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Assessment of Adherence to Hypertension Medications and Awareness of Hypertension Medications among People with Hypertension in Tabuk

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ABSTRACT

Background: in 2015, there were 1.13 billion people living with high blood pressure worldwide. The prevalence of hypertension worldwide is of about 40%. In Saudi Arabia it reached 3.2% among those aged between 15-24 years, 51.2% among those aged 55-64 years and up to 70% among those aged 65 years and older. It has been observed that there is an increase in prehypertension cases, reaching 46.5% (3 millions) among males and 34.3% (more than 2 million) among females. Worldwide, raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths. **Aim of the work**: this study aimed to assess knowledge of hypertension and to determine factors affecting the compliance of hypertensive patients to their antihypertensive drugs. **Methods:** we have conducted a descriptive cross-sectional study in Tabuk city population, Saudi Arabia. This study was conducted during the period from August to December 2017. The participants were selected by random sampling. Sampling included the different geographical areas of the city. The total sample included 108 pupils. All the pupils were approached to obtain the desired sample size. A self-administered questionnaire about hypertension and complications was filled by the participants.

Results: in this study, participants classified to three groups according to age: less than 40 years old from 40 to 65 years old and 65 years old or above. Male and female groups contributed to 72.2% and 27.8% respectively. The majority of participants were university graduates (55.6%) and about 33.3% were secondary education. The majority of participants with hypertension were on one medications prescribed for treatment of their high blood pressure and the majority of participants(66.7%) were poorly compliant to their hypertension medication.

Conclusion: more attention is needed on preventive educational programs that focus on awareness and assessment of the hypertension medications adherence, complications of hypertension, and the danger of poor control of it.

Keywords: Hypertension, adherence, control, perception

INTRODUCTION

In 2015, there were 1.13 billion people living with high blood pressure worldwide **[1].** The prevalence of hypertension worldwide is of about 40% **[1].** In Saudi Arabia it reached 3.2% among those aged between 15-24 years, 51.2% among those aged 55-64 years and up to 70% among those aged 65 years and older. It has been observed that there was an increase in prehypertension cases, reaching 46.5% (3 millions) among males and 34.3% (more than 2 million) among females **[2].**

Worldwide, raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths. This accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS **[3].** Blood pressure tends to rise as people get older, Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke. Blood pressure levels have been shown to be positively and continuously related to the risk for stroke and coronary heart disease. In some age groups, the risk of cardiovascular disease doubles for each increment of 20/10 mmHg of blood pressure, starting as low as 115/75 mmHg. In addition to coronary heart diseases and stroke, complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment. Treating systolic blood pressure and diastolic blood pressure until they are less than 140/90 mmHg is associated with a reduction in cardiovascular complications[3].

Adherence to prescribed medication is an imperative issue which can be directly linked with the management of chronic diseases like hypertension; failure to adhere can affect the effectiveness of medication as well as the efficiency of the health care system. There is scarcity of information regarding the level of drug adherence for antihypertensive medications and its determinants in Ethiopia, particularly in the study area[4]. Adherence to antihypertensive medications is a crucial mediator of favorable outcomes in treating HTN, and non-adherence, in turn, halts BP

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control. In this review, we will summarize the available evidence on health-related impacts of adherence to AHD, methods for the evaluation of adherence and potential interventions aimed to improve adherence in hypertensive individuals[5]. Adherence to anti-hypertensive medications has been found to be a major concern.

The success of long-term maintenance therapy for hypertension depends largely on the patient's compliance with a therapeutic plan. Appropriate adherence to

medication is still a challenging issue for hypertensive patients[6]. Therefore, the current study was carried out to assess the adherence to hypertensive medications and to analyze the association between various socio demographic factors and adherence to hypertensive treatment.

METHODS

We have conducted a descriptive cross-sectional study in Tabuk city population, Saudi Arabia. This study was conducted during the period from August to December 2017. The participants were selected by random sampling. Sampling was included form the different geographical areas of the city. The total sample obtained 108 pupils. All participants were Saudi and diagnosed with hypertension.

Study participants were required to be self-reported hypertensive. All the pupils were approached to obtain the desired sample size. A self-administered questionnaire to be filled by participants. A letter that explains the objectives of the study and asks for participants consent was sent with the questionnaire. The questionnaire required information about duration of hypertension, knowledge of hypertension complications, number of hypertensions medications, perceived control of blood pressure, and eight questions scale that measure level of adherence to medications, previously validated[7].

The questionnaire responses were analyzed using the Statistical Package for the Social Science (SPSS Inc. Chicago, IL, USA) version 23. Categorical variables were described by frequencies and percentages.

Descriptive analysis involved Chi-square test was used to test significance of association between categorical variables. The level of significance was set at $P< 0.05$. The research was approved by the local Research Committee of the Faculty of Medicine, University of Tabuk. Pupils were asked to give their written consents before participation in this study. The study was done after approval of ethical board of University of Tabuk.

RESULTS

Table 1 shows general characteristics of the participants. Participants classified to three groups according to age: less than 40 years old, from 40 to 65 years old, and 65 years old or above. Male and female groups contributed to (72.2%) and (27.8%) respectively. The majority of participants were university graduates (55.6%), and about (33.3%) were secondary education.

Table 2 showed characteristics of high blood pressure among people with hypertension. More than half of patients had the disease for less than five years(52.7%), about (30.6%) from five to ten years, and only (16.7%) had it for more than ten years. The majority of participants with hypertension were on one medications prescribed for treatment of their high blood pressure, (19.4%) on two medications, and the remaining were on wither on three or more medications(5.6%), or not using any medications(11.1%). Participants who reported that their blood pressure is controlled were more than those who reported their blood sugar is uncontrolled,(50%) and (25%) respectively. and a fourth of them did not know about the if their blood pressure is under control or not(25%).

Table 3 shows frequency of knowledge regarding the definition and awareness of complications of hypertension. (43.3%) disagreed to the statement'' Hypertension is defined as BP 140/90 or more '' while more than half of participants agreed to that statement(56.7%). The mostly known and recognized complication of high blood pressure were ''Atherosclerosis, heart attack(MI), and Peripheral Arterial Disease'' and it account for(55.6%), while those who were aware about heart failure and stroke as complications to high blood pressure contributed to (41.7%) and (41.7%), respectively. nearly a third of participants know that renal failure (38.9%) is a complications of high blood pressure and only (25%) of them know that hypertension may lead to blindness. Participants who reported existing of other chronic illness rather than hypertension were(41.7%), and (58.3%) denied coexisting any other chronic illnesses.

Table 4 shows adherence of participants to their medication used to treat hypertension. The majority of participants(66.7%) were poorly compliant to their hypertension medication, while (27.8%) were moderately adherent to their hypertension medications. Only (5.6%) were highly adherent to their medications.

Table 5 shows significant relation between level of adherence of participants to hypertension medications and gender, age, and education

groups. Male participants were more likely to adhere to their medications than females(p=0.005). female with low adherence were about (90%), while male with low adherence were (57%). Male and female with medium adherence contributed to (34.6%) and (10%), respectively. no one of female groups were highly compliant to their medications, and the male group who were highly adherent to their medications were only (7.7%). Level of adherence to hypertension medications among age groups was variable(p=.000). Participants who were above sixty five were nine participants, only three of them were highly adherent to their medications(33.3%), and the remaining were poorly adherent(66.6%). No one of the middle age groups-from 40 to 65 years- were highly adherent to their medications, and the majority of them were with low adherent to their medication(77.3%). Regarding the age group less than forty years, only(9%) were highly adherent, and half the remaining were with medium adherence(45.5%), and half were with low adherence(45.5%). Level of adherence were inversely related to level of education(p=.004). the higher the education level, the lower adherence to hypertension medications. Three fourths of participants who were university graduates or more were with low adherence(27%), a fifth of them were with medium adherence(20%), and only (5%) were highly adherent to medications. Participants who were with secondary education and with low adherence contributed to (58.3%), and who were with medium adherence contributed to (41.7%). Participants with intermediate education or less have higher levels of adherence to their medications when compared to those with higher education levels. Half participants who have intermediate education or less were with low adherence, a forth of them were medium adherence, and the remaining forth were highly adherent to their medications.

Table 6 shows relation between adherence of participants to hypertension medications and characteristics of high blood of participants. Significant relation between adherence and duration of hypertension of participants(p=.001). Participants who have hypertension for more than ten years were more likely to be poorly adherent to their hypertension medications(83.3%). Those who have the disease from five to ten years were more likely to adhere to their medications when compared the other groups, as (63.6%) of them were poorly compliant to their medications, and (18.2%) were highly adherent to their medications. Those who have the disease for less than five years, the majority were with low compliance to hypertension medications(63.2%), and the remaining were with medium adherence. The relation between adherence and the number of medications participants on were insignificant(p=.425). participants who were on one antihypertensive medication in relation to level of adherence to their medications were as follow: low adherence(69.6%), medium adherence(62.1%), and high adherence(4.3%). Those who were on two medications in relation to level of adherence were as follow: low adherence(57.1%), medium adherence (28.6%), and high adherence(14.3%). Those who were on three medications or more in relation to level of adherence were as follow: low adherence(50%), medium adherence (50%), and high adherence(0%). Relation between adherence to medications and control of blood pressure of participants were significant(p=.001). Those who reported their blood pressure was under control in relation to adherence to their medications were as follow: (83.3%) of them were with low adherence, (11.1%) of them were with medium adherence, and (5.6%) of them were highly adherent to their medications. Those who reported their blood pressure was uncontrolled in relation to adherence to their medications were as follow: (55.6%) of them were with low adherence, (44.4%) of them were with medium adherence, and none of them were at least with high adherence to his/her medications(0%). Those who were un aware of their blood pressure status wither if it is controlled or uncontrolled in relation to adherence to their medications were as follow: (44.4%) of them were with low adherence, (44.4%) of them were with medium adherence, and only (11.1%) them were with high adherence to their medications(0%). Relation between level of adherence and the presence of other chronic illnesses were insignificant(p=0.306). Those who reported the presence of chronic illness rather than hypertension were less than half participants, and their adherence to hypertensive medications were as follow: (73.3%) of them were with low adherence, (20%) of them were with medium adherence, and (6.7%) of them were highly adherent to their medications. Those who denied the presence of any other chronic illnesses were more than half the participants, and their adherence to hypertensive medications were as follow: (61.9%) of them were with low adherence, (33.3%) of them were with medium adherence, and (4.8%) of them were highly adherent to their medications.

Table 1: General characteristics

	n=108	
Charac		
Age	Less than 40 years (n(%))	033(30.6%)
	From 40 to 65 years (n(%))	066(61.1%)
	More than 65 years (n(%))	009(8.3%)
Gender	Male (n (%))	078 (72.2%)
	Female (n (%))	030 (27.8%)
Education	Not educated/ primary/ intermediate (n (%))	012 (11.1%)
	secondary (n (%))	036 (33.3%)
	Graduate (n (%))	60 (55.6%)
Income	Poor (n (%))	021 (19.5%)
	Average (n (%))	051 (47.2%)
	High (n (%))	036 (33.3%)

Table-2: General characteristics of hypertension of the participants (n= 108)

Character		
Duration of Hypertension	Less than 5 years(n(%))	057(52.7%)
	From 5-10 years(n(%))	033(30.6%)
	More than 10 years(n(%))	018(16.7%)
Number of medications	No medications (n (%))	012 (11.1%)
	1 medication (n (%))	069 (63.9%)
	2 medications	021(19.4%)
	3 or more	006(5.6%)
Control of blood pressure	Yes (n (%))	054 (50%)
	No (n (%))	027 (25%)
	I do not know(n (%))	027 (25%)

Table-3: knowledge of definition and complication of hypertension

Question		**Frequency**	**Percent**
HTN is defined as BP 140/90 or more			
	Yes	68	56.7%
	No	52	43.3%
Frequency of disease recognized as a complications of hypertension			
Atherosclerosis, MI, and PAD		60	55.6%
Congestive heart failure		45	41.7%
Stroke		45	41.7%
Renal failure		42	38.9%
Blindness		27	25%
Coexisting other chronic illnesses other than hypertension			
	Yes	45	41.7%
	No	63	58.3%

Table-4: adherence of participants to their medication

ıerence	**Frequency**	**%**
Low adherence	**72**	**66.7**
Medium adherence	**30**	**27.8**
High adherence	**6**	**5.6**
Total	**108**	**100.0**

Table-5: Adherence of participants to hypertension medications among gender, age, and education groups

Adherence	Gender		p-value
	Male n=78	Female n=30	
Low adherence	57.7%	90.0%	
Medium adherence	34.6%	10.0%	
High adherence	7.7%	0.0%	.005
	Age		
	40 years or less n=33	40-65 years n=66	Above 65 years n=9	
Low adherence	45.5%	77.3%	66.7%	
Medium adherence	45.5%	22.7%	0.0%	
High adherence	9%	0.0%	33.3%	.001
	Education		
	Intermediate or less n=12	Secondary n=36	University or more n=60	
Low adherence	50.0%	58.3%	75.0%	
Medium adherence	25.0%	41.7%	20.0%	
High adherence	25.0%	0.0%	5.0%	.004

Table-6: Adherence of participants to hypertension medications among duration of hypertension, number of medications, control of hypertension, and presence of other illnesses

	Duration of Hypertension			
	Less than 5 years n=57	From 5 to 10 Yea n=33	More than 10 years n=18	
Low adherence	63.2%	63.6%	83.3%	
Medium adherence	36.8%	18.2%	16.7%	.001
High adherence	0.0%	18.2%	0.0%	
	Number of medications			
	1 Medication n=69	2Medications n=21	3 Medications or more n=6	
Low adherence	69.6%	57.1%	50.0%	
Medium adherence	26.1%	28.6%	50.0%	.425
High adherence	4.3%	14.3%	0.0%	
	Blood pressure control			
	Controlled n=54	Not controlled n=27	Do not know n=27	
Low adherence	83.3%	55.6%	44.4%	
Medium adherence	11.1%	44.4%	44.4%	.001
High adherence	5.6%	0.0%	11.1%	
	Presence of other illnesses			
	Yes n=45	No n=63		
Low adherence	73.3%	61.9%		
Medium adherence	20.0%	33.3%		
High adherence	6.7%	4.8%		.306

DISCUSSION

Blood pressure control in hypertension patients considered as a long-standing challenge. Adherence to medication is always a matter of concern, especially in chronic diseases. Several recent studies have highlighted the importance of patient medication adherence and have outlined factors that affect patient compliance with prescribed therapy. In the current study, we asked the participants about their blood pressure wither it is controlled or not, 25% of them reported uncontrolled blood pressure and 25% did not know the status of their blood pressure. Another study done over one hundred and six hypertensive African-American patients and reported higher results of uncontrolled hypertension[8].

The current study revealed significant relation between blood control and adherence to medication(p=.001), almost the majority of whom perceived their blood pressure is controlled were poorly adherent to medications. Similar results reported in a study done over one hundred and two hypertensive patients at the University of Michigan Medical Centers[9].

Regarding the adherence to hypertension medications, this study showed that the majority of participants were with low adherence to medications(66.7%) and only (5.6%) were with high adherence to their medications. Another study done and reported a higher rate of adherence to their hypertensive medications(67.7%)[9]. In the same context, another different study done Among 315 patients and it reported higher results, as 49.8% of the patients were adherent[10].

Male were more likely to adhere to their medications when compared to female with a significance (p=.005). A cross-sectional study was conducted in a rural area of the Ardabil city in 2013 showed different results, it showed adherence was slightly high among female respondents than male[11]. In the same context, another study was conducted to assess adherence to medications in patients undergoing hypertensive treatment in the Primary Health Clinics of the Ministry of Health in Malaysia, and it showed female patients were found to be more likely to adhere to their medication regime, compared to their male counterparts ($P < 0.05$)[12].

CONCLUSION

The findings suggest that patients' greater perception of control over trying to reduce blood pressure may result in decreased reliance on medications and subsequent non-adherence to drug therapy. To analyze the association between various socio demographic factors and adherence to hypertensive treatment, more attention is needed on prevention educational programs that focus on awareness and assessment of the hypertension medications adherence, complications of hypertension, and the danger of poor control of it.

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