

Hypertensive Patients' Awareness Level and Self-Care Behavior in Buraidah City, Saudi Arabia: A Cross-Sectional Study

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Abstract

Introduction: Hypertension is one of the leading causes of premature death, and it is known as the silent killer. Maintaining Blood Pressure (BP) levels at less than 140/90 mmHg has been associated with a reduction in its secondary complications. Adherence to desired Self-Care Behavior (SCB) is an important strategy for controlling BP. The study aimed to identify the hypertensive patients' level of awareness and their level of SCBs among Hypertensive patients in Buraidah City, Saudi Arabia.

Methodology: A cross-sectional analytical study was conducted in a tertiary care cardiac center, in the Kingdom of Saudi Arabia (KSA). The sample size of this study was 419 participants, who were recruited using non-probability sampling. The H-SCALE tool was used to assess the level of adherence to self-care behaviors. The data were analyzed using Stata SE 13.0.

Results: The participants' awareness of hypertension was low; only 3.82% of them had a good understanding of hypertension, in terms of hypertension definition, its risk factors, and complications. Participants' knowledge about the causes of hypertension was low and was the highest for the high-salt diet (63%). Participants' awareness of the complications of Hypertension was low and was the highest for heart diseases (56%). Only 43% of the participants reported monitoring their BP at least once a week. All participants reported abstinence from alcohol, 86.8% of them adhered to their medication regimen and 76% refrained from smoking. The prevalence of physical activity, weight management, and healthy diet was poor and measured at 23%, 19%, and 18%, respectively.

Conclusions: Hypertensive patients had a generally low level of knowledge about their disease, causes, and complications. The patients' compliance with BP monitoring and hypertension treatment regimen, in terms of physical activity, weight management, and diet, were not high enough. The results of this study may be used as a platform for further research studies to investigate the SCB of hypertension. In addition, the study results may help create context-specific interventions to improve hypertensive patients' SCB and prevent secondary complications in the KSA.

Keywords: Awareness, Buraidah, Compliance, Hypertension, Risk factors, Saudi Arabia, Self-Care Behavior.

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I. Introduction

Worldwide, nearly 7.5 million people die yearly due to hypertension. In addition, it causes 3.7% of disability-adjusted life years. Hypertension is the major risk factor for heart failure and stroke, and it is also responsible for many other complications that include renal and visual impairment. The estimation shows that in 2025 there will be 1.56 billion cases of hypertension worldwide (Bilal et al., 2015; Tailakh et al., 2014; World Health Organization, 2013). In Asia alone, by the year 2025, it is estimated that there will be more than 500 million cases of hypertension (Kearney et al., 2005). In the Arab population, the prevalence of hypertension has varied from 15.2% to 44% (El Bcheraoui et al., 2014; Tailakh et al., 2014; World Health Organization, 2022a). The closer explanation for the high prevalence of hypertension in the Arab population is urbanization, changes in lifestyle, physical inactivity, and increased fat intake (Tailakh et al., 2014). Self-care behavior has been found to have a positive impact on blood pressure levels (Glynn et al., 2010; World Health Organization, 2022b). Likewise, awareness of factors contributing to hypertension could help in the prevention and control of the disease and its complications (World Health Organization, 2022a).

Like in other countries, hypertension is a rising health problem in the KSA and needs to be addressed due to its significant implications for the population's health (Bilal et al., 2015; El Bcheraoui et al., 2014). A national survey for hypertension in the KSA showed that 15.2% of the population is hypertensive and another 40.6% are borderline hypertensive (El Bcheraoui et al., 2014). Overall, hypertension control is poor among the population in the KSA. Furthermore, the concept of self-care behavior has received very little attention in the KSA (El Bcheraoui et al., 2014). Self-Care Behavior is a broad concept referring to the individual's own responsibilities for healthy behavior and the ability to care for oneself by performing activities necessary to achieve, promote, and maintain health (Richard & Shea, 2011).

Therefore, this study was conducted to identify and describe the level of awareness and the level of Self-Care Behavior (SCB) among hypertensive patients in Buraidah, Al-Qassim, KSA.

Significance of the Study

After reviewing the literature, it was found that only one study has partially explored SCB of hypertensive patients in the KSA (Neminqani et al., 2013), which was limited to the construct of self-care management. The current study identified SCB, which includes self-monitoring and management among hypertensive patients in Al-Qassim. Results of this study could help in designing context-specific interventions that may help to improve the SCB of hypertensive patients.

II. Methodology

Study Design

A cross-sectional, descriptive design was used to determine the level of awareness and Self-care Behavior (SCB) among hypertensive patients in Buraydah city in Saudi Arabia.

Study Setting

The study was conducted at Prince Sultan Cardiac Center, a tertiary care cardiac center of 68 beds, located in Buraidah City, in the Kingdom of Saudi Arabia (KSA).

Sample and Sampling

The study population comprised hypertensive individuals who came to visit the outpatient clinic in the defined cardiac center. The sample size was calculated using the open EPI Info software. Based on the prevalence of different domains of self-care in hypertension (Warren-Findlow & Seymour, 2011), the sample size was calculated with each domain. The highest sample size was noted by using the prevalence of physical activity ($p=52\%$) and, keeping the confidence interval of 95%, a sample size of 384 was obtained. Adding the attrition of 10%, the final sample size desired for the study was about 419 participants. Due to time limitations, a non-probability convenience sampling technique was used to recruit the participants for this study. For this purpose, all the participants who visited the setting from April to June 2017 were recruited for the study.

This study included participants who were adults aged 18 years and above, established diagnosis of hypertension with an ejection fraction greater than 35%; those prescribed anti-hypertensive medications; Saudi nationals, residents of Al-Qassim; and those able to speak Arabic or English. The participants who could not perform independent self-care due to mental issues, physical illnesses, or disability and participants with untreated malignant were excluded from the study.

Data Collection Tools

The demographic data was gathered from the participants' medical record files as well as directly from the participants. To ensure the consistency and completeness of the data, the Hypertension Self-Care Activity Level Effects (H-SCALE) tool was completed via the structured interview technique. It took approximately 15-20 minutes per participant to complete one interview.

Hypertension awareness: hypertension disease awareness was assessed using some questions that asked participants about blood pressure self-monitoring, the definition of hypertension, causes, and long-term complications of hypertension on the health status.

Self-Care Behavior (SCB): To examine the level of SCB of the participants, the H-SCALE tool was used. The participants' demographic data and their awareness of hypertension were collected through a self-developed form. The questions about awareness of hypertension were developed by the researcher from literature, under the supervision of the Research Committee. The following criterion was used to evaluate the participants' understanding of hypertension: *Good understanding*, the participant expresses a related definition of hypertension and knows the normal BP range; *Some understanding*, the participants express a related definition of hypertension but without knowing the normal BP range; *No understanding*, the participant is unable to express a definition related to BP or know the normal BP range.

Warren-Findlow and Seymour (2011) and Warren-Findlow et al. (2013) developed and validated a tool to measure SCB, which is named the Hypertension Self-care Activity Level Effects (H-SCALE). H-SCALE is a

31-item questionnaire including six subscales related to self-care activities required in hypertension management. The scale includes adherence to medication, healthy diet, physical activity, non-smoking, weight management activities, and no alcohol consumption. Each subscale is rated based on recall of the daily activities of the last seven days, except the weight management subscale, which is rated on the past thirty days' activities. H-SCALE tool was translated into the Arabic language, by language experts.

Tool Validity and Reliability

To validate the content of the tool, it was sent to eight experts after translation to ensure clarity and relevance of the tool, and to calculate the Content Validity Index. The experts included three nurses, four doctors, and one researcher involved in cardiovascular care. The evaluation scale was 0.96 for clarity and 0.987 for relevance. All the questions on the scale were evaluated and reported as relevant and clear. It was then pilot tested on 10% of the sample and the data of those participants were not included in the analysis of the study. The reliability of the scale was tested and found to be reliable (Cronbach's alpha coefficient= 0.812).

Statistical Analysis

After data collection was completed, it was entered in the Statistical Package for Social Sciences (SPSS) version 26.0. Descriptive analysis was performed on the demographic and clinical variables and the frequency and percentage were used to display the data of the participants. The data were analyzed using Stata SE 13.0. Proportions and frequencies were calculated for all the variables. Likewise, internal consistency (Cronbach's alpha) was calculated for the scale to test the tool's reliability.

Ethical Considerations

The study participants were recruited after receiving approval from the Ethical Committee of the Medical Education and Research Center, Al Qassim, KSA (Ethical approval # 20170205). Participants' identities were coded and were not revealed at any point during the study period. After the completion of the H-SCALE, participants were provided with a teaching on the SCB of hypertension. In addition, a hypertension booklet was given to the participants, which was already available in the center.

The study raw data was secured under lock and key. In addition, a soft copy of the data was password protected on the investigator's computer and was shared with the study committee only. Data will be saved for five years before being discarded.

III. Results

Participants' Demographic Data

A total of 419 participants took part in this study, of which, 59% were males. The vast majority of the participants (90%) were aged 46 years and above. With regards to family status, 82% of participants were married (Table 1).

Although the level of education varied among the participants, only 21% of them had an education level of grade 12 and above. With regards to the participant's employment status, 23% were employed, while the remaining were either housewives, retired, or unemployed. Slightly more than two-fifths of the participants had an average family income of 3000 to 7000 Saudi Riyal.

Table 1: Main Demographic Characteristics of the Study Participants (N=419)

Sociodemographic Characteristics		n	%
Gender	Male	247	58.95
	Female	172	41.05
Age	18 – 45	38	9.07
	46 – 55	122	29.12
	56 – 65	142	33.89
	66 and above	117	27.92
Family Status	Single, Widowed, Divorced, Separated	77	18.38
	Married	342	81.62
Educational Level	No Formal Education (cannot read/write)	137	32.7
	Primary education (Grade 6)	131	31.26
	Middle education (Grade 9)	61	14.56
	High school education (Grade 12) and above	90	21.48

Employment Status	Unemployed	60	14.32
	Employed	95	22.67
	Retired	126	30.07
	Housewife	138	32.94
Average Family Income	< 3000 Saudi Riyal (SR)	69	16.46
	3000 - 7000 (SR)	175	41.77
	8000 - 12000 (SR)	117	27.92
	13000 - 16000 (SR)	46	10.98
	17000 (SR) and above	12	2.86

Only 0.48% of the participants reported substance abuse. While more than half of the study sample acknowledged that they do not monitor their Blood Pressure (BP), 7% reported monitoring it three times or more in a week (Table 2).

Table 2: The Prevalence of Substance Abuse and Blood Pressure Monitoring

Variables		n	%
Substance abuse	No	417	99.52
	Yes	2	0.48
Blood pressure monitoring per week	I do not monitor	237	56.56
	1 to 2 times	152	36.28
	3 to 4 times	19	4.53
	5 or more times	11	2.63

Participants' Awareness of Hypertension

Figure 1 showed that the majority of the participants (62%) had no understanding of hypertension, as they could neither define nor state the normal ranges of blood pressure. Only a minority (4%) of the participants presented a good understanding of their disease.

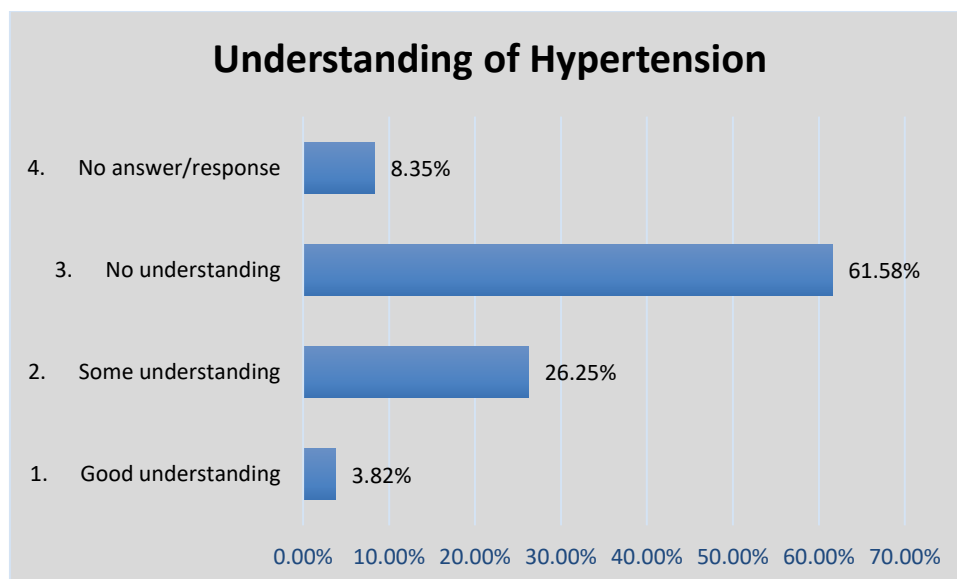


Figure 1: Participants' Understanding of Hypertension

In terms of the knowledge about the causes of hypertension, most of the participants didn't know that among the leading factors of hypertension were the lack of physical activity (87.83%), being overweight or obese (84.96%), and being a smoker (88.31%). Similarly, almost all participants did not perceive alcohol consumption as a risk

factor associated with hypertension (99.52%). However, most of the participants (63%) acknowledged that the high-salt diet was a risk factor for hypertension (**Table 3**).

Table 3: Participants' Awareness of Hypertension Causes

Causes of hypertension		n	%
Lack of physical activity	No	368	87.83
	Yes	51	12.17
Overweight or obese	No	356	84.96
	Yes	63	15.04
High-salt diet	No	154	36.75
	Yes	265	63.25
Smoking	No	370	88.31
	Yes	49	11.69
High alcohol consumption - more than 2 drinks per day	No	417	99.52
	Yes	2	0.48

Regarding the knowledge about the possible complications of hypertension, 96.9% of the participants did not know that hypertension could lead to heart failure, 93.32% did not know that hypertension could lead to visual impairment, 84.25% did not know that hypertension could lead to renal impairment, 60.38% did not know that hypertension could lead to cerebral stroke, while 43.91% of them did not know that hypertension could lead to heart disease (**Table 4**).

Table 4: Participants' Awareness of Hypertension Complications

Complications of hypertension		n	%
- Heart disease	No	184	43.91
	Yes	235	56.09
- Heart Failure	No	406	96.9
	Yes	13	3.1
- Stroke	No	253	60.38
	Yes	166	39.62
- Renal impairment	No	353	84.25
	Yes	66	15.75
- Visual impairment	No	391	93.32
	Yes	28	6.68

Prevalence of Self-Care Behaviors

As shown in **Table 5**, among all the SCBs, the highest performed behavior was alcohol abstinence (100%), followed by medication adherence (86.87%), and abstinence from smoking (76.13%). Whereas adherence to physical activity and weight management had a low prevalence (22.67%, and 18.62% respectively). The lowest prevalence was observed for a healthy diet regimen (17.9%).

Table 5: Adherence to Subscales of SCB

Subscale	Yes	No
Abstinence from alcohol	419 (100%)	0 (0%)
Medication	364 (86.87%)	55 (13.13%)
Abstinence from smoking	319 (76.13%)	100 (23.87%)

Physical activity	95 (22.67%)	324 (77.33%)
Weight management	78 (18.62%)	341 (81.38%)
Diet	75 (17.90%)	344 (82.10%)

IV. Discussion

The findings of the study revealed that patients' awareness of hypertension was found low in this study. Only a few of them showed a good understanding of their disease. This finding is consistent with other studies from Pakistan and India, where the level of awareness of hypertension has been reported low among hypertensive patients (Bilal et al., 2015; Gupta et al., 2016). The current study findings could be attributed to the low levels of literacy among the study participants, as more than two-thirds of them had no education or had only primary education.

Regarding the prevalence of Self-Care Behaviors, abstinence from alcohol had been one of the best-adhered behaviors in the study of Warren-Findlow and Seymour (2011) and Hu et al. (2013). In the current study, participants reported 100% abstinence. This finding was concordant with another study conducted in Iran (Motlagh et al., 2016). Moreover, both substance abuse and alcohol intake are socially undesirable behaviors in the KSA because it is a Muslim country where Islamic teachings prohibit these behaviors. In this study, although very few participants acknowledged indulging in substance abuse, the use of alcohol was completely not acknowledged. Since Iran and the KSA are both Muslim countries, alcohol intake is considered a socially undesirable behavior.

Similar to the existing literature (Bilal et al., 2015; Gupta et al., 2016; Hu et al., 2013; Warren-Findlow & Seymour, 2011), medication adherence was reasonably high in this study. In the KSA, medication and health care services are free for Saudi nationals. Free medication is a factor in the findings related to increased medication adherence (World Health Organization. Regional Office for the Eastern Mediterranean, 2015). In addition, free healthcare services can certainly lead to more follow-ups, and this increases interaction with the healthcare team. As a result, the awareness of the medication and emphasis on its adherence increases (Gowani et al., 2016).

The majority of the study participants were adherent to abstaining from smoking. This finding is congruent with the available literature (Abhinand & Sams, 2014; Hu et al., 2013; Motlagh et al., 2016; Neminqani et al., 2013). Similar to the discussion about alcohol earlier, smoking is also considered an undesirable behavior in communities in the KSA, as all intoxicant substances are prohibited in Islamic teaching, thus leading to a lower prevalence of smoking.

Among all the self-care behaviors, alcohol abstinence, medication adherence, and smoking abstinence were high; however, physical activity had a low level of adherence. Previous studies reported 52% to 64% adherence to physical activity, while the current study showed only 23% (Gupta et al., 2016; Hu et al., 2013; Warren-Findlow & Seymour, 2011). The findings of the current study affirmed the World Health Organization (WHO) reports that the Eastern Mediterranean Region has the highest level of insufficient physical activity (World Health Organization. Regional Office for the Eastern Mediterranean, 2015).

There are several possible reasons for this low level of physical activity in this area. The Kingdom of Saudi Arabia is a desert area, where the temperature is usually very high most of the year. Moreover, as per the cultural norms of the male dominant society in the KSA, women are restricted from going out without wearing the abaya, which could be a hurdle and cause inconvenience during the hot weather for outdoor exercise (Samara et al., 2015). Additionally, a good majority of people in the KSA have servants (maids, drivers, gardeners, etc.), who work for them, and this sedentary lifestyle could be another reason for poor physical activity. According to the WHO factsheet, the Ministry of Health was implementing a few interventions to improve the population's physical activities (World Health Organization. Regional Office for the Eastern Mediterranean, 2015).

Most of the participants in this study had low adherence to weight management practices. This finding is consistent with the available literature (Motlagh et al., 2016; Warren-Findlow & Seymour, 2011). This finding is also in line with the study of Albakry (2014) who reported a high obesity rate (49%) in the KSA population that is associated with a sedentary lifestyle. Weight management is mainly dependent on the practices of a healthy diet and physical exercise, both of which were also reported low in the current study.

In this study, adherence to a healthy diet was found to be the lowest among the other self-care behaviors. The previous studies, in other parts of the world, affirm similar findings (Motlagh et al., 2016; Warren-Findlow & Seymour, 2011). It is well observed that the Saudis consume a lot of oil in their diet. Their consumption of meat and rice is much more compared to fruits and vegetables. They also consume a high number of sweet dishes.

The participants of this study were found to have low compliance with blood pressure (BP) monitoring which was consistent with the literature (Gupta et al., 2016; Hu et al., 2013). The participants had a limited understanding of hypertension, as many of them did not know the normal range of BP. In addition, about one-third of them could not read or write. Perhaps the reason for low compliance could be a lack of awareness of the importance of blood pressure monitoring.

V. Conclusions

From the study, self-care behavior was found to be low among the study participants. Alcohol abstinence, medication adherence, and smoking abstinence showed a high prevalence among the participants. On the other hand, adherence to physical activity, weight management, and a healthy diet had a low prevalence. There is a need to enhance awareness about SCBs in hypertensive patients. Moreover, routine blood pressure monitoring must also be emphasized on an ongoing basis, for the early detection of complication and their prevention.

The results of this study may be used as a platform for further research studies to investigate the SCB of hypertension. In addition, the study results may help create context-specific interventions to improve hypertensive patients' SCB and prevent secondary complications, in the KSA.

VI. Recommendations

In-depth investigations and surveys are recommended to assess the reasons for low adherence to SCBs among the hypertensive population. National programs to enhance the population's awareness regarding hypertension must be initiated by the organization that is involved in providing health care services in the KSA (Ministry of Health). Moreover, hypertension awareness programs must emphasize routine blood pressure monitoring and teach how to monitor BP.

Specific interventions to improve the level of adherence to physical activity among hypertensive patients must be initiated by the primary health care centers. This effort is required to bring awareness about the importance of health promotion and disease prevention activities to improve the quality of life of hypertensive patients in the KSA.

The media and mobile services could be suitable supporting platforms for the initiation of awareness programs for hypertensive patients and these are accessible by a high percentage of the population in the KSA. In addition, using audio, video, and pictorial messages is a good option for those who cannot read and write.

Limitations of the study

A few limitations were indicated in this study. First, due to time limitations, a non-probability sampling technique was used; this might have resulted in accidental selection bias. Second, this study was conducted in one setting in the KSA. Therefore, the study findings may have limited generalizability. However, it may be extended to similar contexts with caution. Third, this study included questions that asked for information on some socially undesirable behaviors such as alcohol intake, substance abuse, and smoking; Therefore, a reporting bias may be present in the data related to the mentioned research questions. Finally, this study included participants who are only suffering from hypertension without any disabilities, psychiatric illnesses, heart failure, or untreated malignancies that can affect the performance of SCB among hypertensive patients. Therefore, the study results may not apply to this excluded population.

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