



CODEN [USA]: IAJPBB

ISSN: 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3334349>

Available online at: <http://www.iajps.com>

Research Article

### LEVEL OF ADHERENCE TO AND AWARENESS OF HYPERTENSION TREATMENT MEDICATIONS AMONG POPULATION IN RIYADH

<sup>1</sup>Saad Abdularahman Alotaibi

<sup>1</sup>M3 MBCh Student, Faculty of Medicine, University of shaqra, Riyadh/ KSA.

Article Received: May 2019

Accepted: June 2019

Published: July 2019

**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 million) 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 Riyadh city population, Saudi Arabia. This study was conducted during the period from September 2018 to June 2019. The participants were selected by random sampling. Sampling included the different geographical areas of the city. The total sample included 216 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 medication 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.

**Corresponding author:**

**Saad Abdularahman Alotaibi,**

M3 MBCh Student, Faculty of Medicine, University of shaqra, Riyadh/ KSA.

QR code



Please cite this article in press Saad Abdularahman Alotaibi., *Level of Adherence to and Awareness of Hypertension Treatment Medications among Population in Riyadh.*, Indo Am. J. P. Sci, 2019; 06(07).

## 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 million) 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 a hemorrhagic stroke. Blood pressure levels have been shown to be positively and continuously related to the risk of 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 a 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 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 antihypertensive 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 Riyadh city population, Saudi Arabia. This study was conducted during the period from September 2018 to June 2019. The participants were selected by random sampling. Sampling was included from the different geographical areas of the city. The total sample obtained 216 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 the duration of hypertension, knowledge of hypertension complications, a number of hypertension medications, perceived control of blood pressure, and eight questions scale that measures the 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 the significance of the 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 Shaqra. Pupils were asked to give their written consents before participation in this study.

## RESULTS:

**Table 1** shows the 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 the 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 medication 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 if their blood pressure is under control or not (25%).

**Table 3** shows the frequency of knowledge regarding the definition and awareness of complications of hypertension. (43.5%) disagreed to the statement “Hypertension is defined as BP 140/90 or more” while more than half of participants agreed to that statement (56.5%). The most known and recognized complication of high blood pressure were “Atherosclerosis, heart attack(MI), and Peripheral Arterial Disease” and it accounts for (55.6%), while those who were aware of 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 complication 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 the 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 (5.5%) were highly adherent to their medications.

**Table 5** shows a significant relationship between the 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 a low adherence were about (90%), while male with a low adherence were (57%). Male and female with medium adherence contributed to (34.6%) and (10%), respectively. No one of the 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 eighteen participants, only six 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 the 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 the relation between adherence of participants to hypertension medications and characteristics of high blood of participants. A 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 with hypertension medications (63.2%), and the remaining were with medium adherence. The relation between adherence and the number of medications participants were insignificant ( $p=.425$ ). participants who were on one antihypertensive medication in relation to the 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 the 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 the 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( $p=0.001$ ). 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 unaware 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 the 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=216

Character		
<b>Age</b>	Less than 40 years (n(%))	066(30.6%)
	From 40 to 65 years (n(%))	132(61.1%)
	More than 65 years (n(%))	0018(8.3%)
<b>Gender</b>	Male (n (%))	156 (72.2%)
	Female (n (%))	060 (27.8%)
<b>Education</b>	Not educated/ primary/ intermediate (n (%))	024 (11.1%)
	secondary (n (%))	072 (33.3%)
	Graduate (n (%))	120 (55.6%)
<b>Income</b>	Poor (n (%))	042 (19.5%)
	Average (n (%))	102 (47.2%)
	High (n (%))	072 (33.3%)

**Table-2: General characteristics of hypertension of the participants  
n= 216**

<b>Character</b>		
<b>Duration of Hypertension</b>	Less than 5 years(n(%))	114(52.7%)
	From 5-10 years(n(%))	066(30.6%)
	More than 10 years(n(%))	036(16.7%)
<b>Number of medications</b>	No medications (n (%))	024 (11.1%)
	1 medication (n (%))	0138 (63.9%)
	2 medications	042 (19.4%)
	3 or more	012 (5.6%)
<b>Control of blood pressure</b>	Yes (n (%))	0108 (50%)
	No (n (%))	054 (25%)
	I do not know(n (%))	054 (25%)

**Table-3: knowledge of definition and complication of hypertension**

<b>Question</b>	<b>Frequency</b>	<b>Percent</b>
<b>HTN is defined as BP 140/90 or more</b>	Yes	122 56.5%
	No	94 43.5%
<b>Frequency of disease recognized as a complication of hypertension</b>		
Atherosclerosis, MI, and PAD	120	55.6%
Congestive heart failure	90	41.7%
Stroke	90	41.7%
Renal failure	84	38.9%
Blindness	54	25%
<b>Coexisting other chronic illnesses other than hypertension</b>		
Yes	90	41.7%
No	126	58.3%

**Table-4: adherence of participants to their medication**

<b>Adherence</b>	<b>Frequency</b>	<b>%</b>
<b>Low adherence</b>	<b>144</b>	<b>66.7</b>
<b>Medium adherence</b>	<b>60</b>	<b>27.8</b>
<b>High adherence</b>	<b>12</b>	<b>5.5</b>
<b>Total</b>	<b>216</b>	<b>100.0</b>

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

Adherence	Gender			p-value
	Male n=156	Female n=60		
Low adherence	57.7%	90.0%		.005
Medium adherence	34.6%	10.0%		
High adherence	7.7%	0.0%		
<b>Age</b>				
Adherence	40 years or less n=66	40-65 years n=132	Above 65 years n=18	p-value
	45.5%	77.3%	66.7%	
Low adherence	45.5%	77.3%	66.7%	.001
Medium adherence	45.5%	22.7%	0.0%	
High adherence	9%	0.0%	33.3%	
<b>Education</b>				
Adherence	Intermediate or less n=24	Secondary n=72	University or more n=120	p-value
	50.0%	58.3%	75.0%	
Low adherence	50.0%	58.3%	75.0%	.004
Medium adherence	25.0%	41.7%	20.0%	
High adherence	25.0%	0.0%	5.0%	

**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=114	From 5 to 10 Years n=66	More than 10 years n=36	
Low adherence	63.2%	63.6%	83.3%	.001
Medium adherence	36.8%	18.2%	16.7%	
High adherence	0.0%	18.2%	0.0%	
	Number of medications			
	1 Medication n=138	2 Medications n=42	3 Medications or more n=12	
Low adherence	69.6%	57.1%	50.0%	.425
Medium adherence	26.1%	28.6%	50.0%	
High adherence	4.3%	14.3%	0.0%	
	Blood pressure control			
	Controlled n=108	Not controlled n=54	Do not know n=54	
Low adherence	83.3%	55.6%	44.4%	.001
Medium adherence	11.1%	44.4%	44.4%	
High adherence	5.6%	0.0%	11.1%	
	Presence of other illnesses			
	Yes n=90	No n=126		
Low adherence	73.3%	61.9%	.306	
Medium adherence	20.0%	33.3%		
High adherence	6.7%	4.8%		

**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 whether 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 was done over one hundred and six hypertensive African-American patients and reported higher results of uncontrolled hypertension<sup>[8]</sup>. The current study revealed a 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<sup>[9]</sup>. 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 was done and reported a higher rate of adherence to their hypertensive medications(67.7%)<sup>[9]</sup>. In the same context, another different study was done among 315 patients and it reported higher results, as 49.8% of the patients were adherent<sup>[10]</sup>. Male were more likely to adhere to their medications when compared to female with a significance ( $p=0.005$ ). 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<sup>[11]</sup>. 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 ( $P < 0.05$ )<sup>[12]</sup>.

### 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.

### REFERENCES:

1. WHO World Health Statistics (2015): available at [http://www.who.int/gho/publications/world\\_health\\_statistics/2015/en/](http://www.who.int/gho/publications/world_health_statistics/2015/en/)
2. Ministry of health, Saudi Arabia(2017): World hypertension day. Available from: <https://www.moh.gov.sa/en/HealthAwareness/healthDay/2017/Pages/HealthDay-2017-05-17.aspx>
3. WHO Global Health Observatory (2015): Raised Blood Pressure Available from: [http://www.who.int/gho/ncd/risk\\_factors/blood\\_pressure\\_prevalence\\_text/en/](http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/)
4. Mekonnen H S, Gebrie M H, Eyasu K H, and Gelagay A A. (2017): Drug adherence for antihypertensive medications and its determinants among adult hypertensive patients attending in chronic clinics of referral hospitals in Northwest Ethiopia. *BMC Pharmacology and Toxicology.*, 18(1): 27
5. Gosmanova E O, and Kovcsdy C P. (2014): Adherence to antihypertensive medications: is prescribing the right pill enough?. *Nephrology Dialysis Transplantation*, 30(10): 1649-1656
6. Behnood-Rod A, Rabbanifar O, Pourzargar P, Rai A, Saadat Z, Saadat H, and Morisky D E. (2016): Adherence to antihypertensive medications in Iranian patients. *International Journal of Hypertension*, 2016: Article ID 1508752, 7 pages available from: <file:///C:/Users/HP/Downloads/1508752.pdf>
7. Morisky D E, Ang A, Krousel-Wood M, and Ward H J. (2008): Predictive validity of a medication adherence measure in an outpatient setting. *The Journal of Clinical Hypertension*, 10(5): 348-354
8. Ogedegbe G, Harrison M, Robbins L, Mancuso CA, Allegrante JP. (2004): Barriers and facilitators of medication adherence in hypertensive African Americans: a qualitative study. *Ethnicity & Disease*, 14(1): 3-12
9. Patel R P, and Taylor S D. (2002): Factors affecting medication adherence in hypertensive patients. *Annals of Pharmacotherapy*, 36(1): 40-45
10. Thi-Phuong-Lan Nguyen, Catharina C M Schuiling-Veninga, Thi Bach Yen Nguyen, Thu-Hang Vu, E Pamela Wright, and Maarten J Postma. (2017): Adherence to hypertension medication: Quantitative and qualitative investigations in a rural Northern Vietnamese community. *PloS one.*, 12(2): e0171203. Available from: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0171203>
11. Kamran A, Ahari S S, Biria M, Malpour A, and Heydari H. (2014): Determinants of patient's adherence to hypertension medications: application of health belief model among rural patients. *Annals of medical and health sciences research*, 4(6), 922-927
12. Ramli A, Ahmad N S, and Paraidathathu T. (2012): Medication adherence among hypertensive patients of primary health clinics in Malaysia. *Patient preference and adherence*, 6:613-622.