

Effectiveness of an Instructional program concerning Medication adherence on Knowledge of Hypertensive Patients at AL-Razi Center in Al-Basra Governorate

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Abstract

Objective: the study aims to find out the effectiveness of an instructional program on patients adherence for medication of hypertension, and their knowledge.

Methodology: A quasi-experimental design study is conducted at AL-Razi center in AL-Basra governorate. The study was started at 1st of December 2018 to end June 2019. A probability sample of (50) hypertensive patients who attending AL-Razi center. Data were collected throughout the utilization of the adopted questionnaire and interview technique. The questionnaire is composed of (44) items related to patient's adherence and knowledge toward importance of medication compliance. The reliability of instrument was 0.74 by using cronbachs alpha, the data analysis done by uses the statistical methods which as (descriptive, and inferential statistics)

Results: the findings revealed that there were improve in patient's knowledge and their adherence toward hypertensive medication at post test of program which of 75.3% of them was compliance for medication uses, and the patients not compliance was reduced to 24.7%.

Conclusions: The instructional program had positive effect on this group of patients and this study demonstrated significant changes in their knowledge scores comparing the pre and the post knowledge, knowledge was changed from moderate grade level in pre-test to high grade level in post-test.

The study **recommend** to establish specific department in each treating center of hypertension to provide the patients the information needed about the important of compliance and follow up when patients need to change their drugs

Key words: Effectiveness, Instructional program, Medication adherence ,Knowledge, hypertensive patients. AL-Razi center

فاعلية البرنامج التعليمي المتعلق بالالتزام بالعلاج على معارف مرضى فرط ضغط الدم في مركز الرازي في محافظة البصرة

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المستخلص

الهدف: تهدف الدراسة لمعرفة فاعلية البرنامج التعليمي في معارف المريض التزامه بعلاج ارتفاع ضغط الدم **المنهجية:** دراسة شبه تجريبية في مركز الرازي في محافظة البصرة. اجريت بتاريخ الاول من كانون الاول 2018 حتى نهاية حزيران 2019. تم اختيار (50) مريض مشخص بارتفاع ضغط الدم الذين يراجعون مركز الرازي. وتم جمع البيانات باستعمال الاستبيان المعد لهذا الغرض. حيث تكون من (44) فقرة تتعلق بالالتزام المريض ومعارفهم حول اهمية الالتزام بأدوية ضغط الدم. وتم قياس صدق الاستبانة باستخدام مقياس مرون باخ والمساوي 0.74. وتم تحليل البيانات باستخدام التحليل الوصفي والاستدلالي

النتائج: اظهرت نتائج الدراسة تحسناً واضحاً في معارف المريض والتزامه بأدوية ارتفاع ضغط الدم في الاختبار البعدي للبرنامج وبنسبة 75.3% ، وانخفض مستوى عدم التزام المرضى إلى 24.7%.

الاستنتاجات: طبقاً للنتائج تبين ان للبرنامج التعليمي تأثير إيجابي على معارف المرضى من خلال زيادة نسبة الالتزام باخذ علاج ارتفاع الضغط

التوصيات: توصي الدراسة بإنشاء قسم مخصص في كل مركز علاجي لفرط ضغط الدم لتزويد المرضى بالمعلومات حول أهمية الامتثال والمتابعة عندما يحتاج المرضى إلى تغيير العلاج.

كلمات البحث: فاعلية ، برنامج تعليمي ، الالتزام بالعلاج ، المعرفة ، مرضى ارتفاع ضغط الدم. مركز الرازي

Introduction:

Hypertension, or high blood pressure (BP), is the most common health problem among persons and can cause complication like stroke, myocardial infarction, renal failure, and death if not treated early and effectively, patients with specific risk factors for developing hypertension should be treated at any age. ⁽¹⁾

Approximately 1 in every 3 American adults has hypertension and only about half have their blood pressure controlled. In addition to therapeutic lifestyle modifications as a first intervention for blood pressure control among those with hypertension, adherence to prescribed antihypertensive medication regimens is also necessary. Good adherence to medication has been associated with greater odds of blood pressure control ⁽²⁾.

Globally, it is also one of the major causes of premature death, and 7.1 million of people die from hypertension related diseases annually and the problem is still increasing globally. More than 25% of the adult people worldwide have been diagnosed as having hypertension, and the prevalence of hypertension increases with age ⁽³⁾.

Currently, hypertension is also responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke. In Ethiopia, 3.5% of all deaths are due to HTN, making it

the seventh leading cause of death in the country ⁽⁴⁾.

Hypertension may not cause symptoms for a long time and its significant side effects may occur after years there for is called "silent killer". In the absence of symptoms, the treatment by the patient is difficult to accept. Antihypertensive drug therapy is the key method for long-term control of blood pressure. ⁽⁵⁾

Despite the effectiveness of antihypertensive therapies, the proportion of patients regularly taking their medication is decrease, even in the context of secondary prevention. It is estimated that about half of the patients being prescribed antihypertensive drugs stop taking treatment within the first year. A similar level of adherence is observed among patients with uncontrolled and/or resistant hypertension ^(6,7).

The effectiveness of medications to treat hypertension must be achieved by optimal medication adherence. Medication adherence is defined as the process by which patients take their medication as their prescribed. Optimal antihypertensive drug adherence has significantly positive association with blood pressure control ^(8,9).

World health organization classified those multidimensional factors into patient, social/economic, condition, therapy, and health care team-related factors. Community management is the main factor that effects to

treatment and control of blood pressure in patients with hypertension (8).

Patients with low medication adherence have a high risk in terms of uncontrolled blood pressure and adverse outcomes that may increase. It has been proven that involvement of patients in decision making, and taking disease and treatment seriously by the patients affects the medication adherence positively (7).

Low adherence to antihypertensive medications is interference in the management of hypertension resulting in high rate of hospitalization and death it undermines the efforts of health facilities, health professionals, and policy makers for the modification and improvement of the health of patients. low adherence will be the main source of psychological and medical complications and has an impact on patient's quality of life, wasting health care resources and reducing individual's believe towards the health care system (9).

MATERIAL AND METHODS:

Design of the Study:

A quasi-experimental design study was achieved through the pre and post-tests for present sample to evaluate effectiveness of instruction program concerning medication adherence on knowledge of hypertensive patients at AL-Razi center in AL-Basra

governorate. The study was started at 1st of December 2018 to end of June 2019.

Setting of the Study:

The study was conducted in AL-Razi center which treat the hypertensive patients and diabetic that located in AL-Basra government.

Sample of the Study

A probability sample consists of (50) patients for both male and female (28 years and above) patients chosen randomly which received the instructional program.

Study Instrument

A constructional checklist was conducted to evaluate the effectiveness of an instructional program on patient's knowledge through data collection which contains five parts.

First part: It is concerned with the patient's demographic data that include (gender, age, and level of education, marital status, level of income, living, and occupation).

Second part: it concerned with patient's behavior that include (Physical activity, smoking, alcohol drinking, your food contain a small amount of salt, and drink water in sufficient quantity at least 3 liters per day).

Third part: it concerned with medical history of the patient that include (diseases associated with hypertension ,have family history of hypertension ,frequency of physician's follow up , change medication without order ,alternative practices methods are used to reduce the high blood pressure, date of

medically diagnosed with high blood pressure ,date taking medication ,does the medication reduce blood pressure ,highest reading of pressure ,type of medication used ,do you take your medication regularly ,body mass index).

Fourth part: it contains (30) items which are rated according to know (3), not sure (2), Not know (1) score, related to the patient's knowledge about hypertension and the most important treatments and their uses and methods of giving and alternative methods used to reduce high blood pressure.

Fifth part: it concerned with scale of the patient's adherence to medications that contain from (14) items which are rated according to choice yes or no, correct answer take (2) incorrect (1) score.

Validity: the checklist and had been achieved by 10 experts from different scientific branches having at least 10 years' experience .in their field of work

Reliability of the checklist Items: The reliability had been evaluated through

applying Cronbach's Alpha for (44) items, the results was (0. 74)

Statistical Methods: Statistical programs such as SPSS (Statistical Package for Social Science) version 23 and Excel application were used to analyze the data through descriptive data analysis that included frequencies, percentages, in addition to inferential data analysis.

Results

Table (1): shows that the high percent (70%) of the study sample are males more than females, and 62% of them are at age group (48 and above) years old, the mean and standard deviation of patients was(50±8.7) and 26% of them illiterate , all of them was married (100%) , and 54% of their monthly income were barely sufficient,70% of them living urban area, and 28% of them were free-business, and 30% of them were housewives.

Table (1): Distribution of the Study Sample by Socio-demographic Characteristics No=50

Variables	Classification	F.	%
Gender	Males	35	70.0
	Females	15	30.0
Age group	28-37 year	5	10.0
	38-47 year	14	28.0
	48 and above	31	62.0
	Mean ± SD	50 ± 8.7	
Level of Education	Don't Read and Write	13	26.0
	Read and write	12	24.0
	Primary school	8	16.0
	Secondary school	12	24.0
	Institute	1	2.0
	College	3	6.0
	Postgraduate	1	2.0
Marital Status	Married	50	100.0
Monthly Income	Sufficient	8	16.0
	Barely sufficient	27	54.0
	Insufficient	15	30.0
Residency	Rural	9	18.0
	Urban	35	70.0
	Suburban	6	12.0
Occupation	Employee	7	14.0
	Free business	14	28.0
	Retired	9	18.0
	Housewife	15	30.0
	Student	1	2.0
	Un employed	4	8.0

While, Table (2) shows that 86% of subject are physically in active and the remaining 14% are physically active , (18%) of the smoking patients in a present study was still smoking, all of

them (100%) do not drink alcohol, 66% of the study sample eating food with small amount of salt, and half of them (50%) drinks' water in sufficient quantity at least 3 liters per day.

**Table (2): Distribution of the Study Sample by Health Behaviors
No=50**

Variables	Classification	F.	%
Physical activity	do exercise for 30 minutes per day or higher	1	2.0
	do some exercise lower than 30 minutes per day	6	12.0
	can't do exercise	43	86.0
Smoking	Still smoking	9	18.0
	Ex-smoker	13	26.0
	Never smoking	28	56.0
Alcohol Drinking	Yes	0	0.0
	No	50	100.0
Does your food contain a small amount of salt?	Yes	33	66.0
	No	17	34.0
Do you drink water in sufficient quantity at least 3 liters per day?	Yes	25	50.0
	No	25	50.0

However, Table (3): represent that **46%** of the study sample was medically diagnosed as hypertension since (1-5) years, most of their high blood pressure was associated with heart's disease which of **40%**, **72%** of the study sample have a family history of hypertension, according to patients physician's follow up the result represent that **66%** of them not doing follow up, **92%** of the study sample was change the treatment by consult a doctor, **38%** of them used lemonade as an assistant methods to reduce

the high blood pressure, **54%** of them was have medication since (1-5) years, **98%** of the study sample who used medication for decrease level of blood pressure was effectives on reducing the high level of reading, **76%** of the study sample their blood pressure reading reached to (140-180 mm/Hg) as a systolic and from (100-120 mm/Hg) as diastolic, **38%** of them used capoten to maintain the blood pressure, and **42%** of them was a normal weight.

Table (3): Distribution of the Study Sample by Medical History No=50

No	Variables	Classification	Freq.	%
1	Duration of medically diagnosis of hypertension?	1-5 years	23	46.0
		6-11 years	13	26.0
		12-17 years	11	22.0
		18-23 years	1	2.0
		24-29 years	2	4.0
2	High blood pressure associated with disease	Diabetic mellitus	16	32.0
		Herat disease	20	40.0
		No	14	28.0
3	Have family history of hypertension	Yes	36	72.0
		No	14	28.0
4	Frequency of physician's follow up	No visit	33	66.0
		One time every six months	0.0	0.0
		One time every three months	4	8.0
		One time every month	10	20.0
		One or more times every two weeks	3	6.0
5	How to change treatment	By self	4	8.0
		Consult a doctor	46	92.0
6	What are the alternative behaviors methods are used to reduce the high blood pressure	Lemonade	19	38.0
		Bananas	5	10.0
		Ginger	5	10.0
		Nothing	21	42.0
7	How long have you been taking treatment?	1-5 years	27	54.0
		6-11 years	12	24.0
		12-17 years	7	14.0
		18-23 years	2	4.0
		24-29 years	2	4.0
8	Does the medication of blood pressure effective?	Yes	49	98.0
		No	1	2.0
9	Highest reading of pressure?	140-180/100-120 mm/Hg	38	76.0
		185-215/ 125-145 mm/Hg	12	24.0
10	Type of medication used	Capoten	19	38.0
		Amlodipine	12	24.0
		Atenolol	4	8.0
		Losartan	5	10.0
		Atacand	4	8.0
		Lisinopril	6	12.0
11	Body mass index (BMI)	Underweight = <18.5	0.0	0.0
		Normal weight = 18.5–24.9	21	42.0
		Overweight = 25–29.9	20	40.0
		Obesity = BMI of 30 or greater	9	18.0

Also, Table (4): shows the patients adherence for medication of hypertension at pre-test which of

58.7% of them was not adherence to medication and 41.3% of them adherence to medication

Table (4): Patients Adherence for Medication of Hypertension at pretest

No.	Items of adherence	Not Adherence		adherence	
		F	%	F	%
1	Do you forget to take your medication when you are busy	45	90.0	5	10.0
2	Do you forget to take your medication if you are invited to lunch or dinner?	40	80.0	10	20.0
3	Do you forget to take your medication?	45	90.0	5	10.0
4	Do you get late when it comes to buying your medication	33	66.0	17	34.0
5	Do you stop taking your medication if it forbids you from eating certain food that you love because of possible food-medication interaction?	34	68.0	16	32.0
6	Will you stop taking your medication, without your doctor's consultation, if your neighbor/relative took a prescription like yours for a long term and it caused them side effects?	2	4.0	48	96.0
7	Do you stop taking your medication without consulting your doctor if the laboratory tests show improvement during treatment period?	29	58.0	21	42.0
8	Do you stop taking your medication without consulting your doctor if you do not feel better during treatment period?	15	30.0	35	70.0
9	Do you stop taking your medication without consulting your doctor if you feel better during treatment period?	33	66.0	17	34.0
10	Do you decide to stop some of your medications without consulting your doctor if you noticed that you are taking too many medications every day?	1	2.0	48	96.0
11	Do you stop your chronic treatment if you get bored of it?	32	64.0	18	36.0
12	Do you stop taking your medication in case of side effects?	40	80.0	10	20.0
13	Do you stop taking your medication if your insurance does not cover it?	18	36.0	32	64.0
14	Will you stop buying your medication packs if you considered them expensive?	17	34.0	33	66.0
	Total		58.7		41.3

The result of table (5) revealed that the patient's knowledge toward importance of adherence for

medication of hypertension at pre-test was moderate level according to total mean which of (1.1%).

Table (5): Patients Knowledge toward importance of adherence for medication of Hypertension at pre-test

No.	Patients knowledge	M.	S.D.	Ass.
1	Hypertension is a major cause of gastrointestinal diseases	1.12	0.32	M
2	Primary blood pressure develops over time	1.12	0.32	M
3	High salt content in the body leads to high blood pressure	1.12	0.32	M
4	Blood pressure is more than 130 \ 90 mm / Hg is normal	1.12	0.32	M
5	Adult patients with diabetes are not at risk for high blood pressure	1.14	0.35	M
6	Age and diabetes mellitus are an unchangeable risk factor for hypertension	1.14	0.35	M
7	Reducing weight, organizing meals, exercising, reducing smoking and drinking alcohol are a risk factor for high blood pressure	1.02	0.14	L
8	there is no obvious cause for Primary hypertension	1.02	0.14	L
9	Renal failure is one of the causes of secondary hypertension	1.04	0.19	L
10	Signs of hypertension are headaches, dizziness, nausea and facial redness	1.02	0.14	L
11	Cholesterol, blood, urine analysis and ECG are essential for the diagnosis of hypertension	1.20	0.40	M
12	Lifestyle change is not considered a therapeutic intervention for hypertension	1.02	0.14	L
13	Garlic can damage the liver and cause bleeding in some patients with hypertension	1.02	0.14	L
14	Exercise, relaxation techniques and reduced fatigue play to reducing hypertension	1.02	0.14	L
15	The patient with hypertension should not change the diet to become better	1.02	0.14	L
16	A patient with high blood pressure should reduce fat, salt, sweets,	1.02	0.14	L
17	Stress is an important factor for treating high blood pressure	1.20	0.40	M
18	Behavioral interference, breathing techniques, relaxation and meditation are important tools to reduce fatigue or stress	1.20	0.40	M
19	Use garlic, omega-3 capsules and natural fiber such as wheat bran to treat many health problems including high blood pressure	1.12	0.32	M
20	Atenolol contributes to reducing the pressure on the heart	1.04	0.19	L
21	Atenolol is used to lower blood pressure	1.04	0.19	L
22	Atenolol is given intravenously only	1.20	0.40	M
23	Capoten is given an hour or two after the meal to absorb the entire treatment	1.24	0.43	M
24	Capoten causes headache, cough, insomnia, dizziness, constant fatigue	1.20	0.40	M
25	Amlodipine is used to treat hypotension and diabetes	1.20	0.40	M
26	The frequent side effects of lisinopril are headache, dizziness, orthostatic hypotension	1.06	0.23	L
27	Lisinopril is used to treat stress in adults and children 6 years of age and above and also to treat left ventricular dysfunction following myocardial infarction	1.06	0.23	L
28	One of the contraindications of Losartan is the hypersensitivity to Losartan	1.02	0.14	L
29	Candesartan is initially given to adults 32 mg once a day.	1.20	0.40	M
30	Patients who are adherence to medications are exposed to damage the organs	1.20	0.40	M
	Total	1.1		M

Low= 1; Middle= 1.1- 1.5; High= 1.6-2

Table (6): Patients Adherences for Medication of Hypertension at Post test

No.	Items of adherence	Not Adherence		adherence	
		F	%	F	%
1	Do you forget to take your medication when you are busy	22	44.0	28	56.0
2	Do you forget to take your medication if you are invited to lunch or dinner?	16	32.0	34	68.0
3	Do you forget to take your medication?	24	48.0	26	52.0
4	Do you get late when it comes to buying your medication	5	10.0	45	90.0
5	Do you stop taking your medication if it forbids you from eating certain food that you love because of possible food-medication interaction?	17	34.0	33	66.0
6	Will you stop taking your medication, without your doctor's consultation, if your neighbor/relative took a prescription like yours for a long term and it caused them side effects?	2	4.0	48	96.0
7	Do you stop taking your medication without consulting your doctor if the laboratory tests show improvement during treatment period?	3	6.0	47	94.0
8	Do you stop taking your medication without consulting your doctor if you do not feel better during treatment period?	2	4.0	48	96.0
9	Do you stop taking your medication without consulting your doctor if you feel better during treatment period?	4	8.0	46	92.0
10	Do you decide to stop some of your medications without consulting your doctor if you noticed that you are taking too many medications every day?	4	8.0	46	92.0
11	Do you stop your chronic treatment if you get bored of it?	23	46.0	27	54.0
12	Do you stop taking your medication in case of side effects?	28	56.0	22	44.0
13	Do you stop taking your medication if your insurance does not cover it?	13	26.0	37	74.0
14	Will you stop buying your medication packs if you considered them expensive?	10	20.0	40	80.0
	Total		24.7%		75.3%

Table (6): represent the patients adherence for medication of hypertension was improved at post instruction program which

as 75.3% of them was compliance for medication uses, and the patients not compliance was reduced to 24.7%.

Table (7): Patients Knowledge toward importance of patient's adherence for medication of Hypertension at post-test

No.	Patients knowledge	M.	S.D.	Ass.
1	Hypertension is a major cause of gastrointestinal diseases	1.90	0.30	H
2	Primary blood pressure develops over time	1.50	0.50	M
3	High salt content in the body leads to high blood pressure	2.00	0.00	H
4	Blood pressure is more than 130 \ 90 mm / Hg is normal	1.96	0.19	H
5	Adult patients with diabetes are not at risk for high blood pressure	1.94	0.23	H
6	Age and diabetes mellitus are an unchangeable risk factor for hypertension	1.58	0.49	M
7	Reducing weight, organizing meals, exercising, reducing smoking and drinking alcohol are a risk factor for high blood pressure	1.98	0.14	H
8	there is no obvious cause for Primary hypertension	1.30	0.46	M
9	Renal failure is one of the causes of secondary hypertension	1.66	0.47	H
10	Signs of hypertension are headaches, dizziness, nausea and facial redness	2.00	0.00	H
11	Cholesterol, blood, urine analysis and ECG are essential for the diagnosis of hypertension	1.92	0.27	H
12	Lifestyle change is not considered a therapeutic intervention for hypertension	1.90	0.30	H
13	Garlic can damage the liver and cause bleeding in some patients with hypertension	1.86	0.35	H
14	Exercise, relaxation techniques and reduced fatigue play in reducing hypertension	2.00	0.00	H
15	The patient with hypertension should not change the diet to become better	1.98	0.14	H
16	A patient with high blood pressure should reduce fat, salt, sweets, and red meat	2.00	0.00	H
17	Stress is an important factor for treating high blood pressure	1.94	0.23	H
18	Breathing techniques, relaxation and meditation are important t to reduce fatigue or stress	1.68	0.47	H
19	Use garlic, omega-3 capsules and natural fiber such as wheat bran to treat many health problems including high blood pressure	1.68	0.47	H
20	Atenolol contributes to reducing the pressure on the heart	1.06	0.23	L
21	Atenolol is used to lower blood pressure	1.08	0.27	L
22	Atenolol is given intravenously only	1.94	0.23	H
23	Capoten is given an hour or two after the meal to absorb the entire treatment	1.36	0.48	M
24	Capoten causes headache, cough, insomnia, dizziness, constant fatigue	1.94	0.23	H
25	Amlodipine is used to treat hypotension and diabetes	1.98	0.14	H
26	The frequent side effects of lisinopril are headache, dizziness, orthostatic hypotension	1.18	0.38	M
27	Lisinopril is used to treat stress in adults and children 6 years of age and above and also to treat left ventricular dysfunction following myocardial infarction	1.10	0.30	M
28	One of the contraindications of Losartan is the hypersensitivity to Losartan	1.14	0.35	M
29	Candesartan is initially given to adults 32 mg once a day.	1.98	0.14	H
30	Patients who are adherence to medications are exposed to damage the key organs such as kidneys or hear	1.98	0.14	H
	Total means	1.71		H

Low= 1; Middle= 1.1- 1.5; High= 1.6-2

Table (7): shows the patient’s knowledge toward importance of patient's adherence for medication of hypertension at post-test was improved their knowledge according to total mean of their responses toward the items of instruction program which of (1.71) (high level).

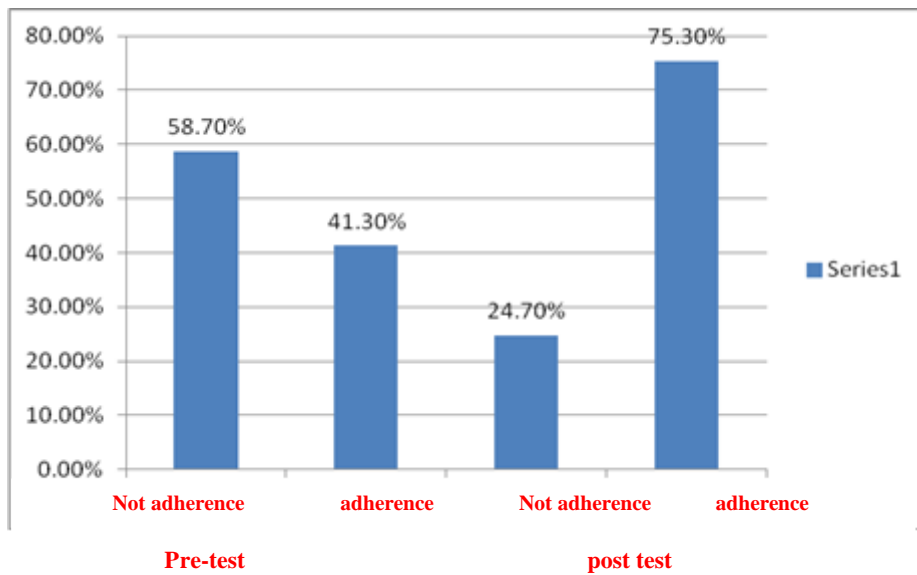


Figure (1): Pre and Post patients Adherence for Medication of Hypertension

Figure (1): present the improvement of patient’s adherence for medication of hypertension between pre and post instruction program

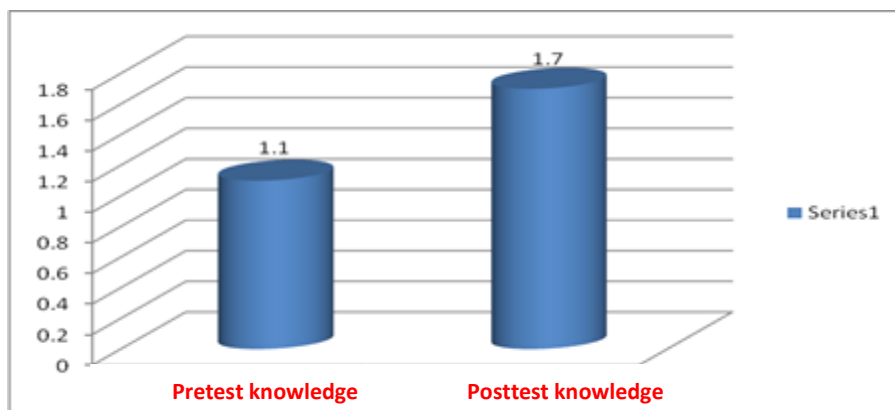


Figure (2): Pre and Post patients knowledge toward important of adherence for Hypertension Medication

Figure (2): present the improvement of patient’s knowledge toward important of their adherence for medication of hypertension between pre and post instruction program.

Table (8): Relationship between the Patients Adherence after Instruction Program and their age, level of education, income, and Residency

Variables		Patients adherence	Age group	Level of education	Income	Residency
Patients adherence	Pearson Correlation	1	.048	.130	-.255	.395**
	Sig. (2-tailed)		.742	.369	.074	.005 H.S.
	N	50	50	50	50	50
Age group	Pearson Correlation	.048	1	-.313*	-.100	.085
	Sig. (2-tailed)	.742		.027 S.	.489	.555
	N	50	50	50	50	50
Level of education	Pearson Correlation	.130	-.313*	1	-.385**	.079
	Sig. (2-tailed)	.369	.027		.006	.585
	N	50	50	50	50	50
Income	Pearson Correlation	-.255	-.100	-.385**	1	-.258
	Sig. (2-tailed)	.074	.489	.006 H.S.		.071
	N	50	50	50	50	50
Residency	Pearson Correlation	.395**	.085	.079	-.258	1
	Sig. (2-tailed)	.005	.555	.585	.071	
	N	50	50	50	50	50

Table (8) presented that there were highly significant relationship between patient's adherence after instruction program and their residency, and there were no significant relationship between patient's adherence and their level of education, age, and income at $p \leq 0.01$ level.

Table 9: Relationship between Patients Adherence and duration of hypertension, other disease, family history, follow up, and type of their drug

Variables		Patients adherence	Duration of hypertension	Other disease	Family history	Follow up	Type of drug
Patients adherence	Pearson Correlation	1	-.010	-.023	.134	.245	.192
	Sig. (2-tailed)		.943	.875	.354	.086	.181
	N	50	50	50	50	50	50
Duration of hypertension	Pearson Correlation	-.010	1	-.350*	-.132	-.135	-.011
	Sig. (2-tailed)	.943		.013 H.S.	.361	.351	.941
	N	50	50	50	50	50	50
Other disease	Pearson Correlation	-.023	-.350*	1	.082	.056	-.024
	Sig. (2-tailed)	.875	.013		.573	.700	.866
	N	50	50	50	50	50	50
Family history	Pearson Correlation	.134	-.132	.082	1	.067	-.207
	Sig. (2-tailed)	.354	.361	.573		.646	.149
	N	50	50	50	50	50	50
Follow up	Pearson Correlation	.245	-.135	.056	.067	1	.048
	Sig. (2-tailed)	.086	.351	.700	.646		.739
	N	50	50	50	50	50	50
Type of drug	Pearson Correlation	.192	-.011	-.024	-.207	.048	1
	Sig. (2-tailed)	.181	.941	.866	.149	.739	
	N	50	50	50	50	50	50

Table (9) presented that there were no significant relationship between patient's adherence and duration of hypertension, other disease, family history, follow up, and type of their drug at $p \leq 0.01$ level, while there were significant relationship between duration of hypertension and other disease at $p \leq 0.01$ level.

Discussion

The socio-demographic characteristics of participate in present study were (70%) of them were males, high percent (62%) of the sample at age group (48 and above) years, the level of education included in the present study was (26%) illiterate, the monthly income barely sufficient (54%), 70% of them

lives in urban area (table 1) **Mekonnen , et al.,(2017)** stated in a cross sectional study to assess the drug adherence among 409 participants from three referral hospitals in Northwest Ethiopia were the mean age of respondents was 54.5 years ,More than three-fourth (78.2%) of the respondents were urban area. two hundred sixty one (63.8%) reported as married, and 105 (25.7%) were government employees⁽¹⁰⁾ .

The present study revealed that (table2) the physical activity that (86%) can't do exercise, lowest percentage of them (18%) still smoking and (26%) ex-smoker smoke, all of the hypertensive patients (100%) not alcohol drinking, (66%) of this group were food contain a small amount of salt. **Serhal , et al.,(2018)** stated in study a cross-sectional

study, including 405 patients, was performed in outpatient cardiology clinics of three hospitals in Beirut. Blood pressure was measured, a questionnaire filled, and sodium intake estimated by a urine test. Logistic regression defined predictors of hypertension control and adherence, showed (71.1%) of patients don't any physical activity, the lowest percentage of them (18%) still smoking and (26%) stopped smoke, (63.4) have low sodium diet ⁽¹¹⁾.

The present study revealed that high percent (46%) date of medically diagnosis of hypertension at the (1-5) years, hypertensive patients have another diseases associated with hypertension, most of this diseases in this study were heart diseases that represent (40%) in this sample, (72%) of sample has family history of hypertension, Frequency of physician's follows up in this study (66%) no routine consultation and 92% of this sample change treatment by consult a doctor, the alternative practices methods are used to reduce the high blood pressure in this study (38%) used Lemonade to reduce high blood pressure, while (42%) not use anything, duration since starting treatment (54%) of patients start to take medication range at (1-5) years after disease started and high percentage of this sample 98% were the medications reduce blood pressure for them, (76%) of them represent the highest reading of blood pressure were the diastolic pressure range from 100-120 mm/Hg and systolic pressure range from 140-180 mm/Hg, Type of medication used in this study represent capotien (38%) the highest using, Body mass index was normal weight (18.5-24.9) in the most sample of study (42%) of them(table 3). **Boratas and Kilic**, (2018) explained in their cross-sectional which included 147 hypertensive patients who were admitted to Akdogan Health Center to evaluate

medication adherence in hypertensive patients and to identify the influential factors that duration of hypertension range between (2-6) years (38.1), and visit for hypertension (70.7%) once a month, 72.8 of them not uses any alternative methods to reduce high blood pressure ⁽⁴⁾.

The patients adherence for medication of hypertension at pre-test which of (58.7%) of them was not adherence to medication and (41.3%) of them was adherence to medication, while the patients adherence for medication of hypertension was improved at post instruction program which as 75.3% of them was compliance for medication uses, and the patients not compliance was reduced to 24.7%. **Teshome, et al.**,(2017) shows in their study in a cross-sectional study was conducted on 346 participants to assess the adherence to antihypertensive medications and identify associated factors at Debre Tabor General Hospital, northwest Ethiopia, they concluded that (75.1%) of the participants were found to be adherent to their medication therapy⁽⁵⁾.

The results of present study revealed that the patient's knowledge toward importance of adherence for medication of hypertension at pre-test was moderate level, and at post test was high level which of (1.71) **Pirasath, et al.**, (2017) stated in comparative study was carried out at Teaching Hospital Jaffna, from January 2017 to April 2017 to assess the patient's knowledge and awareness about hypertension and adherence to antihypertensive medication among hypertensive patients in a tertiary care center of northern Sri Lanka that 69.9% of patients from 303 patients had adequate knowledge about hypertension ⁽¹²⁾.

There were highly significant relationship between patient's adherence after instruction program and their residency, and there were no significant relationship between patient's adherence and their level of education, age, and income at $p \leq 0.01$ level (table 8). **Saleem, et al.**, (2013) assess 385 hypertensive patients who visited outpatient departments in two public hospitals in Quetta City, Pakistan, patient's knowledge of hypertension management and medication adherence that out of 385 patients, 236 (61.3 %) of them had average knowledge about hypertension while 249 (64.7 %) were categorized as poor adherent. No patient was considered as good adherent in the study. Correlation coefficient between total score of knowledge and total adherence was -0.170 ($p < 0.001$), indicating an inverse association between knowledge scores and adherence level ⁽¹³⁾.

The study results find that there were highly significant relationship between the effectiveness of instruction program and patients level of education, and there were no significant relationship between effectiveness of instruction program and their patient's residency, duration of hypertension, family history, and follow up at $p \leq 0.01$ level (table 10). **Saleem, et al.**, (2011) explain in their study a non-clinical randomized control trial was conducted whereby participants received an educational intervention through hospital pharmacists. Hypertension knowledge, medication adherence and health-related quality of life were measured by means of self-administered questionnaires that three hundred and eighty-five hypertensive patients were randomly assigned 192 in the control group and 193 in the intervention group) they presented that there were . no significant differences were observed in either group for age, gender, income, locality, education, occupation or duration of disease. And they

found, that increase in the participants' levels of knowledge about hypertension and medication adherence among the interventional group after completing the intervention. Significantly lower systolic and diastolic blood pressure levels were also observed among the interventional group after completion of the intervention. The interventional group, however, reported decreased yet significant health-related quality of life at the end of the interventional program ⁽¹⁵⁾.

The present study concluded:

- 1-The instructional program had positive effect on patient's knowledge.
- 2- Patients in the study demonstrated significant changes in their adherence for medication between pre and the post test

The study recommends the followings;

- 1-To enhance medication adherence, the clinicians should prescribe the minimal doses but best combinations and government should ensure availability of antihypertensive medications in all government health facilities.
- 2-Health care providers should reinforce their activities to help to improve patients' knowledge level, through focusing on identifying risk factors to hypertension, regular medication intake, good nutrition, physical activity, and changing and informing lifestyles of patients with hypertension.
- 3- Establish specific department in each treating center of hypertension to provide the patients the information about the important of compliance and follow up when patients need to change their drugs.

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