Original Article

Assessment of Adherence to Healthy Lifestyle and Medications Among Hypertensive Patients in Babylon Province

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Abstract

Background: Hypertension is one of the most common health problems in the world and considered as the most common risk factor for different heart diseases such as coronary heart disease, stroke, renal disease, and peripheral vascular diseases. Adherence to healthy lifestyle and medications plays an important role in controlling hypertension among hypertensive patients and in preventing the long-term complications of hypertension. **Objectives:** The study aimed to assess the adherence to healthy lifestyle and medications in controlling hypertension among hypertensive patients in Al-Hilla city, Iraq. **Materials and Methods:** This study was a "descriptive cross-sectional study" involving about 303 hypertensive patients who visited healthcare centers and hospitals above 18 years by a designed questionnaire through the interview method. The data were collected from April to July 2021. **Results:** The mean age of hypertensive patients was 54.89 ± 10.42 years, females represent 51.2%, males represent 48.8%, adherence of hypertensive patients to healthy lifestyle was 65.3%, and adherence to medications was 55.4%. There was no significant association between adherence to healthy lifestyle and medications and variables in our study (age, sex, marital status, educational level, residence, employment status, socio-economic level, duration of hypertension, family history of hypertension, and measurement of hypertension). **Conclusion:** In this study in Babylon Province, the highest proportions of hypertensive patients adhere to healthy lifestyle (65.3%) and medications (55.4%), and there is no significant association between adherence to healthy lifestyle and medications and variables in our study (age, sex, marital status, educational level, residence, employment status, socio-economic level, duration of hypertension, family history of hypertension, and measurement of hypertension).

Keywords: Hypertension, lifestyle, medications

Introduction

Hypertension commonly known as high blood pressure (BP) is defined as a BP reading of 130 mmHg and higher for the systolic reading and 80 mmHg and higher for the diastolic reading (American Heart Association, 2017).

It is considered as a major public health problem worldwide due to its high prevalence around the globe[1,2] and as the first among the preventable causes of death worldwide.[3]

The elevated BP is strongly and positively correlated with the risk of stroke and coronary heart diseases and its complications include heart failure, renal impairment, and retinal hemorrhage.[4]

Many patients who suffer from hypertension may not be aware of it at an early stage because it is rarely accompanied by symptoms and its detection is usually through screening or when seeking health care for an unrelated condition. Symptoms appear only when BP is very high, which include headache, vertigo, dizziness, and palpitation.[5]

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Due to the asymptomatic nature of hypertension, it is referred to as "the silent killer."[6]

The symptoms of hypertension may not present and the appearance of its side effects may occur after years; acceptance of treatment by patients in the absence of symptoms is usually difficult.[7]

The risk factors are identified and controlled through adherence to pharmacological therapy or lifestyle modification or the combination of both.[8]

The World Health Organization has reported the major risk factors for hypertension, which is classified as metabolic, behavioral, social determinants, and cardiovascular diseases-linked; the behavioral risk factors of hypertension include unhealthy diet, tobacco, physical inactivity, and use of alcohol, whereas metabolic risk factors include obesity, diabetes, and elevated blood lipids.[9]

Hypertension is divided into primary hypertension, called also essential hypertension (90%) which results from an unknown pathophysiological etiology and usually not curable, and secondary hypertension (10%), which results from specific causes such as chronic kidney disease, hyperparathyroidism, Cushing's syndrome, primary aldosteronism, hyperthyroidism, and some medications (e.g., corticosteroids, estrogens, non-steroidal anti-inflammatory drugs, amphetamines, cyclosporine, and erythropoietin). Secondary hypertension can be potentially cured.[10]

The good lifestyle modification and adherence can control and lower the BP as single antihypertensive drugs do.[11]

The research demonstrates that reduced sodium intake and alcohol, weight loss, regular exercise, and cessation of smoking are effective and important lifestyle modification factors in controlling the blood pressure (BP); also diets high in fruits and vegetables and low-fat diet can prevent and decrease the development of BP.[12]

It can be treated effectively with lifestyle modification and pharmacological therapy; the lifestyle modification is advised for all hypertensive patients, regardless of their drug therapy and stage of hypertension.[13]

Studies indicated that unhealthy lifestyle is associated with unhealthy behaviors and poor health outcomes; the understanding of BP measurements, risk factors, and complications is important to the patient to become more compliant to healthy lifestyle and treatment.[14]

The aim of this study is to assess the adherence to healthy lifestyle and medications among hypertensive patients about hypertension.

Materials and Methods

Patients and study design

Data were collected from Merjan Teaching and Babylon Maternity and Children Hospitals and from Merjan and Babil Al-Tadreby Health Care Centers in Babylon Province, Iraq. This study was a descriptive cross-sectional study, and the sources of data were collected from hypertensive patients who came to the emergency unit, those who were admitted in wards, from patients' relatives who are hypertensives, and from patients who attended healthcare centers by a designed and dependable questionnaire through an interview method, and in the days when the authors are available. The period of data collection is from April to July. Inclusion criteria include hypertensive patients above 18 years, and exclusion criteria include patients who refused to participate in answering the questionnaire and who are less than 18 years.

The pilot study was performed for 2 days; 20 patients were taken and excluded from the study to assess the understanding of questionnaire and to assess the time needed for data collection. The total sample size in this study was 303 hypertensive patients, which was estimated according to the following equation:

$$N = z^2 p(1-p) / d^2,$$

$$N = (1.96)^2 * 0.265\ (1-0.265) / (0.05)^2,$$

$$n = 300,$$

where N is the sample size, Z=1.96, P the prevalence of hypertension in Thi-Qar Governorate of 26.5%, and d is the relative precision=0.05.

The first part of questionnaire is about sociodemographic information which includes age, sex, marital status, educational level, employment status, residence, socio-economic level, family history of hypertension, any associated diseases, the duration of hypertension, and BP measurements.

The second part of the questionnaire is about adherence to healthy lifestyle which includes asking the patients five questions with answer "Yes" or "No," and the patients were considered as "adherent" when they answer 4 out of 5 and "not adherent" when they answer 3 and less.[15]

The third part of the questionnaire is about adherence of patients to antihypertensive medications which includes asking the patients four questions with answer "Yes" or "No," the patient was considered as "adherent" when answer was "No" to all questions and "not adherent" if answer was "Yes" to at least one question.[16]

Statistical analysis

Statistical analysis was carried out using SPSS version 25. Categorical variables were presented as frequencies and percentages. Continuous variables were presented as (means ± SD). Student's *t*-test was used to compare means between the two groups. The analysis of variance test was used to compare means among three groups or more. Pearson's χ^2 and Fisher exact tests were used to find the association between categorical variables. A *P*-value of ≤ 0.05 was considered significant.

Ethical approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before the sample was taken. The study protocol and the subject information and consent form were reviewed and approved by a local Ethics Committee according to the document number 7951 including the number and date (17/8/2021) to get this approval.

Results

Figure 1 shows the distribution of hypertensive patients according to adherence to lifestyle. Largest proportions (65.3%) of hypertensive patients adhere to lifestyle, and 34.7% did not adhere to healthy lifestyle.

The scoring system includes 5 points and considered as "adherent" when 4 out of 5 points were answered and "not adherent" when 3 and less were answered.

Figure 2 shows the distribution of hypertensive patients according to adherence to medications. Largest proportions

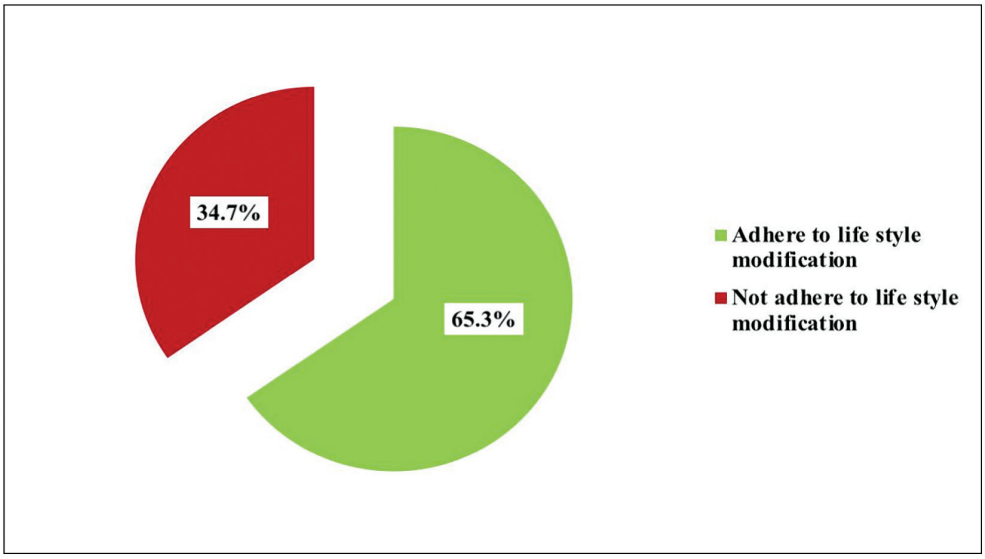

Figure 1: Distribution of hypertensive patients according to adherence to lifestyle

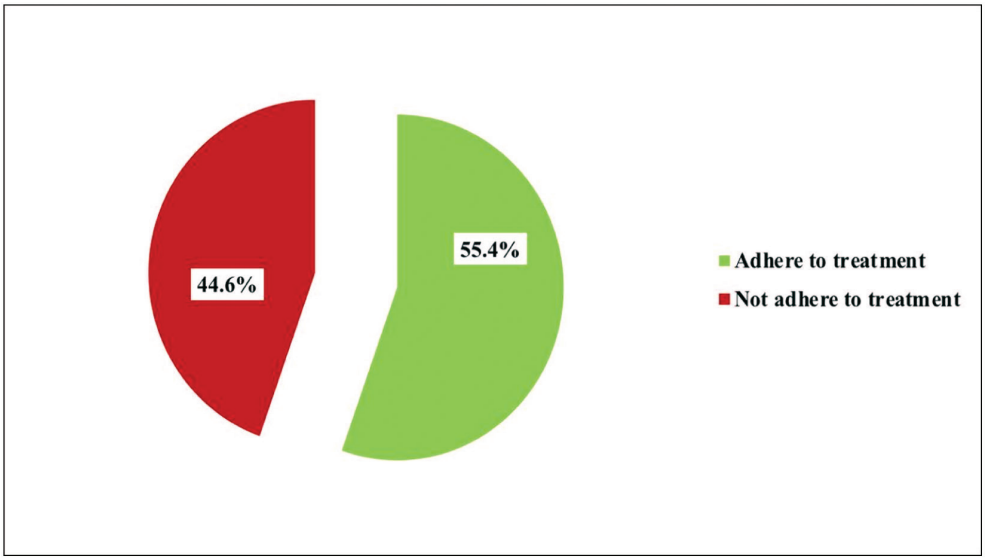

Figure 2: Distribution of hypertensive patients according to adherence to medications

Table 1: Mean differences of age and duration of hypertension according to adherence to lifestyle

Sociodemographic characteristics	Lifestyle	No.	Mean	SD	*t*-test	*P*-value
Age (years)	Adherent	198	54.12	10.38	−1.779	0.076
	Not adherent	105	56.35	10.40		
Duration of hypertension (years)	Adherent	198	6.50	4.57	0.089	0.929
	Not adherent	105	6.45	4.24		

Table 2: Mean differences of age and duration of hypertension according to adherence to medication

Sociodemographic characteristics	Adherence to medications	No.	Mean	SD	*t*-test	*P*-value
Age (years)	Adherent	168	55.55	10.27	1.240	0.216
	Not adherent	135	54.06	10.59		
Duration of hypertension (years)	Adherent	168	6.48	4.32	0.002	0.999
	Not adherent	135	6.48	4.63		

(55.4%) of hypertensive patients adhere to medications, and 44.6% did not adhere to medications.

The scoring system includes 4 points and considered as "adherent" when answer was "No" to all questions and "not adherent" if answer was "Yes" to at least one question.

Table 1 shows the mean difference of age and duration of hypertension according to adherence to lifestyle. There was no significant association between age and duration of hypertension with adherence of patients to lifestyle (P>0.05).

Table 2 shows the mean difference of age and duration of hypertension according to adherence to medications. There were no significant differences between age and duration of hypertension with adherence of patients to medications (P>0.05).

Table 3 shows the association between adherence to medications and sociodemographic characteristics. These include sex, marital, employment and educational status, residence, income level, family history, and duration of hypertension. There is no significant association between adherence to medications and sociodemographic characteristics (P>0.05).

Discussion

This cross-sectional study was done on hypertensive patients in Al-Hilla city, Iraq. The mean age was 54.89 ± 10.42 years (range 19–80). The mean systolic BP was 140.54 ± 13.83 mmHg (range 120–200), whereas the mean diastolic BP was 87.23 ± 9.45 mmHg (range 70–110). About 48.8% were males and 51.2% females, 86.8% were married, 32.7% had secondary education, 33.7% were housewives, 80.9% were living in the urban area, 39.3% had a low socio-economic level, 61.4% of them had a family history of hypertension, 58.7% had no history of any associated diseases, 17.2% had history of diabetes mellitus, and 43.9% had hypertension with a duration of 5–10 years.

In other studies in Urban Ghana,[17] the following results were found: the mean age was 64.1 ± 1.31 years (range 27–94); 29.14% were males and 70.82% were females. About 30.28% had no history of any associated diseases, whereas 69.73% had history of associated diseases.

The adherence to lifestyle in our study found that the largest proportions were adherent to healthy lifestyle (65.3%) and 34.7% were not adherent to healthy lifestyle. Other studies in Eastern Ethiopia show nearly similar results, with 62.1% were adherent to healthy lifestyle and 37.9% were not adherent to healthy lifestyle. The largest proportions were adherent to medications (65.3%), whereas 34.7% were not adherent to medications. A study in Massachusetts University[16] shows similar results, with 65% being adherent to medications and 35% not adherent to medications.

Regarding the adherence to healthy lifestyle in our study Table 4, the results show that there is no significant association between healthy lifestyle and sociodemographic characteristics in our study (sex, marital status, educational status, employment status, residence, family history, income level, and duration of hypertension). A study in Addis Ababa, Ethiopia[18] shows that there is a significant association between adherence to lifestyle and sex (P = 0.01), with 63.5% of patients adhering to healthy lifestyle. They were females and also had a significant association with the duration of hypertension (P = 0.006), with 53.4% of patients adhering to healthy lifestyle were less than 5 years duration of hypertension and there is no association with marital status.

About adherence to medications in our study, the results show no significant association between adherence to medication and sociodemographic characteristics (sex, marital status, educational level, employment status, residence, income level, family history, and duration of

Table 3: Association between adherence to medications and sociodemographic characteristics

Sociodemographic characteristics	Adherence to medications		Total	*P*-value
	Adherent (no., %)	Not adherent (no., %)		
Sex				
Male	84 (50.0%)	64 (47.4%)	148 (48.8%)	
Female	84 (50.0%)	71 (52.6%)	155 (51.2%)	0.654
			303 (100.0%)	
Marital status				
Married	142 (84.5%)	121 (89.6%)	263 (86.8%)	
Single	8 (4.8%)	7 (5.2%)	15 (5.0%)	
Divorced	1 (0.6%)	1 (0.7%)	2 (0.7%)	0.268
Widowed	17 (10.1%)	6 (4.4%)	23 (76%)	
			303 (100.0%)	
Educational level				
Illiterate	17 (10.1%)	8 (5.9%)	25 (8.3%)	
Primary	47 (28.0%)	36 (26.7%)	83 (27.4%)	0.520
Secondary	51 (30.4%)	48 (35.6%)	99 (32.7%)	
High education	53 (31.5%)	43 (31.9%)	96 (31.7%)	
			303 (100.0%)	
Employment status				
Employee	41 (24.4%)	34 (25.2%)	75 (24.8%)	
Free work	43 (256%)	42 (31.1%)	85 (28.1%)	0.665
Housewife	59 (35.1%)	43 (31.9%)	102 (33.7%)	
Retired	25 (14.9%)	16 (11.9%)	41 (13.5%)	
			303 (100.0%)	
Residence				
Rural area	36 (21.4%)	22 (16.3%)	58 (19.1%)	
Urban area	132 (78.6%)	113 (83.7%)	245 (80.9%)	0.259
			303 (100.0%)	
Socio-economic level				
High (>1,000,000)	35 (20.8%)	34 (25.2%)	69 (22.8%)	
Moderate (500,000–1,000,000)	66 (39.3%)	49 (36.3%)	115 (38.0%)	0.659
Low (<500,000)	67 (39.9%)	52 (38.5%)	119 (39.3%)	
			303 (100.05)	
Family history				
Yes	103 (61.3%)	83 (61.5%)	186 (61.4%)	
No	65 (38.75)	52 (38.5%)	117 (38.6%)	0.976
			303 (100.0%)	
Duration				
Less than 5 years	9 (5.4%)	15 (11.1)	24 (7.9%)	
5–10 years	79 (47.0%)	54 (40.0)	133 (43.9)	0.142
10–15 years	44 (26.2%)	27 (20.0%)	71 (23.4)	
15–20 years	16 (9.5%)	17 (12.6%)	33 (10.9)	
≤ 20 years	20 (11.9%)	22 (16.3%)	42 (13.9%)	
			303 (100.0)	

hypertension). A study in Saudi Arabia[19] shows also no significant association with sex, marital status, educational level, employment status, and income level, regarding adherence to medication.

The strengths of the study include hypertensive patients who are diagnosed by a specialist physician, patients who are on antihypertensive medication, and patients who are newly diagnosed as hypertensives. The limitation of the study includes patients who refuse to participate in answering the questionnaire and patients with one reading of high BP who are not hypertensive (emergency cases).

Conclusion

In this study, it was found that the highest proportions of hypertensive patients (65.3%) were adherent to healthy lifestyle and (55.4%) were adherent to medication.

Table 4: Association between adherence to lifestyle and sociodemographic characteristics

Sociodemographic characteristics	Adherence to lifestyle		Total no. (%)	*P*-value
	Adherent no. (%)	Not adherent no. (%)		
Sex				
Male	104 (52.5%)	44 (41.9%)	148 (48.8%)	0.078
Female	94 (47.5%)	61 (58.1%)	155 (51.2%)	303 (100.0%)
Marital status				
Married	175 (88.4%)	88 (83.8%)	263 (86.8%)	0.438
Single	8 (4.0%)	7 (6.7%)	15 (5.0%)	
Divorced	2 (1.0%)	0 (0.0%)	2 (0.7%)	
Widowed	13 (6.6%)	10 (9.5%)	23 (7.6%)	
			303 (100.0%)	
Educational status				
Illiterate	13 (6.6%)	12 (11.4%)	25 (8.3%)	0.524
Primary	55 (27.8%)	28 (26.7%)	83 (27.4%)	
Secondary	67 (33.8%)	32 (30.5%)	99 (32.7%)	
High education	63 (31.8%)	33 (31.4%)	96 (31.7%)	
			303 (100.0%)	
Employment status				
Government employee	51 (25.8%)	24 (22.9%)	75 (24.8%)	0.467
Free work	60 (30.3%)	25 (23.8%)	85 (28.1%)	
Housewife	62 (31.3%)	40 (38.1%)	102 (33.7%)	
Retired	25 (12.6%)	16 (15.2%)	41 (13.5%)	
			303 (100.0%)	
Residence				
Rural area	35 (17.7%)	23 (21.9%)	58 (19.1%)	0.373
Urban area	163 (82.3%)	82 (78.1%)	245 (80.9%)	
			303 (100.0%)	
Income level				
High (>1,000,000) IQD/month	44 (22.2%)	25 (23.8%)	69 (22.85)	0.935
Moderate (500,000–1,000,000) IQD/ month	75 (37.9%)	40 (38.1%)	115 (38.0%)	
Low (<500,000) IQD/month	79 (39.9%)	40 (38.1%)	119 (39.3%)	
			303 (100.0%)	
Family history				
Yes	121 (61.1%)	65 (61.9%)	186 (61.4%)	0.893
No	77 (38.9%)	40 (38.1%)	117 (38.6%)	
			303 (100.0%)	
Duration				
Less than 5 years	17 (8.6%)	7 (6.7%)	24 (7.9%)	
5–10 years	81 (40.9%)	52 (49.5%)	133 (43.9%)	0.303
10–15 years	53 (26.8%)	18 (17.1%)	71 (23.4%)	
15–20 years	22 (11.1%)	11 (10.5%)	33 (10.9%)	
Equal or more than 20	25 (12.6%)	17 (16.2%)	42 (13.9%)	

There is no significant association between neither the adherence to healthy lifestyle nor the adherence to medication with sociodemographic characteristics in our study (age, sex, educational and employment status, income level, marital status, residence, and family history of hypertension).

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Nil.

Conflicts of interest

There are no conflicts of interest.

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