occupational status [a]				
Unemployed	3.49 ± 0.79	F=12.186; <0.001 **	3.27 ± 1.55	F=13.509; <0.001 **
Employed	3.65 ± 0.69		3.69 ± 1.46	
Student	3.73 ± 0.59		3.58 ± 1.83	

a P-value has been calculated using Mann Whitney U test.

b P-value has been calculated using the Kruskal Wallis test.

** Significant at p<0.05 level.

Discussion:

Our study investigated the level of practice of lifestyle modifications (LSM) and the physician's adherence to giving LSM advice as a part of HTN management. We found that 90.4% of our study population had good knowledge of LSM in HTN management, while 54.0% had a good level of practice towards LSM in HTN management. Nonetheless, studies in Eastern and Southern Ethiopia showed a higher level of knowledge with a poor practice level regarding LSM in HTN management [7,8]. A study in Kuwait also reported, that more than 60% of their participants didn't adhere to LSM advice [9]. In Addis Ababa, a study found that only 23% adhered to LSM [10]. Some of the studies that were held in Ethiopia [11] and Nigeria [12] found that more than 50% of their subjects had a good knowledge level of LSM in HTN management which is in line with the results of our study. On the other hand, a study held in Egypt showed that only 8.9% had a good level of knowledge about LSM [13].

Among the population of our study, people who were 50 years or less had better knowledge and practice towards LSM

than people aged more than 50 years, this is contrary to the findings of the Ethiopian study which found that practice towards LSM among the old age population is six times higher than the younger age groups [10]. This could be dependent on the other covariates and the demographical differences between people living in Saudi Arabia and Ethiopia. However, we believe that more access to online information and better flexibility of adapting new habits made it easier for younger age groups to have a better practice of LSM.

The results showed that employed people had a better practice of LSM as compared to the unemployed individuals and students, while students had better knowledge than employed and unemployed people. This also can be viewed in the Ethiopian study where they noticed that employed respondents were better at adhering to LSM [10].

People with a university degree or higher education were found to have better knowledge and adherence to LSM than people with a high school degree or below. These findings are consistent with the study that was done in Taif [14]. These results can be an indication that the higher the educational level, the better the knowledge about the importance of LSM in managing hypertension.

When patients were surveyed about how they manage their hypertension, (64.5%) reported that they are reducing dietary salt intake as a non-pharmacological measure to control hypertension, while (33.8%) used regular exercise to manage their hypertension. This can be compared with a study done in Baltimore, United States, where they found that 75% of participants reported that they reduced their salt intake, and nearly 50% committed to regular exercise [15]. In Saudi Arabia, a systematic review of inactivity prevalence conducted in the year 2018 found that most Saudi children, youth, and adults were not active enough to meet the recommended guidelines [16].

It is clear that the number of participants who exercise regularly to manage their high blood pressure is low, therefore, primary health care physicians should emphasize the importance of physical activity as an essential method to control hypertension and prevent its complications.

The gap between knowledge and practice could be explained by cultural and environmental factors, such as excessive social events, increased dependency on maids/servants and cars which lead to decreased daily activities. Also, lack of time, easier accessibility, and lower cost of fast food compared with healthier options in addition to long summers. These factors are like those found in a study held in Kuwait[9].

When patients were asked about physi-

cians' prescription of LSM, 66% of our sampled group had a good level of knowledge provided to them by a doctor which is low in comparison with a study held in Asser, and another held in Nigeria where most physicians (more than 80%) prescribed LSM [17,18].

Our study derives its mains strengths from the large sample size. We used online questionnaire to collect the data that reduced the chances of data encoding errors. The questionnaire used is also a reliable tool to collect data since the questions were standardized in their phrasing to provide easier understanding for participants. This study is limited to the PHC setting and PHC-related healthcare specialties. So, the results cannot be generalized to settings or specialties. The study methodology involves self-reported measures which are highly dependent on the participant's memory and recall bias may occur.

Conclusion:

There is a higher level of knowledge (90.4%) than practice (54.0%) towered lifestyle modifications among hypertensive patients. This gap could be due to cultural, social, and environmental factors. Most of the participants can manage their hypertension non-pharmacologically by reducing salt intake. Physician's adherence to prescribing lifestyle modifications was low in comparison to other studies. Multiple health disciplinary efforts are needed to improve adherence to lifestyle modification in hypertensive management.

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