Compliance of Hypertensive Patients to Medication Attending The Outpatient Clinics Of Internal Medicine in AL-Imam AL-Hussein medical City- Kerbala- 2018

A thesis

Submitted to the Council of College of Medicine – University of Kerbala as Partial fulfillment of the Requirements for the Degree of Higher Diploma in Family Medicine

By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الَّذِينَ آمَنُواْ وَتَطْمَئِنُّ قُلُوبُهُم بِذِكْرِ اللَّهِ أَلاَ بِذِكْرِ اللَّهِ تَطْمَئِنُّ الْقُلُوبُ ▢

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Supervisor Certification

We certify that this thesis entitled (Compliance of Hypertensive Patients to Medication Attending The Outpatient Clinics of Internal Medicine in AL-Imam AL-Hussein medical City in Kerbala /2018) was prepared under my supervision in the department of family and community medicine ,College of Medicine ,University of Kerbala as a partial fulfillment of the degree of Higher Diploma (2 calendar years) in family medicine.

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Acknowledgements

Dedications

To

Great heart … My father .

Great lady … My mother.

Pure soul …My sister.

Helper & supporter… My brothers .

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List of Abbreviations

Abbreviation	Key
BP	Blood Pressure
CVA	Cerebrovascular Accident
DBP	Diastolic Blood Pressure
DM	Diabetes Mellitus
HTN	Hypertension
IQD	Iraqi Dinar
MMAS-8	8-Item Morisky Medication Adherence Scale
MI	Myocardial Infarction
SBP	Systolic Blood Pressure
SD	Stander Deviation
USA	United States of America
WHO	World Health Organization

Abstract

Background

High blood pressure is a major risk factor for coronary artery diseases and its complications, heart failure, renal insufficiency, stroke and blindness in diabetic patients (1) . It is expected to cause 7.5 million deaths worldwide, around 12.8% of the whole deaths (8) .

Noncompliance to antihypertensive treatment results in uncontrolled high blood pressure and poor clinical results. The aims of management hypertensive patients are to prevent complications, improve their quality of life and reduction of mortality through patient's compliance to medication therapy ⸳

Objectives

This study is designed to determine the compliance of hypertensive patients attending the consultation clinics of internal medicine in Al-Imam Al-Hussein medical city with treatment regimen and the causes of noncompliance ⸳

Patients and methods

A descriptive cross- sectional study was conducted in the outpatient clinics of Al- Imam Al-Hussein medical city in Kerbala during the period from March through June 2018⸳ Total study sample was 335 hypertensive patients, their ages over 25 years who were selected by convenience sampling procedure according to the inclusion criteria . They were interviewed and assessed using special questionnaire format based on sociodemographic data, Morisky 8- item medication adherence scale (MMAS-8) ,and measuring of blood pressure of each participant was done by the researcher. Data were collected, entered and analyzed using statistical package for social science program (SPSS software version 20).

Results

The study revealed that the mean age of the patients was 58.69 ± 11.87 SD years. About 49⸱6% of the patients were in the age group of ≥ 60. Males were 43⸱3%. Good compliance with treatment was present in only 28.36% of the sample, 25⸱67% with partial compliance and 45.97% had poor compliance. Around 70.4%of patients had family history of hypertension.

About 38⸱2 % of the patients were measuring their BP at governmental clinics (primary health care centers or hospitals), while 26⸱3% measure it at private clinics , and 40⸱6% tend to measure their blood pressure monthly .

Good control of blood pressure was present only in 23.3% of the patients.

The absence of symptoms was the first isolated cause of non-compliance to medication 21⸱9% , followed by forgetfulness 18⸱8% , the cost of medication 16⸱3% then negligence and carelessness of patients 9.4%,while 23.1% of the patients had more than one specific reason to their poor compliance .

Conclusions

The study existing a low rate of medication compliance and low level of blood pressure control with strong association between them. Compliance increased with age, male gender, higher level of education and high income, longer duration of the disease, presence of complications, using healthy diet and having positive believe about hypertension treatment and its consequences. 23.1% of the patients with poor compliance had more than one specific reason for their low adherence rate, while the main isolated causes were the absence of symptoms followed by forgetfulness ,cost of medication, carelessness and side effects of drug

Chapter one

Introduction

1-Introduction

Hypertension (HTN) is a prevalent disease and remains one of the most significant causes of death worldwide. High blood pressure (BP) is a major risk factor for coronary artery disease and its complications, heart failure, renal insufficiency, stroke and blindness in diabetic patients .(1)

It is one of the most important risk factors for cardiovascular morbidity and mortality which is, reported by the World Health Organization (WHO) as the leading cause of death worldwide. (2)

Globally, HT affects over one billion people, with an overall prevalence of around 40% in adults aged 25 years and over in 2008, with high prevalence in Africa, followed by Eastern Mediterranean, while Europe recorded higher prevalence of HT than USA (3) . Iraq reported the highest prevalence of HTN 41.4% among Eastern Mediterranean countries (4).

Only 57% of identified hypertensive patients receiving medical treatment in the United States have controlled blood pressure. (5)

It is estimated that 32% of total strokes and 15% of cases of acute myocardial infarction among patients treated for hypertension can be associated with poor controlled blood pressure. (5)

Middle and low-income countries have higher prevalence of HTN, as the numbers of persons with HTN who are undiagnosed, untreated and uncontrolled are high.(2)

Information from different national and local surveys show that hypertension is common in developing countries, specifically in urban regions , where the amounts of awareness, control and treatment are low.(6)

The updated hypertension guideline alternates the definition of hypertension, which is currently considered to be any systolic BP measurement of 130 mm Hg or higher or any diastolic BP measurement of 80 mm Hg or higher.(7)

Previously hypertension was defined as systolic blood pressure (SBP) of 140 mmHg or higher, or diastolic blood pressure (DBP) of 90 mmHg or higher.(8)

In the new guideline, measurement of 140/90 mm Hg or more is considered stage 2 hypertension. Persons with stage 1 or stage 2 hypertension must ask the physician for treatment. Very high BP (systolic more than 180 mm Hg or diastolic more than 120 mm Hg) with target organ damage is considered an emergency.(7)

Follow-up with treatment adjustment must remain until the goal of blood pressure (BP) less than 140/90 mmHg is attained. This level is essential to reduce the risk of cardiac diseases. The aim for patients with hypertension and co-morbidities such as diabetes or renal disease is to reach a blood pressure less than 130/80 mmHg. (9)

Hypertension is classified depending on its cause into primary (essential or idiopathic) and secondary hypertension. Secondary hypertension represents about 5-10% of the cases of hypertension and results from an underlying, recognizable cause. In the remaining 95% of the cases, no identified cause is being known even with the complete medical investigations .(10)

The pathogenesis of primary (essential) hypertension is not well understood, though scientists consider that the primary pathology is in the kidney, peripheral blood vessels or the sympathetic nervous system and in some cases affecting several systems in the body.(11)

Causes of secondary hypertension include: pregnancy , renal diseases including renal parenchymal diseases, renal vascular diseases and polycystic kidney disease, Coarctation of aorta, endocrine diseases e.g. phaechromocytoma, Cushing's syndrome, hyperparathyroidism, Conn's syndrome, acromegaly and thyrotoxicosis, drugs e.g. estrogen containing oral contraceptives, non-steroidal anti-inflammatory drugs (NSAIDS) and anabolic steroids. (12)

The risk factors for the development of hypertension include overweight, obesity , diabetes mellitus, alcohol, high salt diet, high cholesterol , smoking, physical inactivity and unhealthy diet ,these considering modifiable risk factors. (7,12)

While relatively fixed risk factors include increased age, family history, psychosocial stress, obstructive sleep apnea, low birth weight, premature birth, chronic kidney diseases , male sex, low socioeconomic status (7).

'Rule of halves' states that half of hypertensive patients are not known to health services (i.e. remain undiagnosed), half of those with known hypertension do not receive any treatment and half of those who are treated, do not achieve adequate control (13).

Successful control of blood pressure is necessary for the reduction of morbidity and mortality rates , several studies have demonstrated the influence of antihypertensive medication in improving the clinical results. Compliance with antihypertensive medication is one of the most important factors affecting hypertension management results in terms of quality of life and complications.(14)

For the treatment of hypertension, wide range of antihypertensive drugs are now available, as well as therapeutic lifestyle modifications such as increased physical activity, weight reduction, and reduction of dietary salt intake, which have been proved to be important in the disease management.(12)

Regular exercise is a well-established intervention for the promotion and treatment of several long-lasting diseases, including hypertension .Higher levels of physical activity and cardiorespiratory fitness have shown to reduce the possibility of hypertension in healthy normotensive persons .(15)

The specific type and amount of exercise essential for optimal lowering of blood pressure is not clear. Though, the recommendations which are derived from the American College of Sports Medicine guidelines to promote and conserve adult fitness include moderate aerobic, like walking for 30 min. daily for 5 days per week or vigorous like cycling ,jogging and running for 20 min. per day for 3 days per week.(16)

The dietary approach to control and treat hypertension is a dietary pattern that promotes the ingestion of vegetables ,fruits, and low-fat dairy products, contains nuts , poultry , fish, and full grains and attempts to decrease the consumptions of sweets, sugar-containing beverages, red meat, cholesterol, total fat , saturated fat , reduction of salt intake and combination with other methods such as weight loss or physical activity. (17)

Reduction in BP is connected with reduction in the rate of cardiovascular heart disease and stroke. Though, systolic blood pressure (SBP) has strong association (compared with diastolic blood pressure (DBP)) with the total disease burden of hypertension.(18)

The barriers for controlling hypertension are well-known and include patient causes, like non-adherence to drug treatment or lifestyle recommendations , and healthcare worker causes, including the organization and the setting where the care is provided.(14)

Non adherence to antihypertensive medication is the main cause for failure to control blood pressure among persons under treatment.(12)

Medication adherence is defined by WHO as "the level to which the medication-taking behavior of the patient agrees with approved recommendations from the health care provider.(19)

The term compliance to medicine is defined as "the extent to which the patient acts in accordance with the recommended interval and amount of the dosing regimen" reported as the percentage of the recommended doses taken at the recommended time interval .Even with these differences, these terms have been used interchangeably in most studies .(20)

The World Health Organization classifies the factors of poor medication adherence into five categorizations, including socioeconomic factors, factors related to the health system, therapy-related factors, disease-related factors and patient-related factors. Recognizing the influence of all these factors lead to the development of interventions that can result in increasing the medication adherence effectively.(21)

Compliance with medication on the individual level improves the quality of life by preventing medical problems and so that early death. Towards the family, it prevents the adverse emotional effect related to unexpected loss or living with a family member suffering from long-lasting devastating disease like stroke. It also protects the family incomes that have been used to get medical care, also to the society, compliance with medication is a cost preserving method as it decreases the occurrence of complications and the need for additional treatments .(11)

It is very important to determine the reasons of the patients' non-adherence to their drug regimen . Studies have established that the patients who are on continuing treatment are more liable to non-compliance than persons who take the drugs for short time . Also, the patients with other disorders than the specific disease are with low compliance due to the using of multiple drugs . The cases of non-compliance in chronic and comorbid conditions can relate to the high drugs frequencies or to the difficult treating programs.(22)

Lower adherence to antihypertensive drug therapy was detected in newly diagnosed hypertensive patients and new antihypertensive treatment users.(23)

The patients' age and socio-economic condition is directly connected with the incidence of non-compliance. Geriatric patients are well-known to have higher incidence of non-compliance in contrast to the rest of the population.(22)

High cost of medications and avoiding the side effects of the drugs are mainly associated with nonadherence to treatment particularly when the patients have the belief that the drug's side effects outweigh the possible benefits.(19)

Low socioeconomic status and low monthly income, lack of family support, awareness ,knowledge and belief concerning hypertension and its management, forgetfulness, absence of symptoms ,distance from health services ,irregular follow-up, do not understanding the drug regimen well and dissatisfaction with the treatment and health services provided were

significantly associated with poor adherence to antihypertensive drug therapy .(20)

Methods for assessment of treatment compliance can be classified into direct and indirect . Neither of these methods is completely sufficient.(23)

Direct methods include directly observed therapy and measure the plasma drug concentration. Plasma drug concentration may be difficult to take, dependent on the period between drug consumption and when the blood sample is taken, medication pharmacokinetics, and the individual variations in absorption and metabolism. (23)

Indirect methods are the most widely used methods to measure the medication adherence which include patient interview, questionnaires , self-reports, prescription refill rates, pill counts, electronic medication monitors and assessment of the patient's clinical response.(24)

Electronic medication monitors are pillboxes provided with a microprocessor which accounts the time and date of every opening of the container, therefore giving correct and complete information on adherence. However, this method is expensive and usually limited to clinical research.(23)

Adherence to long-standing treatment for chronic diseases in developed countries around 50%. In developing countries, the rates are too lower.(25)

Objectives ▯–

1- To evaluate the compliance rate of hypertensive patients with their

medications by using a well-structured questionnaire.

2- To identify the causes of non-compliance .

3- To assess the socio-demographic characteristics of the patients , beliefs

about the disease, risk factors, and complications in relation to the

compliance.

Chapter Two

Patients and methods

2.1. Study design ,setting and time

A descriptive cross sectional hospital based study was conducted at the medical consultation clinics of Al-Imam Al- Hussein medical city in Kerbala 2018 to assess the compliance of hypertensive patients to medication ⍰

2.2.Ethical considerations

Ethical approvals were obtained from the research committee in the College of Medicine in Kerbala University and from the research ethical committee in Kerbala health directorate⍰
Verbal consent was taken from each patient prior to the interview, after a brief explanation on the study and its objectives.

2.3.Study sample

The study included a sample of 335 hypertensive patients of both males and females their ages above 25 years attended the consultation clinics of internal medicine of Al-Imam Al- Hussein medical city .

2.4.Inclusion and exclusion criteria

Inclusion criteria of the patients were diagnosed with essential HTN for not less than 6 months, age of 25 years and more, taking antihypertensive treatment for not less than 6 months. Pregnant women, severely ill, untreated hypertensive patients and those with psychiatric diseases were all excluded.

2.5.Sample size

Sample size was determined according to Fisher's formula .

n= $\frac{Z^2 P(1-P)}{d^2}$

n=sample size

Z= 1.96 which is the corresponding value for the 95% confidence interval .

P= prevalence of non-compliance ,assumed to be 57.9% (3)

= 0.58 to get a larger sample size .

d= the degree of accuracy required taken as 0.05 at 95% confidence interval.

n= (1.96*1.96)*0.58 (1-0.58)/ 0.05 *0.05

= 3.841*0.58*0.42/0.0025

=374   and then the estimated sample was 335 patients, because the time of the study was not enough to get the assumed sample size .

2.6. Sampling procedure

Convenience non probability sampling procedure was done to select the study participants that fit research criteria who attended the consultation clinics of the internal medicine during the study period.

2.7.Pilot study

The questionnaire has been reviewed and approved by the supervisor, then tested in a pilot study on 12 patients in order to detect the acceptance, understanding, and to estimate the time required to complete each form .

The pilot study was carried out two weeks prior to data collection from the first – mid of March, 2018 and was revealed good acceptance, with 100% response rate, minor modifications on the questionnaire were done.

2.8.Data collection and sampling technique

Data collection was done during the period from the mid of March through June, 2018.

A specially designed questionnaire including the socio-demographic part which includes age, gender, occupation, marital status, educational level, residence, income, family history and the duration of the disease and compliance to medication part was based on Morisky 8 Item Medication Adherence Scale (MMAS-8). (26)

The MMAS-8 was designed to evaluate the patients adherence to their medical treatment .It consists of 8 questions. From questions 1 to 7, the answer choices are "yes" or "no". The eighth question is answered according to a scale of five options: never, almost never, sometimes, frequently, and always. The total score of this scale is from 0 to 8.

The classification of patients according to their scores is as follows: less than 6 (low adherence), 6 or 7 (moderate adherence), and 8 (high adherence). This scale presented a sensitivity of 93% in discovering those patients with poor adherence . (26)

The time needed for each interview was nearly 15 minutes, and the number of forms that can be completed was 12-15 forms / day.
A questionnaire form had been filled for each patient through direct interview in average of 2 days per week.

Smoking history was taken through the interview .Smoking was defined as current use, at the time of the study, of cigarettes. An ex-smoker was defined as an individual who had stopped smoking for the past 6 months and a non-smoker was a person who is not smoked.(27)

Measurement of BP for each patient was done using a mercury sphygmomanometer at the end of the interview while the participants were in the resting state and in seated position , and should avoid smoking, caffeine, and exercise for at least 30 minutes before the measurement. support the arm used to measure BP . The measurement was done on both arms and the highest reading was taken.(7)

Compliance for each patient was measured at the end of the interview and the non– compliant patients were asked about the reasons for their non-compliance to medication, while compliant patients with uncontrolled blood pressure were instructed to follow up with their treating physician.

2.9.Statistical analysis

Data entered and analyzed by statistical package for social science program (SPSS software version20). It presented in figures, tables, frequencies and percentages. The chi-square (χ2) and Fisher- exact tests were used to find the associations between the variables with compliance score. The association considered statistically significant when the P-value is ≤ 0.05.

Chapter Three

Results

3-Results

Table 1 ▯ The distribution of the patients according to the socio-demographic characteristics including (age, gender, residence, occupation, marital status, income, and education).

Socio-demographic Characteristics	N	%
Age		
< 40	12	3.6%
40-59	157	46.8%
≥ 60	166	49.6%
Total	335	100.0%
Gender		
Male	145	43.3%
Female	190	56.7%
Total	335	100.0%
Residence		
Urban	272	81.2%
Rural	63	18.8%
Total	335	100.0%
Occupation		
Employee	41	12.2%
Free work	56	16.7%
Retired	33	9.9%
Not working	46	13.7%
Housewives	159	47.5%
Total	335	100.0%
Marital status		
Single	3	0.9%
Married	244	72.8%
Divorce	8	2.4%
Widow	80	23.9%
Total	335	100.0%
Monthly Income		
< 500000 I.Q.D	244	72.8%
500000-1000000 I.Q.D	85	25.4%
More than 1000000 I.Q.D	6	1.8%
Total	335	100.0%
Education		
Illiterate	111	33.1%
Read and write	71	21.3%
Primary	74	22.1%
Secondary	41	12.2%
Higher education	38	11.3%
Total	335	100.0%

*Mean age of patients and stander deviation(SD) was (58.69 ± 11.87).

As shown in Table 1, the ages of respondents ranged between 26 to 94 years.

About 49.6 % of the patients were in age group of ≥ 60 years .

43.3% of the patients were males and 56.7% were females, 72.8% were married

and 81.2% lived in urban area .

Of the total population of the study 47.5% were housewives, 33.1% were

illiterate while those with higher education were only 11.3% , and 72.8%

of the patients were with low monthly income .

Table 2: The distribution of the patients according to study variables including (Family history of hypertension, duration of hypertension, number of antihypertensive drugs used, number of daily doses, source of drug, frequency of blood pressure measurement and place of blood pressure measurement).

Study variables	N	%
Family history of hypertension		
Yes	236	70.4%
No	99	29.6%
Total	335	100.0%
Duration of hypertension		
≤ 5 years	122	36.4%
6-9 years	104	31.0%
10 years or more	109	32.6%
Total	335	100.0%
Number of antihypertensive drugs used		
One drug	303	90.4%
Two drugs	32	9.6%
Three drugs and more	0	0.0%
Total	335	100.0%
Number of doses daily		
Once daily	233	69.6%
Twice daily	101	30.1%
Three times daily	1	0.3%
Total	335	100.0%
Source of antihypertensive drugs		
Hospital	6	1.8%
Public clinic	2	0.6%
Private pharmacy	300	89.6%
More than one source	27	8.0%
Total	335	100.0%
Frequency of blood pressure measurement		
Daily	36	10.7%
Weekly	134	40.0%
Monthly	136	40.6%
Every 3 months and more	29	8.7%
Total	335	100.0%
Place of blood pressure measurement		
Home	64	19.1%
Hospital	105	31.3%
Primary health care center	23	6.9%
Private clinic	88	26.3%
More than one place	55	16.4%
Total	335	100.0%

As shown in Table 2, about 70.4% of the patients had family history of hypertension, 32.6 % of hypertensive patients their duration of the disease were 10 years and more , 90.4% of them used one medication per day for the treatment of hypertension and 69.6% were taking the antihypertensive drug once daily. Of the sample nearly 38.2 % of the patients tend to measure their BP at governmental clinics (primary health care centers or hospitals) while 26.3% measure it at private clinics and 19.1% at home . 40% tend to measure their BP weekly ,while 40.6% measure it monthly and only 8.3 % measure their BP every 3 months or more .

Table 3: The frequency distribution of the patients according to study variables including (smoking habit, use of healthy diet, regular exercise, presence of other diseases, history of complications and belief of the patient regarding regular treatment).

Study variables	N	%
Smoking habit		
Smokers(current cigarettes use)	42	12.5%
Passive smokers	33	9.9%
X-smokers	97	29.0%
Non smokers	163	48.7%
Total	335	100.0%
Use of healthy diet		
Always	82	24.5%
Sometimes	205	61.2%
Never use healthy diet	48	14.3%
Total	335	100.0%
Regular exercise		
Yes	45	13.4%
No	290	86.6%
Total	335	100.0%
History of other diseases		
Yes	188	56.1%
No	147	43.9%
Total	335	100.0%
Types of chronic diseases		
Diabetes mellitus	151	80.3%
Asthma	9	4.8%
DM and asthma	2	1.1%
Other diseases	26	13.8%
Total	188	100.0%
Presence of complications		
Yes	151	45.1%
No	184	54.9%
Total	335	100.0%
Types of complications		
Angina	72	47.7%
MI	20	13.2%
Heart failure	21	13.9%
CVA	24	15.9%
Renal failure	3	2.0%
Visual complication	8	5.3%
Multiple complications	3	2.0%
Total	151	100.0%
Belief of patient regarding regular treatment		
Yes	277	82.7%
No	58	17.3%
Total	335	100.0%

As shown in Table 3, about 48.7% of the patients were non–smokers,

29.0% were x–smokers ,12.5% were smokers and 9⬚9% were passive smokers.

Only 24.5% of the patients used a healthy diet .

Regular physical activities were reported by only 13.4% of participants.

About 56.1% of the patients with history of other diseases and

80.3% of them had diabetes mellitus.

Around 54.9% of the patients had no complications and 45.1% were having

complications.

Figure 1 shows the distribution of the patients according to blood pressure measurement. 43% of the patients presented with stage II hypertension (>140/>90 mmHg), while 23.3% of the patients had normal blood pressure (<120/<80) and 20.9% were with stage 1 hypertension (BP 130─139/80─89).(7)
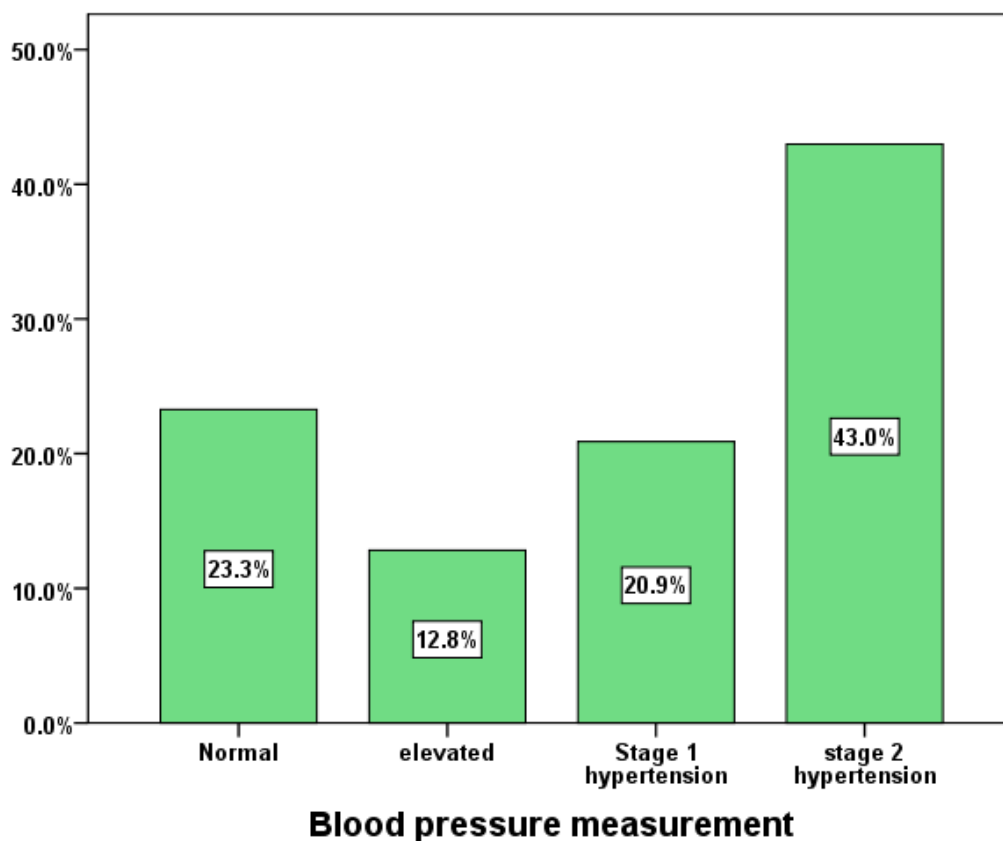
Figure 1: Distribution of the patients according to blood pressure measurement

Figure 2 shows the distribution of the patients according to the compliance

with antihypertensive drugs . 45.97% of the patients presented with low

compliance to treatment (score < 6) . Good compliance (score = 8) with

treatment was present in only 28.36 % of the sample ,while 25.67 % had

partial compliance (score 6 ─ < 8) .
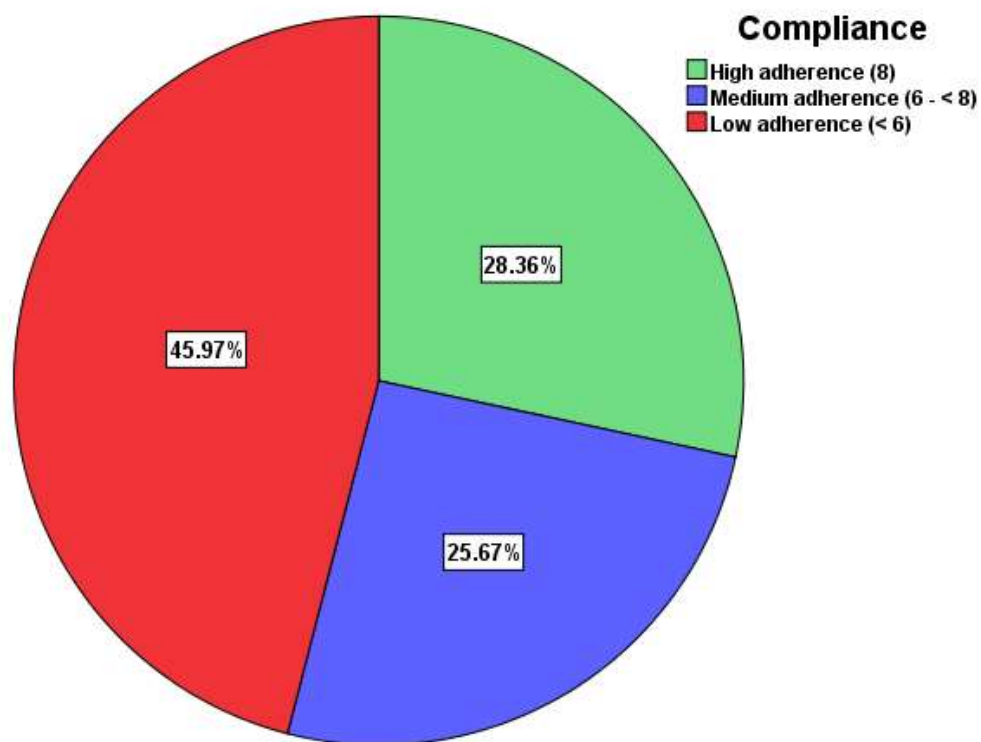
Figure 2: Compliance to medications according to Morisky medication 8-item

adherence scale among hypertensive patients .

Figure 3️ shows the distribution of the patients according to the causes of poor

compliance with antihypertensive drugs. 23.1% of the patients had more than one

specific reason to poor compliance. The absence of symptoms was the first isolated

cause of non-compliance to medication 21.9%, followed by forgetfulness 18.8%, the

cost of medication 16.3% , then negligence or carelessness of the patients 9.4% ,and

avoidance of drug because of the side effects 8.1% .

**Figure 3: causes of poor compliance with antihypertensive drugs according to
the patient's opinion.**

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Table 4: The Association between compliance with antihypertensive drugs and sociodemographic characteristics of the patients.

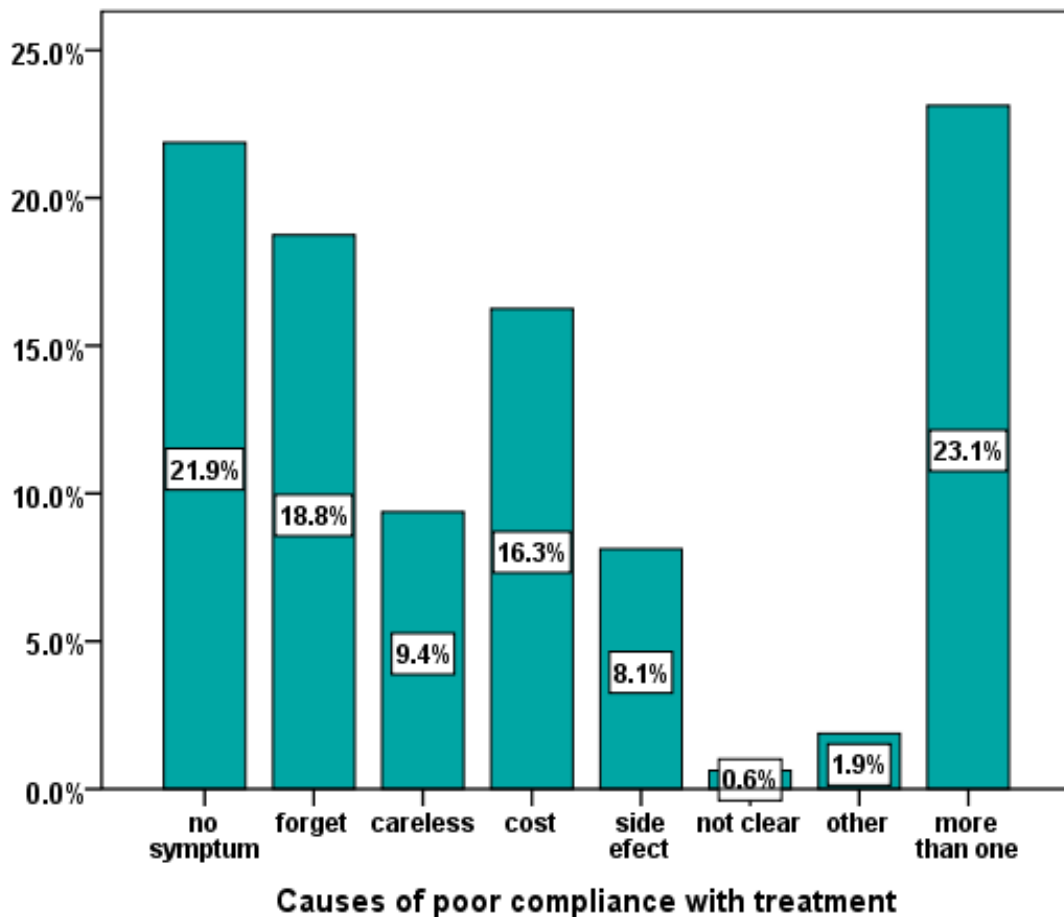| Study variables	Compliance			χ^2	P-value
	High (8)	Medium (6- < 8)	Low (<6)		
Age					
< 40	0 (0.0)	1 (1.1)	11 (7.1)		
40-59	45 (47.4)	44 (51.2)	68 (44.2)		**0.027* f**
≥ 60	50 (52.6)	41 (47.7)	75 (48.7)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Gender					
Male	52 (54.7)	34 (39.5)	59 (38.3)		
Female	43 (45.3)	52 (60.5)	95 (61.7)	**7.11**	**0.028***
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Residence					
Urban	77 (81.1)	70 (81.4)	125 (81.2)	0.004	0.998
Rural	18 (18.9)	16 (18.6)	29 (18.8)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Occupation					
Employee	20 (21.1)	10 (11.6)	11 (7.1)		
Free work	16 (16.8)	12 (14.0)	28 (18.2)		
Retired	14 (14.7)	11 (12.8)	8 (5.2)	**21.05**	**0.002***
Not working or house wife	45 (47.4)	53 (61.6)	107 (69.5)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Marital status					
Single	1 (1.1)	1 (1.2)	1 (0.6)		
Married	70 (73.7)	61 (70.9)	113 (73.5)		0.949 f
Divorce	2 (2.1)	1 (1.2)	5 (3.2)		
Widow	22 (23.1)	23 (26.7)	35 (22.7)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Monthly Income					
< 500000 I.Q.D	67 (70.5)	54 (62.8)	123 (79.9)		
500000-1000000 I.Q.D	26 (27.4)	30 (34.9)	29 (18.8)		**0.047* f**
More than 1000000 I.Q.D	2 (2.1)	2 (2.3)	2 (1.3)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Education Illiterate, read and write, primary and secondary	81 (85.3)	71 (82.6)	145 (94.2)		
Higher education	14 (14.7)	15 (17.4)	9 (5.8)	**8.899**	**0.012***
Total	95 (100.0)	86 (100.0)	154 (100.0)		

*p value ≤ 0.05 was significant. f: Fisher- exact test.

As shown in Table 4 , there was a significant association between compliance with antihypertensive medication and different sociodemographic characteristics of the patients , where compliance with medication was higher among age group ≥ 60 years ,male gender, those who were working ,higher levels of education and income .

Table 5: The association between compliance with antihypertensive drugs and blood pressure measurement

Study variables	Compliance			χ^2	P-value
	High (8)	Medium (6- < 8)	Low (<6)		
Blood pressure measurement					
Normal	38 (40.0)	21 (24.4)	19 (12.3)		
Elevated	10 (10.5)	20 (23.3)	13 (8.4)		
Stage1 hypertension	19 (20.0)	23 (26.7)	28 (18.2)	**53.119**	**<0.001***
Stage 2 hypertension	28 (29.5)	22 (25.6)	94 (61.0)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		

*p value ≤ 0.05 was significant. f: Fisher- exact test.

As shown in Table 5, there was a significant association between compliance with antihypertensive medication and blood pressure measurement,

40% of the patients with high compliance rate had normal blood pressure measurement. while high percentage of low compliance had low blood pressure control rate .

Table 6 shows the associations between compliance with antihypertensive drugs and study variables including (Family history of hypertension, duration of hypertension, number of antihypertensive drugs used, the number of daily doses, source of drug, frequency of blood pressure measurement and place of blood pressure measurement).

Study variables	Compliance			χ^2	P-value
	High (8)	**Medium (6- < 8)**	**Low (<6)**		
Family history of hypertension					
Yes	72 (75.8)	56 (65.1)	108 (70.1)	2.48	0.289
No	23 (24.2)	30 (34.9)	46 (29.9)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Duration of hypertension					
$\leq$ 5 years	25 (26.3)	28 (32.6)	69 (44.8)		
6-9 years	28 (29.5)	24 (27.9)	52 (33.8)	**17.81**	**0.001***
10 years or more	42 (44.2)	34 (39.5)	33 (21.4)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Number of antihypertensive drugs used					
One drug	84 (88.4)	77 (89.5)	142 (92.2)	1.087	0.581
Two drugs	11 (11.6)	9 (10.5)	12 (7.8)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Number of daily doses					
Once daily	63 (66.3)	66 (76.7)	104 (67.5)		
Twice daily	32 (33.7)	20 (23.3)	49 (31.8)		0.349 f
Three times daily	0 (0.0)	0 (0.0)	1 (0.7)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Source of antihypertensive drugs					
Hospital	0 (0.0)	0 (0.0)	6 (3.9)		
Public clinic	0 (0.0)	0 (0.0)	2 (1.3)		
Private pharmacy	85 (89.5)	80 (93.0)	135 (87.7)		0.151 f
More than one source	10 (10.5)	6 (7.0)	11 (7.1)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Frequency of blood pressure measurement					
Daily	8 (8.4)	10 (11.6)	18 (11.7)		
Weekly	43 (45.3)	34 (39.5)	57 (37.0)	3.86	0.696
Monthly	37 (38.9)	37 (43.0)	62 (40.3)		
Every 3 months	7 (7.4)	5 (5.9)	17 (11.0)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		
Place of blood pressure measurement					
Home	16 (16.8)	20 (23.3)	28 (18.2)		
Hospital	33 (34.7)	23 (26.7)	49 (31.8)		
Primary health care center	8 (8.4)	7 (8.1)	8 (5.2)	6.906	0.547
Private clinic	27 (28.4)	18 (20.9)	43 (27.9)		
More than one place	11 (11.6)	18 (20.9)	26 (16.9)		
Total	95 (100.0)	86 (100.0)	154 (100.0)		

*p value $\leq$ 0.05 was significant. f: Fisher- exact test.

As shown in Table 6, there was a significant association between compliance to antihypertensive medication and longer duration of the disease, higher compliance rate was found among those who had the disease for 10 years or more .No significant associations were noted between compliance and Family

history of hypertension, number of antihypertensive drugs used and the number of daily doses.

Table 7 ⬚ shows the associations between compliance with antihypertensive drugs and study variables including (smoking habit, use of healthy diet, regular exercise, history of other diseases, history of complications and belief of the patients regarding regular treatment).

Study variables	Compliance			χ^2	P-value
	High (8)	**Medium (6- < 8)**	**Low (<6)**		
Smoking habit Tobacco Smoker, passive smoker and X-smoker Non smoker Total	42 (44.2) 53 (55.8) 95 (100.0)	42 (48.8) 44 (51.2) 86 (100.0)	88 (57.1) 66 (42.9) 154 (100.0)	4.224	0.121
Use of healthy diet Always Sometimes Never use healthy diet Total	34 (35.8) 58 (61.1) 3 (3.2) 95 (100.0)	24 (27.9) 52 (60.5) 10 (11.6) 86 (100.0)	24 (15.6) 95 (61.7) 35 (22.7) 154 (100.0)	**26.66**	**<0.001***
Regular exercise Yes No Total	17 (17.9) 78 (82.1) 95 (100.0)	12 (14.0) 74 (86.0) 86 (100.0)	16 (10.4) 138 (89.6) 154 (100.0)	2.87	0.238
History of other disease Yes No Total	55 (57.9) 40 (42.1) 95 (100.0)	50 (58.1) 36 (41.9) 86 (100.0)	83 (53.9) 71 (46.1) 154 (100.0)	0.573	0.751
History of complication Yes No Total	48 (50.5) 47 (49.5) 95 (100.0)	46 (53.5) 40 (46.5) 86 (100.0)	58 (37.7) 96 (62.3) 154 (100.0)	**6.619**	**0.037***
Belief of patient regarding regular treatment Yes No Total	94 (98.9) 1 (1.1) 95 (100.0)	79 (91.9) 7 (8.1) 86 (100.0)	104 (67.5) 50 (32.5) 154 (100.0)	**47.30**	**<0.001***

*p value ≤ 0.05 was significant. f: Fisher- exact test.

As shown in Table7, there was a significant associations between compliance

with antihypertensive medication and the presence of complications, using

healthy diet and positive belief of patients regarding regular treatment

p value < 0.05.

Smoking and the presence of other diseases had no significant relationship with

compliance rate in our study p value > 0.0 5.

Chapter four

Discussion

4-Discussion

Compliance with antihypertensive treatment is an important factor in preventing critical complications in patients with high blood pressure. Non-compliance is a serious problem, and must be assumed as one of the major barriers to successful treatment of hypertension, identifying the responsible factors is of vital significance in applying therapeutic plan and in obtaining acceptable results.

Our study was carried out to examine the prevalence of compliance to antihypertensive medication treatment and the causes of non-compliance among the sample of hypertensive patients in Al- Imam Al-Hussein medical city in Kerbala.

This study revealed that only 28.36% of the patients with good compliance to antihypertensive medication, while 45.97% of the patients had poor compliance to medication according to The 8-Item Morisky Medication Adherence Scale (MMAS-8) as shown in (Appendix 1) .

The low rate of compliance is less than that reported by different researchers which were 88.6% reported by Al-Mehza A.M. from AL Kuwait in 2009 (30) ,85.5% reported by Okoro R.N. in Nigeria 2012 (25) , 85% reported from cross-sectional study by Abbas H. in Lebanon 2017 (8) , 66.3% reported from cross- sectional study on 323 patients by Lötsch F.in Austria 2015 (36), 62.4% reported from cross- sectional study on 327 hypertensive patients by Kimuyu B.M.in Nairobi 2014 (31), 53∎4% conducted by Ramli A. in Malaysia 2012 through cross- sectional study on 653 hypertensive patients (24), 45 % conducted by Ismael D.H.in Erbil city ,2015 through cross- sectional study

on 200 hypertensive patients (28) ,39.6% conducted by Esmaeili R. in Iran, 2016 through cross-sectional study on 422 hypertensive patients (9)and 36.3% . (21)

While it was higher than 24.8% compliance rate in study conducted in Babylon city by Alsallami S.H. ,2015 (3) , and higher than 26 % reported by Polska S. from Przegląd lekarski in 2013 (2) .

Also, it was higher than the compliance rate 23.3% conducted by Shameena A.U. in India ,2017 (32) , the compliance rate 25.19% conducted by Campbell P.C. in Nigeria ,2014 (33) , and the compliance rates 24% ,16.4% that found in Iranian studies measured medication adherence in patients with hypertension conducted by Kamran A. in 2014 and Saadat Z. in 2015 (29), (26) .

There is a direct correlation between better compliance to treatment with higher control rate of blood pressure that make it considerable issue.(3) Thus, low compliance rate in this study can explain the low BP control rate appeared.

The low BP control rate of 23.3% was lower than other studies carried out by several authors which were 36% conducted by Al-Mehza A.M. in AL Kuwait , 2009 (30) , 48.3% conducted by Kimuyu B.M. from University of Nairobi in 2014 (31) , 26.7% reported by Campbell P.C. from Nigeria in 2014 (33) and it was higher than the BP control rates 22⸱3% reported from Iraq in 2015 by Alsallami S.H. (3), 11.1% reported by Polska S. from Przegląd lekarski (2) and 2% reported from a study conducted in Erbil city in 2015 by Ismael D.H. and Qadir C.S. (28).

This difference in results from variant societies may be related to the difference in educational values, cultures, beliefs about the disease and

compliance of treatment, in addition to the quality of health services providing.

Compliance to prescribed treatment leads to well control of BP, and this association was evident in our study as 40% of the patients with high medication compliance had normal BP, while 79% of low compliance patients had stage 1 and stage 2 HTN with high significant statistical association. This result was logically acceptable and supported by many studies reported by Alsallami S.H. (3) , Alhaddad I. A. (34) and Hawrami O.H. (35).

About 49.6% of the sample was in age group of ≥ 60 years, this agrees with other study in Iraq conducted by Ismael D.H.in Erbil city, 2015 (28) .

In addition, this age group was significantly more compliant with treatment than other age groups in our study and this agrees with other studies conducted by AUS B.S. in India ,2017 (19) , Kamran A. in Iran ,2014 (29) , Shameena A.U. from south India (32) and Alhaddad I.A. in Lebanon, 2017 (34).

This may reveal the traditional importance on family care for the elderly in the community and the extreme care which provide for them, when the disease is more often associated with severe symptoms and complications .But this disagree with other studies such as the study conducted by Alsallami S.H. and Abutiheen ,2015 in Iraq (3) .

Males in our study comply better to medication than females , this result is sustained in previous studies in Iraq reported by Alsallami S. H. (3), Ismael D.H. (28), Alhaddad I.A. (34) ,Hawrami O.H. (35), and also this result is consistent with study conducted in Egypt by Awad E.Y. , 2015 (10).

But females were more compliant than males in other studies conducted by different researchers like Polska S. from Przegląd lekarski in 2013 (2), AUS

B.S. in South India , 2017 (19), Ramli A. in Malaysia , 2012 (24) and Kamran A. in Iran 2014 (29) .

Low females compliance rate can be explained by the highest percentage of the sample was of low education and housewives (47.5%) which was the predominant occupation and (56.7%) of the sample were females, as it appeared that medication compliance was inversely connected with low education and housewives .

In our study, there was a significant association between longer duration of the disease and better compliance, 32.6% of the participants presented with HTN for more than 10 years and they were more compliant to antihypertensive treatment than those with shorter duration of the disease .

Our result is consistent with studies conducted in Babylon city in 2015 by Alsallami S.H. (3) and in Al Sulaimani city in 2016 by Hawrami O.H. (35), which found that patients with longer duration of antihypertensive drugs use for more than 10 years reported good adherence than patients with short duration of 5 years or less ,also this result agrees with other studies reported by other authors like Abbas H. in Lebanon, 2017 (8), Polska S. in Przegląd lekarski , 2013 (2) and Kimuyu B.M. , 2014 (31).

A study conducted in Erbil city by Ismael D.H. , 2015 (28) and another in Egypt reported by Awad E. y. , 2015 (10) revealed that the patients who had disease less than 10 years were with higher compliance to treatment as compared with patients who had the disease for more than 10 years .

This can be explained that these patients may possible have more information about the disease and established strong patient-physician relationship and follow up more than those with short duration of HTN.

Education was significantly associated with patients' compliance in our study and the result agrees with other studies conducted by several authors like Alsallami S.H. 2015 (3), Alsolami F. 2015 (9), and disagree with studies reported that compliance rate was higher amongst patients with a low level of education like Awad E.Y. 2015 (10), Esmaeili R. 2016 (21), Hawrami O.H.in Iraq 2016 (35) , Polska S. 2013 (2) and Ismael D.H. in Erbil city 2015 (28) .

This explains that highly educated patients may have more knowledge about hypertension, benefits from using anti-hypertensive drugs to control their blood pressure, and avoiding the future complications.

Occupational status has well recognized relation with compliance to drugs and inversely related with non-compliance. This finding was statistically important in our study, the rate of non-compliance was highest among those not working and housewives 69.5 % compared with employed 7.1%.

This may be related to economical factors, which make the employed person more careful about his/her health in addition to the ability to afford the cost of antihypertensive medications which should be taken on continues basis and this can be a burdened for the unemployed and the housewives and this agrees with other study conducted in Iraq in 2016 by Hawrami O.H. (35) and disagrees with study from Austria conducted by Lötsch F.in 2015 (36).

Limited income will probably affect the compliance to antihypertensive therapy ,this may explain the results of the current study which shown significant association between compliance and monthly income of hypertensive patients .This result is supported by other studies conducted in Egypt by Awad E.Y.in 2015 (10) and in Iran by Esmaeili R. in 2016 (21) which found that the limited or low monthly income will possibly affect the

compliance mostly when the drug is expensive or the patient is receiving multiple drugs .

In contrast to other study conducted in Nigeria by Okoro R.N. on hypertensive patients which found that there was no significant association between compliance and monthly income [25].

Positive beliefs regarding the importance of antihypertensive medications contribute significantly to positive medication adherence as found in our study with strong statistical significant association and this was also reported by Kamran A. 2014 [29], Al- Mehza A.M. 2009 [30] and Kimuyu B.M. 2014 [31] .

There was a significant association between compliance to antihypertensive medications and following healthy diet in our study ,this possibly indicates that HTN management is a combined plan where the pharmacological treatment is complementary to the non-pharmacological one by using healthy diet as part of the healthy lifestyle and this agrees with study reported by Kamran A. in Iran, 2014 [29] .

Our study shows no significant association between compliance and marital status, the number and frequency of antihypertensive drugs used ,this result is consistent with other studies conducted by Hawrami O.H.2016 [35] ,Esmaeili R. 2016 [21] and Kamran A. 2014 [29], but inconsistent with studies reported from India by AUS B.S.2017 [19] and from Nigeria by Shameena A.U. 2017 [32].

Also in our study, there was no significant association between compliance to medication and the presence of other comorbidities and this result is in agreement with a study conducted by Bader R.J.K. from United Arab Emirates

in 2015 (14) , and disagrees with another study reported by Polska S. in Przegląd lekarski 2013 (2) .

When the causes of non-compliance were explored in the current study, 23.1% of the patients had more than one cause for their non-compliance to treatment.

The first isolated cause for poor compliance to medication as patients mentioned was the absence of symptoms that forms 21.9%, for example taking the treatment only when they develop symptoms such as headache and not take medication when they feel well , it is important to explain to the patients that hypertension is a silent and invisible killer (37) and the treatment must be taken frequently and not only when feeling unwell.

The absence of symptoms was also the main cause of noncompliance in another study in Iraq reported by Alsallami S. H. (3), and in a study that was evaluating the factors influencing medication adherence to hypertension treatment in developing countries conducted by Dhar L. in 2017 (20), and it was the second cause of noncompliance in study conducted in AL Kuwait by Al-Mehza A.M. (30) and the third cause of noncompliance in study conducted in Nigeria 2014 by Campbell P. C. (33).

Forgetfulness which appeared as the second cause of noncompliance reported by 18.8 % of the subjects, forgetfulness was also a main cause of non-compliance in other studies conducted by Ismael D.H. in Erbil city 2015 (28), Kamran A. in Iran 2014 (29), Al- Mehza A.M. in 2009 (30), Campbell P.C. from Nigeria in 2014 (33) and Hawrami O.H. in 2016 (35) ,but not important cause in other studies which conducted by Alsallami S.H. (3) and Dhar L. (20).

The third reason for poor compliance was the cost of medication ,followed by negligence or carelessness of the patients , and side effects of the drugs which appeared as the least cause of poor compliance in our study and this was similar to the Alsallami S.H.(3) , while it was the second cause reported by AL-Mehza A.M. (30) .

From this, it appears that reasons for noncompliance were different in proportions from region to another and from culture to another although the presence of some similarity .

Chapter five

Limitations, Conclusion and Recommendations

Limitations :–

1- As many causes can affect medication adherence, we were not able to study all potential associated factors such as psychological factors, attitude and knowledge of the patients.

2- Some possible determinants of adherence were not investigated in this study such as the use of alcohol .

3- This was a small non-random sample of the patients ,thus the results cannot be generalized to the whole hypertensive patients in Karbala city .

4- There was a shortage in the time of the study .

Limitations :–

Conclusions ▯–

The study revealed a low rate of medication compliance and low blood pressure control rate with strong association between them.

Compliance increases with age, male gender, higher level of education and income, longer duration of the disease, presence of complications ,using healthy diet and having positive believe about hypertension treatment and its consequences .

Statistically, there was no significant association between compliance and family history of hypertension, number and frequency of antihypertensive drugs, smoking, and the presence of other chronic diseases.

 About 23.1% of the patients with poor compliance had more than one specific reason for their low adherence rate, while the main isolated causes were the asymptomatic nature of disease, followed by forgetfulness ,cost of medication, carelessness and side effects of drug .

Recommendations –

1- Planned health education programs can be done to highlight on health education of hypertensive patients, who visit the primary health care centers and hospitals about the complications of hypertension and the importance of compliance to medication.

2- Hypertensive patients should be instructed at any time they visit to the physician to increase the compliance to antihypertensive drugs to control hypertension , therefore we suggest routine use of adherence questionnaires in hospitals to help to detect patients who are non-adherer to anti-hypertensive medication.

3- Successful population – based interventions combine the power of mass media ,public educational programs, school programs and other communication tools with screening and counseling activities to maintain good blood pressure control .

4- We suggest to allow the antihypertensive drugs freely in hospitals and public clinics ,this will greatly enhance the treatment compliance mainly for poor and disabled patients.

5- Finally, we suggest further studies to be directed towards compliance monitoring in order to define more non –compliant patients to identify and regulate the interventions that may be used for improving adherence.

References

References

1- Abegaz TM, Shehab A, Gebreyohannes EA, Bhagavathula AS, Elnour AA. Nonadherence to antihypertensive drugs: a systematic review and meta-analysis. Medicine. 2017 Jan;96(4).

2- Polska S. Medication adherence in hypertensive patients of different cardiovascular risk treated in primary health care. Age (years). 2013;59:11-3.

3- Alsallami SH, Abutiheen AA. Hypertensive Patients Compliance with Medications in Marjan Teaching Hospital/Babylon. Medical Journal of Babylon. 2015;12(3):592-602.

4- Al-Lami F, Mousa A. Prevalence of undetected, untreated, and uncontrolled hypertension among attendants of primary health care centers in nasiriya city, Iraq. In Proceedings of the 61st Annual Epidemic Intelligence Service Conference (EIS'12) 2012 Apr (p. 99).

5- Bautista LE. Predictors of persistence with antihypertensive therapy: results from the NHANES. American journal of hypertension. 2008 Feb 1;21(2):183-8.

6-Ibrahim MM, Damasceno A. Hypertension in developing countries. The Lancet. 2012 Aug 11;380(9841):611-9.

7- James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland DT, LeFevre ML, MacKenzie TD, Ogedegbe O, Smith SC. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). Jama. 2014 Feb 5;311(5):507-20.

8- Abbas H, Kurdi M, Watfa M, Karam R. Adherence to treatment and evaluation of disease and therapy knowledge in Lebanese hypertensive patients. Patient preference and adherence. 2017;11:1949.

9- Alsolami F, Correa-Velez I, Hou XY. Factors affecting antihypertensive medications adherence among hypertensive patients in Saudi Arabia. American Journal of Medicine and Medical Sciences. 2015;5(4):181-9.

10- Awad EY, Gwaied BE, Fouda LM, Essa HA. Compliance of hypertensive patients with treatment regimen and its effect on their quality of life. Health. 2015;13:16.

11- Filippi A, Paolini I, Innocenti F, Mazzaglia G, Battaggia A, Brignoli O. Blood pressure control and drug therapy in patients with diagnosed hypertension: a survey in Italian general practice. Journal of Human hypertension. 2009 Nov;23(11):758.

12-Tsiantou V, Pantzou P, Pavi E, Koulierakis G, Kyriopoulos J. Factors affecting adherence to antihypertensive medication in Greece: results from a qualitative study. Patient preference and adherence. 2010;4:335.

13-Panesar S, Chaturvedi S, Saini NK, Avasthi R, Quadri SS, Singh A. Current status of the 'rule of halves' of hypertension: a survey among the residents of slum resettlement colony from east Delhi. Health line, July-Dec. 2013;4:69-73.

14- Bader RJ, Koprulu F, Hassan NA, Ali AA, Elnour AA. Predictors of adherence to antihypertensive medication in northern United Arab Emirates. Eastern Mediterranean Health Journal. 2015 May 1;21(5).

15-Ciolac EG. High-intensity interval training and hypertension: maximizing the benefits of exercise?. American journal of cardiovascular disease. 2012;2(2):102.

16-Sharman JE, Stowasser M. Australian association for exercise and sports science position statement on exercise and hypertension. Journal of Science and Medicine in Sport. 2009 Mar 1;12(2):252-7.

17-Siervo M, Lara J, Chowdhury S, Ashor A, Oggioni C, Mathers JC. Effects of the Dietary Approach to Stop Hypertension (DASH) diet on cardiovascular risk factors: a systematic review and meta-analysis. British Journal of Nutrition. 2015 Jan;113(1):1-5.

18-Alhalaiqa F, Deane KH, Nawafleh AH, Clark A, Gray R. Adherence therapy for medication non-compliant patients with hypertension: a randomized controlled trial. Journal of human hypertension. 2012 Feb;26(2):117.

19-AUS BS, Kumar SN. Medication adherence and health belief model among hypertensive patients attending rural health centers of a tertiary care hospital in South India. International Journal of Community Medicine and Public Health. 2017 Apr;4(4):1159.

20 -Dhar L, Earnest J, Ali M. A Systematic Review of Factors Influencing Medication Adherence to Hypertension Treatment in Developing Countries. Open Journal of Epidemiology. 2017;7(03):211-50.

21 -Esmaeili R, Matlabi M, Khajavi A, Aliasghari E, Sajjadi M. Factors affecting adherence to antihypertensive medication: Results from a rural population study in east of Iran. Global Journal of Health Science. 2016 Oct 27;9(5):286.

22-Bastakoti S, Khanal S, Dahal B, Pun NT. Adherence and non-adherence to treatments: focus on pharmacy practice in Nepal. Journal of clinical and diagnostic research: JCDR. 2013 Apr;7(4):754.

23-Krzesinski JM. Practical issues in medication compliance in hypertensive patients. Research Reports in Clinical Cardiology. 2011;2:63-70.

24-Ramli A, Ahmad NS, Paraidathathu T. Medication adherence among hypertensive patients of primary health clinics in Malaysia. Patient preference and adherence. 2012;6:613.

25-Okoro RN, Ngong CK. Assessment of patient's antihypertensive medication adherence level in non-comorbid hypertension in a tertiary hospital in Nigeria. Int J Pharm Biomed Sci. 2012;3(2):47-54.

26-Saadat Z, Nikdoust F, Aerab-Sheibani H, Bahremand M, Shobeiri E, Saadat H, Moharramzad Y, Morisky DE. Adherence to antihypertensives in patients with comorbid condition. Nephro-urology monthly. 2015 Jul;7(4).

27-Ghazi HF, Elnajeh M, AbdalQader M, Baobaid MF, Omar AB. Research Article Prevalence of Hypertension and its Association with Nutritional Factors Among University Students in Shah Alam, Malaysia.

28-Ismael DH, Qadir CS. Factors Affecting Treatment Compliance of Hypertensive Patients in Erbil City. kufa Journal for Nursing sciences. 2015;5(2):181-8.

29-Kamran A, Ahari SS, Biria M, Malpour A, Heydari H. Determinants of patient's adherence to hypertension medications: application of health belief model among rural patients. Annals of medical and health sciences research. 2014;4(6):922-7.

30-Al-Mehza AM, Al-Muhailije FA, Khalfan MM, Al-Yahya AA. Drug compliance among hypertensive patients; an area based study. Eur J Gen Med. 2009;6(1):6-10.

31-Kimuyu BM. Factors Associated with Adherence to Antihypertensive Treatment in Kiambu District Hospital. Disertasi: University of Nairobi. 2014 Oct.

32-Shameena AU, Badiger S. Retracted: Medication adherence and health belief model among hypertensive patients attending rural health centres of a tertiary care hospital in South India. International Journal Of Community Medicine And Public Health. 2017 Mar 28;4(4):1159-65.

33-Campbell PC, Oladeyi OO. Compliance to and knowledge of anti-hypertensive therapy amongst hypertensive patients attending Lagos University Teaching Hospital (Luth), Idi-Araba, Lagos, Nigeria. IOSR J Dental Med Sci. 2014;13(5):108-5.

34-Alhaddad IA, Hamoui O, Hammoudeh A, Mallat S. Treatment adherence and quality of life in patients on antihypertensive medications in a Middle Eastern population: adherence. Vascular health and risk management. 2016;12:407.

35-Hawrami OH, Abdulla MH. Noncompliance With Antihypertensive Drugs Among Patients with Essential Hypertension in Sulaimani City. Iraqi Academic Scientific Journal. 2016;15(2):140-7.

36-Lötsch F, Auer-Hackenberg L, Groger M, Rehman K, Morrison V, Holmes E, Parveen S, Plumpton C, Clyne W, De Geest S, Dobbels F. Adherence of patients to long-term medication: a cross-sectional study of antihypertensive regimens in Austria. Wiener klinische Wochenschrift. 2015 May 1;127(9-10):379-84.

37-World Health Organization. A global brief on hypertension: silent killer, global public health crisis: World Health Day 2013. World Health Organization; 2013.

Questionnaire

1. Age ………………..
2. Gender⬜- Male ⬜ Female ⬜
3. Residence ⬜- Urban ⬜ Rural ⬜
4. Marital status ⬜- Single ⬜ Married ⬜ Divorced ⬜ Widow ⬜

5. Level of education ⬜- Illiterate ⬜ Read and write ⬜

    Primary school ⬜ High school ⬜ University and higher ⬜

6. Occupation ⬜- Employee ⬜ Free work ⬜ Retired ⬜ Not work ⬜

    House wife ⬜
7. Monthly income⬜- < 500000 I.D ⬜ 500000-1000000 I.D ⬜ > 1000000 I.D ⬜

8. Number of family members⬜- ⬜

9. Number of rooms in the house⬜- ⬜
10⬜ Family history of hypertension ⬜- Yes ⬜ No ⬜

11⬜ Duration of hypertension ⬜- ≤ 5 years ⬜ 6– 9 years ⬜ ≥ 10 years ⬜

12. Number of antihypertensive drugs used ⬜- 1 ⬜ 2 ⬜ 3 ⬜

13. Number of daily doses⬜- Once daily ⬜ Twice daily ⬜ ≥ 3 times daily ⬜
14. Source of antihypertensive drugs ⬜- Hospital ⬜ Public clinic ⬜

    Private pharmacy ⬜

15. Frequency of blood pressure measurement ⬜-

    Daily ⬜ Weekly ⬜ Monthly ⬜ Every 3 months ⬜

16. Place of blood pressure measurement ⬜-

    Home ⬜ Hospital ⬜ Primary health care center ⬜ Private clinic ⬜

17. Smoking habit ⬜- Smoker ⬜ Passive smoker ⬜ X- smoker ⬜

    Non smoker ⬜

18. Use of healthy diet ▢- Always ▢   Sometimes ▢   Never ▢

19. Regular exercise ▢- Yes ▢   No ▢

20. Hypertension related complications ▢- Angina ▢   Myocardial infarction ▢

Heart failure ▢   Stroke ▢   Renal diseases ▢   Eye complications ▢

21. History of other diseases ▢- Diabetes mellitus ▢   Asthma ▢   Others ▢

22. Belief of the patient regarding regular treatment ▢- Yes ▢   No ▢

Blood pressure measurement ▢

8 items Morisky medication adherence scale

1. Do you sometimes forget to take your antihypertensive pills? Yes ▢   No ▢

2. People sometimes miss taking medications for reasons other than forgetting; thinking over the past two weeks was there any days when you did not take your medicine?

Yes ▢   NO ▢

3. Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it ? Yes ▢   NO ▢

4. When you travel or leaving home do you sometimes forget to bring along your medication? Yes ▢   No ▢

5. Did you take your antihypertensive pills yesterday? Yes ▢   No ▢

6. When you feel like your blood pressure is under control, do you sometimes stop taking your medicine? Yes ▢   NO ▢

7. Do you ever feel hassled about sticking to your treatment plan? Yes ▢   No ▢

8. How often do you have difficulty remembering to take your medication?

Never ▢   Almost never ▢   Sometimes ▢   Frequently ▢   always ▢

*** Scores (   )**

Classify ▢   1- High adherence (8)   2- Medium adherence (6-<8)   3- Low adherence (<6)

***Causes of low compliance to medication? No symptoms ▢   Forgetfulness ▢

Negligence ▢   Cost of drug ▢   Side effect of drug ▢

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Instructions not clear ☐   Others ☐

عزيزي المراجع هذا الاستبيان هو جزء من بحث يهدف الى تقييم التزام المرضى المصابين بارتفاع ضغط الدم بالعلاج الدوائي ,مشاركتك معنا وابداء رايك سيساعدنا كثيرا في تطوير العمل وتقييم التجربة ☐ رايك سيحترم ولك مطلق الحرية في ابدائه وستحفظ البيانات بسرية تامة وتستخدم لأغراض البحث العلمي فقط وانت غير مجبر على الاشتراك ولكن مشاركتك ستكون دليل على حرصك على تطوير العمل --- مع التقدير

الجزء الاول من المقابلة ☐- يشمل الاسئلة الشخصية والاجتماعية

1- العمر☐- ☐ ☐

2- الجنس ☐- ذكر ☐   انثى ☐

3- السكن ☐- حضر ☐   ريف ☐

4- الحالة الاجتماعية ☐- اعزب ☐   متزوج ☐   مطلق ☐   ارمل او ارملة ☐

5- مستوى التعليم ☐- امي ☐   يقرا ويكتب ☐   ابتدائية ☐   متوسطة أو اعدادية ☐
معهد- جامعة او اعلى ☐

6- المهنة ☐- موظف ☐   عمل حر ☐   متقاعد ☐   عاطل ☐   ربة منزل ☐

7-الدخل الشهري ☐– > 500000 دينار ☐   500000– مليون دينار ☐   > مليون دينار ☐

8– عدد افراد العائلة ☐– ☐

9– عدد الغرف في المنزل ☐– ☐

10- هل لديك اقارب من الدرجة الاولى والثانية مصابين بارتفاع ضغط الدم ؟   نعم ☐   لا ☐

11- مدة الاصابة بارتفاع ضغط الدم ☐- ≥ 5 سنوات ☐   6–9 سنوات ☐   ≤ 10 سنوات ☐

12- عدد ادوية الضغط المستخدمة ☐- 1 ☐   2 ☐   3 ☐

13- كم جرعة دواء تأخذ في اليوم ؟ 1 ☐   2 ☐   ≥ 3 ☐

14- من اين تحصل على الدواء ؟ المستشفى ☐   العيادة الشعبية ☐   صيدلية اهلية ☐

15-كم مرة تقوم بفحص الضغط ؟ يوميا ☐   اسبوعيا ☐   شهريا ☐   كل ثلاثة اشهر ☐

16– اين تفحص الضغط ؟   البيت ☐   المستشفى ☐   المركز الصحي ☐   عيادة خاصة ☐
محل صحي ☐

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17–التدخين ☐ – مدخن ☐ غير مدخن ☐ مدخن سلبي ☐ تارك التدخين ☐

18– تناول غذاء خالي من الملح والدهون ☐ – دائما ☐ احيانا (جزئيا) ☐ ابدا (نهائيا) ☐

19 – هل تمارس الرياضة بشكل منتظم ؟ نعم ☐ لا ☐

20- المضاعفات الصحية : الذبحة الصدرية ☐ احتشاء عضلة القلب ☐ عجز القلب ☐
جلطة دماغية ☐ عجز الكلى ☐ امراض العين ☐ لا توجد ☐

21- هل انت مصاب بأمراض مزمنة اخرى؟ داء السكر ☐ ربو قصبي ☐ اخرى ☐

22- هل تعتقد ان ارتفاع ضغط الدم مرض مزمن ويحتاج الى علاج منتظم ؟ نعم ☐ لا ☐

قياس الضغط ☐☐☐☐☐

الجزء الثاني من المقابلة ☐- يشمل مقياس موريس كي لمعرفة التزام المريض بالعلاج الدوائي

1 -هل تنسى في بعض الاحيان ان تأخذ ادوية الضغط ؟ نعم ☐ لا ☐

2- هل توجد ايام خلال الاسبوعين الماضيين لم تأخذ فيها ادوية الضغط ؟ نعم ☐ لا ☐

3- هل سبق لك ان تركت الدواء دون علم الطبيب لا نك لم تشعر بالتحسن عندما كنت تأخذه ؟ نعم ☐ لا ☐

4- هل تنسى في بعض الاحيان ان تأخذ العلاج عند السفر او الخروج من المنزل ؟ نعم ☐ لا ☐

5- هل اخذت علاج الضغط يوم امس ؟ نعم ☐ لا ☐

6- هل توقف اخذ العلاج في بعض الاحيان عندما تشعر ان المرض تحت السيطرة ؟ نعم ☐ لا ☐

7- هل تواجه متاعب بسبب الالتزام بخطة العلاج الخاصة بك ؟ نعم ☐ لا ☐

8- كم مرة واجهت صعوبة في تذكر موعد اخذ العلاج ؟ ابدا ☐ نادرا جدا ☐
احيانا ☐ كثيرا ☐ دائما ☐

SCORE ☐

Classify ☐ A- High adherence (8)   B- Medium adherence (6-<8)   C- Low adherence (<6)

*** اسباب عدم الالتزام بالعلاج ؟ عدم وجود اعراض للمرض ☐ النسيان ☐ الاهمال ☐

الدواء غالي ☐ المضار الجانبية للدواء ☐ التعليمات غير واضحة او عدم المعرفة ☐

اخرى ☐

الباحثة
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د☐ زهراء اسماعيل النصراوي

Appendix 1. The 8-Item Morisky Medication Adherence Scale (MMAS-8)

Item 1. Do you sometimes forget to take your antihypertensive pills ?

Item 2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your antihypertensive medicine ?

Item 3. Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it ?

Item 4. When you travel or leave home, do you sometimes forget to bring along your antihypertensive medication ?

Item 5. Did you take your antihypertensive medicine yesterday ?

Item 6. When you feel like your blood pressure is under control, do you sometimes stop taking your medicine ?

Item 7. Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your antihypertensive treatment plan ?

Item 8. How often do you have difficulty remembering to take all your medications ?   Never, rarely, sometimes, usually, or all the time.

For questions 1 to 7, the answer options are "yes" or "no". The eighth question is a Liker type question. The overall score of this scale is from 0 to 8. The categorization of patients considering their score is as follows: - less than 6 (low adherence), 6 or 7 (moderate adherence), and 8 (high adherence). (26)

الملخص

مقدمة البحث ☐

يعد ارتفاع ضغط الدم من اخطر العوامل المؤدية للإصابة بأمراض القلب والشرايين وعجز الكلى والجلطة الدماغية والعمى عند المرضى المصابين بالسكري ☐كذلك يعتبر من المشاكل الصحية المهمة على المستوى العالمي حيث انه مسؤول عن حوالي 7,5 مليون وفاة سنويا اي ما يعادل 12,8% من نسبة الوفيات ☐

ان عدم التزام المرضى المصابين بارتفاع ضغط الدم بالعلاج الدوائي يعد من اهم الاسباب التي تؤدي الى عدم السيطرة على المرض والاصابة بمضاعفات صحية خطيرة ☐يهدف علاج ارتفاع ضغط الدم الى تحسين نوعية الحياة للمرضى ومنع الاصابة بالمضاعفات وتقليل نسبة الوفاة من خلال الالتزام الجيد بالعلاج ☐

الهدف ☐

تهدف هذه الدراسة الى تقييم نسبة التزام المرضى المصابين بارتفاع ضغط الدم بالعلاج الدوائي في العيادة الاستشارية للأمراض الباطنية في مدينة الامام الحسين (ع) الطبية في محافظة كربلاء المقدسة ومعرفة اهم الاسباب المؤدية الى عدم الالتزام☐

طرائق العمل ☐

دراسة وصفية مقطعية اجريت في العيادة الاستشارية للأمراض الباطنية في مدينة الامام الحسين (ع) الطبية للمدة من شهر اذار الى منتصف حزيران 2018☐ تضمنت الدراسة 335من المرضى المصابين بارتفاع ضغط الدم ويتناولون ادوية الضغط والذين تتجاوز اعمارهم 25 سنة وكانت فترة اصابتهم بارتفاع الضغط ستة اشهر فما فوق ☐حيث تم استجوابهم وفق ورقة استبانة تضمنت المعلومات الشخصية والاجتماعية والتي تضمنت العمر ٍ الجنس ٍ المهنة ٍ السكن ٍ التحصيل الدراسي ٍ الدخل الشهري ٍ التاريخ العائلي للمرض ومدة الاصابة بارتفاع الضغط بالإضافة الى مقياس مورسكي 8 للالتزام بالدواء تم قياس الضغط للمرضى وفق الطريقة القياسية ☐تم تحليل البيانات باستخدام التحليل الوصفي والاستنتاجي ☐

النتائج ☐

اظهرت النتائج ان معدل عمر المرضى 58,69 سنة وان حوالي 49,6% من المرضى كانت اعمارهم 60 سنة فما فوق ☐كانت نسبة الذكور 43,3% بينما بلغت نسبة الاناث 56,7% ☐ نسبة الملتزمين بالعلاج وبشكل جيد كانت 28,36% فقط وان غير الملتزمين به 7 45,9% ٫وان 38,2% من المرضى يقيسون ضغط الدم في المؤسسات الصحية الحكومية بينما 26,3% يقيسون الضغط في العيادات الخاصة☐ بلغت نسبة السيطرة على الضغط ضمن الحدود الطبيعية عند 23,3% من المرضى فقط ☐ اسباب عدم الالتزام بالعلاج الدوائي عند حوالي 23,1% من المرضى كانت ترجع الى اكثر من سبب واحد, بينما 21,9% بسبب عدم وجود اعراض للمرض بعد ذلك النسيان 18,8% ثم كلفة الدواء 16,3% ثم الاهمال 9,4% والاثار الجانبية للدواء 8,1% ☐

الاستنتاج ☐

نستنتج من هذه الدراسة ان معدل الالتزام بتناول العلاج الدوائي لمرضى ضغط الدم ومعدل السيطرة عليه كانتا منخفضتين ويوجد ترابط مهم بينهما ☐ كذلك ان الالتزام بالدواء يرتبط ويزداد بازدياد العمر والتحصيل العلمي والدخل الشهري وطول مدة المرض ووجود المضاعفات بالإضافة الى الالتزام بنظام غذائي صحي واعتقاد المريض بأهمية العلاج والالتزام به0 كانت اسباب قلة او عدم الالتزام بالعلاج الدوائي عند حوالي 23,1% من المرضى ترجع الى اكثر من سبب واحد, بينما 21,9% بسبب عدم وجود اعراض للمرض بعد ذلك النسيان 18,8% ثم كلفة الدواء 16,3% ثم الاهمال 9,4% والاثار الجانبية للدواء 8,1%☐

امتثال المرضى المصابين بارتفاع ضغط الدم الذين يحضرون العيادات الاستشارية للطب الباطني بالعلاجات الدوائية في مدينة الامام الحسين(ع) الطبية ــ محافظة كربلاء المقدسة 2018

رسالة مقدمة الى

مجلس كلية الطب /جامعة كربلاء

وهي جزء من متطلبات نيل درجة الدبلوم العالي / طب الاسرة

من قبل

زهراء اسماعيل عبد المجيد النصراوي

بكالوريوس طب وجراحة عامة

بإشراف

م. د⬜ شهرزاد شمخي الجبوري   ا⬜د⬜ حسن علي عبود نصرالله

2018م   1440ه