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Evaluation of Treatment Adherence among Patients with Hypertension

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ABSTRACT

Objective(s): This study aimed to evaluate patients' adherence to treatment of hypertensive patients and its associated factors in Al-Diwaniyah city.

Methods: A descriptive cross-sectional study conducted during the period from October 1st, 2022 to March 8th, 2023. The study sample consisted of 200 patients who were selected according to the method of non-probability sampling (purposive). The WHOQOL_BREF questionnaire was validated by experts and its reliability was validated by a pilot study. The total number of items included in the questionnaire was 14 to assess adherence to treatment. Data were collected through interviews and analyzed by applying descriptive and inferential statistical analysis.

Results: The results indicated that the average age of the respondents was 47.67 years, (56.5%) females, (62%) married, (43.5%) college graduates, (55%) government employees. More than half (57%) reported poor treatment adherence. Treatment adherence varies according to age, gender, monthly income, marital status, level of education, profession, duration of hypertension and associated diseases.

Conclusions: The results of the study showed that patients with high blood pressure adhere to treatment at less than ideal rates and that the majority of socio-demographic factors, including age, gender, monthly income, marital status, level of education, duration of high blood pressure and associated diseases, influence this behavior.

Recommendations: Treatment of hypertension in primary health care settings should include required health education and counseling programs regarding the condition and its complications, medication adherence, and dietary control.

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تقييم الالتزام العلاجي بين مرضى ارتفاع ضغط الدم المفرط

المستخلص

الأهداف: تهدف هذه الدراسة إلى تقييم مدى الالتزام بالعلاج بين مرضى ارتفاع ضغط الدم والعوامل المرتبطة به في مدينة الديوانية.

المنهجية: دراسة مقطعية وصفية أجريت خلال الفترة من الأول من تشرين الاول ٢٠٢٢ إلى ٨ اذار ٢٠٢٣. تكونت عينة الدراسة من ٢٠٠ مريض تم اختيارهم وفقًا لطريقة أخذ العينات الغير الاحتمالي (الغرضية). تم التحقق من صحة الاستبيان من قبل الخبراء وتم التحقق من موثوقيتها من خلال دراسة تجريبية. كان العدد الإجمالي للفقرات المدرجة في الاستبيان ١٤ فقرة لتقييم الالتزام العلاجي. جمعت البيانات من خلال المقابلات وحللت من خلال تطبيق التحليل الإحصائي الوصفي والاستدلالي.

النتائج: أشارت النتائج إلى أن معدل عمر المبحوثين ٤٧.٦٧ سنة، (٥٦.٥٪) من الإناث، (٦٢٪) متزوجين، (٤٣.٥٪) خريجين كلية، (٥٥٪) موظفين حكوميين. أكثر من النصف (٥٧٪) أعربوا عن التزام علاجي ضعيف. يختلف الالتزام العلاجي حسب العمر والجنس والدخل الشهري والحالة الاجتماعية ومستوى التعليم والمهنة ومدة ارتفاع ضغط الدم والأمراض المصاحبة له.

الاستنتاجات: أظهرت نتائج الدراسة أن المرضى الذين يعانون من ارتفاع ضغط الدم يلتزمون بالعلاج بمعدلات أقل مما هو مثالي وأن غالبية العوامل الاجتماعية الديموغرافية، بما في ذلك العمر والجنس والدخل الشهري والحالة الاجتماعية ومستوى التعليم ومدة ارتفاع ضغط الدم والأمراض المرتبطة بها، تأثير على هذا السلوك..

التوصيات: يجب أن يشتمل علاج ارتفاع ضغط الدم في مرافق الرعاية الصحية الأولية على برامج التثقيف والإرشاد الصحي المطلوبة فيما يتعلق بالحالة ومضاعفاتها، والالتزام بالأدوية، والتحكم في النظام الغذائي.

الكلمات المفتاحية: التزام العلاجي، ارتفاع ضغط الدم، مرضى ارتفاع ضغط الدم.

Introduction

Hypertension is one of the main causes of cardiovascular disease and a major global public health issue. The prevalence of hypertension (HTN) adversely affects both the capacity of the healthcare system and cardiovascular health. HTN is directly responsible for 24% of deaths from coronary heart disease (CHD) and 57% of deaths from stroke. According to the poll, one in three people globally have excessive blood pressure, which is responsible for around half of all stroke and heart disease deaths [(1)].

Hypertension, the most common cause of primary care visits, is also a separate and manageable risk factor for CVDs such myocardial infarction, stroke, and renal failure. It could cause death if identified too late and treated inadequately [(2)]. In low- and middle-income countries, a large number of people with high blood pressure are ignorant of their disease or the importance of getting their blood pressure checked regularly. Additionally, they might not have access to medications that reduce hypertension as well as the mortality and morbidity caused by side effects including heart disease and stroke. People may simply be unaware of or uncaring about the dangers of untreated high blood pressure and disobey treatment recommendations [(3)].

Compared to people with other chronic diseases, HTN patients take their prescription more frequently. Antihypertensive therapy compliance is challenging to accomplish. The type of treatment (including dose regimen), concurrent drugs, clinical state, existence of comorbidities, cost of treatment, and the doctor-patient relationship all have an impact. Environmental factors also have an effect on it. Furthermore, senior hypertension patients' poor quality of life is associated with high adherence to recommended medicines [(4)].

Poor adherence, also referred to as non-adherence, is the main reason why treatments are ineffective. In addition, some people

disobey medical professionals' recommendations and skip antihypertensive medication, which leads to ineffective treatment [5].

According to the most recent meta-analysis, many patients with comorbidities (31.2%) and hypertension (45.2%) did not take their medication as directed [6].

Non-compliance with medication has both financial and personal repercussions; it is projected that following treatment recommendations might reduce about 8% of global healthcare costs [7].

Understanding how hypertension patients adhere to their medication can aid in the development and implementation of support systems tailored to particular cultural groups by health care administrators and policy makers. This study used the Hill-Bone HBP compliance scale to look at treatment compliance and its associations with sociodemographic characteristics among hypertensive patients in Al-Diwaniya city[8].

Methods

Study design and setting

A descriptive cross-sectional study design was carried out at Al-Diwaniyah City in primary health care centers during the period from October 1st, 2022 to March 8th, 2023.

Samples and sampling

The study sample included in present study are non-probability purposive sample of (200) patients with hypertension who are selected on a set of criteria include: 1) Those who are diagnosed with hypertension, 2) who are different level of education, 3) who are different age groups and 4) volunteer to participate in the study after his consent.

Data collection and study instrument

This questionnaire consists of two parts include the followings.

Part I: Patients characteristics include age, gender, monthly income, marital status, education level, occupation and duration of hypertension and associated comorbidities.

Part II: Hill-Bone Compliance scale was developed with funds from National Institutes of Health (NIH), consist of (14) items measured on 4-level type of Likert Scale (1=Always, 2=Mostly, 3=Sometime and 4=Never). Accordingly, points can be taken range from 14-56. The higher average defined as good treatment adherence. Cronbach alpha in current = 0.94 which indicated acceptable level. Such selection is employed pool of subjects [9]. Participants were interviewed who agreed verbally, explained the instructions, answered their questions regarding the form, urged them to participate and thanked them for the cooperation[10].

Validity and Reliability of the study Instrument

The interview techniques were used on individual bases, and each interview (15-20) minutes after taking the important steps that must be included in the study design the face validity of the study tool was conducted after the tool translated into Arabic, which assessed by 11 specialists in diverse departments of nursing. Experts were invited to provide their thoughts and ideas on each study questionnaire item in terms of linguistic relevance, relationship to the dimensions of the study variables allocated to it, and applicability to the study community's setting[11]. Content validity is determined through the use of panel of (11) experts. They are (4) faculty members from the College of Nursing/ University of Baghdad, (3) faculty members from the College of Nursing/ University of Babylon, (2) faculty members from the College of Nursing/ University of Kufa and (2) a consultant physician from the Diwaniyah Health Directorate (Appendix C).

The expert's responses indicated that minor changes should be done to some items

and we were made according to their suggestions, then the final draft was completed to be ready for conducting the study[12] .

Data analysis

The IBM SPSS 20.0 program was used for all the analyses that follow. Numbers and percentages (No. and %) were used to categorize the variables, while the mean and standard deviation were used to characterize the continuous variables (mean and SD). ANOVA test used to compare independent variable[13]. Statistical significance was defined as a two-tailed p .05[14] .

Ethical Consideration

Ethical approval has been secured designated analysis. Participant's verbal consent is sought only after a clear explanation of the purpose of their involvement**.**

Results

Table 1. Patients' Socio-Demographic Characteristics

Variables	Classification	No.	%
Age /years	<30years old	44	22.0
	30-39years old	18	9.0
	40-49years old	34	17.0
	50-59years old	46	23.0
	60-69years old	46	23.0
	70and older	12	6.0
	47.67 ± 14.77		
Gender	Male	87	43.5
	Female	113	56.5
Monthly income	<300 thousand dinars	48	24.0
	300-600 thousand dinars	66	33.0
	601-900 thousand dinars	58	29.0
	> 900 thousand dinars	28	14.0
Marital status	Single	33	16.5
	Married	125	62.5
	Divorced	18	9.0
	Widower	24	12.0
Education level	Illiterate	18	9.0
	Read & write	23	11.5
	Elementary school	19	9.5
	Middle school	15	7.5
	High school	38	19.0
	College	87	43.5
Occupation	Government employ	110	55.0
	Free-business	10	5.0
	Retired	23	11.5
	Unemployment	57	28.5
Duration of HTN	<1 year	30	15.0
	1-5 years	129	64.5
	>5 years	41	20.5

Chronic comorbidities	None	13	6.5
	DM	121	60.5
	Rheumatic Fever	15	7.5
	Asthma	17	8.5
	CVA	30	15.0
	CA	4	2.0

No= number**, %=** percentages**, DM**= Diabetes Mellitus, **CVA=** Cerebrovascular accident.

The average age of the participants is 47.67, with the age groups of 50 to 59 and 60 to 69 years old recording the largest percentages (23%) for each of them. In terms of gender, the majority of participants (56.5%) were female. 33 percent of those with monthly incomes between 300,000 and 600,000 dinars. In terms of marital status, 62% of individuals in the third group were married. Regarding education, the majority of participants (43.5%) had a college degree. Findings related to occupation showed that 55% of participants worked for the government. About one-third of participants (or 64.5%) indicated that their hypertension had been present for 1 to 5 years. The most prevalent chronic comorbidity among patients with hypertension was diabetes (60.5%).

Table 2. Overall Evaluation of Patients' Treatment Adherence

	Rating	**No.**	**%**	**M±SD**
Treatment Adherence	Low	114	57.0	27.15 ± 9.25
	Moderate	75	37.5	
	High	11	5.5	
	Total	200	100.0	

***M±SD**=mean ± Standard deviation, **%**= Percentage, **No**= Sample size.

The results in table 2 showed that (57%) of the patients with hypertension expressed a low treatment adherence 27.15 (±9.25).

Table 3. Statistical Differences in Patients' Treatment Adherence with regard their Socio-Demographic Variables

HBP Compliance	Source of variance	Sum of Squares	df	Mean Square	*F-statistic*	*P value*
Age	Between Groups	9.914	5	1.983	4.989	.000
	Within Groups	77.108	194	.397		
	Total	87.022	199			
Gender	Between Groups	11.235	1	11.235	29.351	.000
	Within Groups	75.788	198	.383		
	Total	87.022	199			
Monthly income	Between Groups	21.224	3	7.075	21.074	.000
	Within Groups	65.798	196	.336		
	Total	87.022	199			
Marital status	Between Groups	13.163	3	4.388	11.643	.000
	Within Groups	73.859	196	.377		
	Total	87.022	199			
Education level	Between Groups	13.385	5	2.677	7.052	.000
	Within Groups	73.638	194	.380		
	Total	87.022	199			
Occupation	Between Groups	7.457	3	2.486	6.123	.001
	Within Groups	79.565	196	.406		
	Total	87.022	199			
Duration of HTN	Between Groups	15.094	2	7.547	20.670	.000

	Within Groups	71.928	197	.365		
	Total	87.022	199			
Chronic comorbidities	Between Groups	29.949	5	5.990	20.361	.000
	Within Groups	57.073	194	.294		
	Total	87.022	199			

df= degree of freedom, **P value**= 0.001.

The analysis of variance showed that there were statistically significant differences in treatment adherence between patients with respect to socio-demographic characteristics.

Discussion

In current study, the most of patients with hypertension are female at mean age is 47.67, the age group 50-59 and 60-69 years old were records the highest for each them, followed by age of <30, 40-49, 30-39 and ≥70 years old. This findings in line with findings from Baghdad City, the most of participants with cardiovascular diseases are 50 years and older[15].

This consisting with findings from AL-Najaf AL-Ashraf City and Bagdad city, the most of patients with hypertension are within age of 50 years and above [16][17].

These results are possible because chronic diseases such as high blood pressure often come at an advanced age. Most of participants were make 300-600 thousand dinars and this insufficient to adhere to the treatment even though they are college graduates and government employ. This results is supported by study conducted in Baghdad city and Al-Diwaniyah, find that the most of patients with insufficient income[18][19].

The economic status is an most important factor that can build adherence to treatment among patients with chronic conditions [20].

Concerning marital status, one third of participants were married. This findings in agreement with findings from outpatient consultancy clinics in Al-Hilla City Hospitals, most patients with chronic diseases are married due to their age. The age groups is associated marital status especially among those who chronic conditions [21][22].

Regarding duration of hypertension, approximately one-third of participants expressed 1-5 years and the most common associated HTN among patients with hypertension were DM. The duration of disease play an importance roles in diseases management[23][24].

This consisting with findings from AL-Hussein Medical-City. Karbala city. Also, the most common associated hypertension are diabetes mellitus[25][26].

Numerous research have looked into the variables influencing treatment adherence. This study demonstrates that antihypertensive medication adherence is low. In this sample, the non-adherence rate to treatment for hypertension was found to be 57%, which is lower than that observed in studies done in Al-Khobar and Saudi Arabia, where it was found to be 47 and 34.7%, respectively [27][28]. Adherence rates in other research from various nations ranged from 15 to 88% [29].

The disparities in demographic characteristics, medication adherence measurement methods, and healthcare systems may be the cause of this discrepancy in adherence rate.

The results of the analysis of variance revealed that patients' treatment adherence, as measured by the HBP Compliance Scale, varied statistically significantly according to their age groups. The differences were that those between the ages of 40 and 60 demonstrated the best treatment adherence, while those between the ages of 70 and beyond were related with morbidity and those under the age of 40 exhibited a lack of healthy interest. Age affects how well a patient

follows their treatment plan. The differences in adherence behaviors among hypertensive patients of different age groups were obvious, despite the fact that various research have produced contradictory results on the significance of this factor with regard to adherence to antihypertensive medication. Age has been shown to have a negative correlation with commitment behavior. Patients under 60 years old showed improved adherence to antihypertensive medication in an observational cross-sectional study of 1000 hypertension patients in Greece [(30)].

Another investigation into the use of antihypertensive drugs in Turkey among 750 hypertensive patients of various ages discovered a progressive decline in antihypertensive drug adherence with age [(31)].

The findings revealed that male and female patients adhered to their treatment at statistically different rates. The gender of the patients was one of the predictors of their level of commitment. In Taiwan, gender differences were a significant compliance factor (p0.05), with men more likely than women to take antihypertensive medication as directed. Additionally, men outperformed women in terms of a predictor of drug adherence: confidence in better personal control and less symptoms [(32)]. Therefore, a comprehensive review of other characteristics that distinguish health behaviors between genders is necessary when examining disparities in medication adherence behavior between sexes. According to the results of the current study, treatment compliance among patients who are male statistically differs from that of patients who are female; in terms of the statistical mean, male patients have better compliance with treatment than female patients.

The results of the analysis of variance revealed that patients' treatment adherence, as measured by the HBP Compliance Scale, varied statistically significantly according to their monthly income. For individuals with chronic illnesses as well as hypertension, economic status was related to medication adherence. The affordability of the drugs was a factor in this relationship. The cost of antihypertensive drugs ranges from reasonable to expensive. The influence of patient economic status on medication adherence extended beyond the ability to pay for medications; it also included ways to improve medication adherence through education or knowledge, as people with higher incomes typically had better education and, as a result, more in-depth knowledge of medication adherence [(33)].

The results of the analysis of variance revealed that patients' treatment adherence, as measured by the HBP Compliance Scale, varied in a statistically significant way depending on their marital status. Married couples benefit from the disparities since they receive more support than singletons, divorcees, and widows. This findings in agreement with findings from Chinese [(34)] and Shanghai[(35)].

According to the findings of the current investigation, better education significantly improves treatment adherence. Lower levels of education are strongly associated with worse health outcomes, according to scholarly literature. Individual education level significantly improved adherence to antihypertensive medication [(36)].

In a study of 410 hypertension patients in Palestine, the Morisky Medication Adherence Scale was used to evaluate socio-demographic traits in relation to adherence to antihypertensive medication. The level of education of the patient and medication adherence were shown to be significantly correlated in this study. The findings revealed a correlation between rising levels of education and rising MMAS scores (scale scores for medication adherence varied from 0 to 8) [(37)].

Through educational interventions, healthcare workers were able to improve

patients' low health literacy regarding drugs[38]. In comparison to individuals who were uneducated, those who were educated may have an edge in seeking out further health information concerning their medical concerns. It was discovered that the absence of this component could have an impact on how less educated patients' health conditions were managed.

The results of the analysis of variance revealed that patients' treatment adherence, as measured by the HBP Compliance Scale, varied significantly depending on their career. There were two sides to this. The first is having the financial means to pay for medical care and treatment; the second is having a daily routine that enhances the patient's cognitive and functional state and, as a result, makes it easier to stick to a medication schedule. Similar studies including 241 senior Korean hypertension patients revealed that employment was linked to a higher likelihood of adhering to antihypertensive medication than retirement or being unemployed [39]. However, it was stated that employed patients' ability to control their illnesses and stick to their drug regimens was compromised by a hectic lifestyle that might make it difficult to do so. A study looking at the effects of employment on disease management and medication adherence for malaria patients in an outpatient environment in Nigeria with 440 participants found a negative connection between employment and medication adherence [40].

Similar findings were significantly explained by the necessity of taking time from work for the patient to obtain injections and participate in rehabilitation therapy while taking malaria drugs.

The results of the analysis of variance revealed that patients' treatment adherence, as measured by the HBP Compliance Scale, varied significantly depending on their career. That is, medication compliance gradually declines the longer hypertension persists. Similar to how the systematic review shown that treatment adherence declined while HTN lingered. The length of hypertension or the interval after diagnosis was inversely related to treatment compliance [41].

According to the analysis of variance, there were statistically significant variations in the HBP Compliance Scale, which measures medication adherence depending on patient chronic comorbidities. Similar, comorbidities were found to be a significant predictor of treatment non-adherence, and it was hypothesized that patients with comorbidities would have more distressing symptoms and believe they are not any sicker as a result, making them less likely to adhere to therapy [42]. In a similar vein, patients with comorbidities had worse treatment adherence in a study done in Saudi Arabia, which suggested that they could need higher treatment adherence to reduce the additional symptoms that hypertension patients with comorbidities experience. It was not just for a certain illness.

Conclusion

The results of the study showed that patients with high blood pressure adhere to treatment at less than ideal rates and that the majority of socio- demographic factors, including age, gender, monthly income, marital status, level of education, duration of high demographic factors, including age, gender, monthly income, marital status, level of education, duration of high blood pressure and associated diseases, influence this behavior.

Recommendations

Treatment of hypertension in primary health care settings should include required health education and counseling programs regarding the condition and its complications, medication adherence, and dietary control.

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