Assessment of physician's role in health education in improving hypertensive patient's knowledge and medication adherence in Ras-Lanofe- Libya

By

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Abbreviations

HFQ	Hypertension Fact Questionnaire
DAI-10	Drug Attitude Inventory
HTN	Hypertension
BP	Blood Pressure
STD	Standard
BHS	British Hypertension Society
SBP	Systolic Blood Pressure
DBP	Diastolic Blood Pressure
SPSS	Statistical Package of Social Science
BMI	Body Mass Index
KG/M^2	Kilogram / Meter^2

Chapter 1

Abstract

Abstract:

Introduction: Hypertension (HTN) is a silent killer, in both the developed and developing nations. It is one of the most significant risk factors for cardiovascular morbidity and mortality due to damage of blood vessels in the heart, brain, kidneys, and eyes. Adherence to long-term therapy for chronic illnesses in developed countries averages 50%. In developing countries, the rates are even lower. Poor adherence to long-term therapies severely compromises the effectiveness of treatment, making it as a critical issue in population health both from the perspective of quality of life and of health economics. **Aim**: to evaluate the effective (intervention program to help patients with HTN in improving: disease state knowledge and adherence to treatment regimen). **Method**: Cohort (interventional) study, pre and post health education assessment, included 100 hypertensive patients, who were followed for 6 months from Ras-Lanofe out patients clinic.

Two different questionnaires were used for the data collection. The Hypertension Fact Questionnaire (HFQ) was used to assess the level of knowledge and drug Attitude Inventory (DAI-10) was used to measure the level of adherence to medications of these patients. Statistical analysis on study results was performed by the SPSS version 18. **Results**: The study included 95(5 patients defaulted) patients, the mean age was 56.8± 6.2 years. Majority 70.5% were males. Mean duration of hypertension was 6.8± 2.8years.There was statistically

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significant difference in most of HTN Knowledge items both before and after health education. Knowledge assessment score, poor knowledge score was 51.6% before the health education and become 1.1% after health education, average score was 32.6% before health education and become 2.1% after health education. Adequate knowledge score was 15.8% before health education and increased to 96.8% after health education. Although the patients had average knowledge about hypertension, the level of adherence was poor, most of medication adherence items before and after health education showed no statistical difference. Moderate adherence score was 11.6% before health education and increased to 38.9% after health education, good adherence score was 22.1% before health education and increased to 27.4% after, and poor adherence score was 66.3% before health education and decreased to 33.7% after health education. Knowledge had no significant or inverse relationship to drug adherence, suggesting that there are other factors for the patients' non-adherence which need to be explored. **Recommendations**: Patients must be educated not only about HTN, but also about the benefits of medications on treatment outcomes and quality of life.

Chapter 2

Introduction

Introduction:

About one third of adults in most communities in the developed and developing world have hypertension. [1]

Hypertension is the most common chronic condition dealt with by primary care physicians and other health practitioners. Most patients with hypertension have other cardiovascular risk factors, dyslipidemia, glucose intolerance, or diabetes, a family history of early cardiovascular events, obesity, and cigarette smoking. [1]

The success in treating hypertension has been limited, and despite well-established approaches to diagnosis and treatment, in many communities fewer than half of all hypertensive patients have adequately controlled blood pressure. [1]

Most major guidelines recommend that hypertension be diagnosed when a person's systolic blood pressure is $\geq$ 140 mm Hg or their diastolic blood pressure is $\geq$ 90 mmHg, or both, on repeated examination. [1]

The systolic blood pressure is particularly important and is the basis for diagnosis in most patients. These figures apply to all adults older than 18years, although for patients aged 80 or older a systolic blood pressure up to 150 mm Hg is now regarded as acceptable. [1]

The goal of treating hypertension is to reduce blood pressure to levels below the figures used for making the diagnosis which is < 140/90 provided that there is no other comorbidity. [1]

Causes of Hypertension

Primary Hypertension

About 95% of adults with high blood pressure have primary hypertension (sometimes called essential hypertension).The cause of primary hypertension is not known, although genetic and environmental factors that affect blood pressure regulation are now being studied. [1]

Environmental factors include excess intake of salt, obesity, and perhaps sedentary lifestyle. Some genetically related factors could include inappropriately high activity of the renin-angiotensin aldosterone system and the sympathetic nervous system and susceptibility to the effects of dietary salt on blood pressure. Another common cause of hypertension is stiffening of the aorta with increasing age. This causes hypertension referred to as isolated or predominant systolic hypertension characterized by high SBP (often with normal DBP), which is found primarily in elderly people. [1]

Secondary Hypertension

This pertains to the relatively small number of cases, about 5% of all hypertension, where the cause of the high blood pressure can be identified and sometimes treated. The main types of secondary hypertension are those related to chronic kidney disease, Cushing syndrome, acromegaly, drugs, renal artery stenosis, excessive aldosterone secretion, pheochromocytoma, and sleep apnea. [1]

Evaluation of patients with HTN

All patients with hypertension require a thorough history-taking and physical examination, yet they need a limited number of routine investigations. Assessment should be targeted to the following:

-Evaluation of possible secondary causes (e.g. hypokalaemia, history of palpitations, flushing, previous renal disease, unequal pulses on examination, renal bruits etc)

-Target organ involvement i.e. evidence of left ventricular hypertrophy, retinopathy and proteinuria or evidence of cardiovascular disease.

-Cardiovascular risk calculation .

- Life-style assessment – smoking, alcohol, obesity, diet including salt and fat intake, and exercise.

-Previous history of anti-hypertensive therapy including drug intolerances and contraindications

- Proper BP measurements. [2]

Blood pressure measurement

• Take **THREE** readings (ignore the first) on **THREE SEPARATE** occasions unless there is evidence of end organ damage

• Use a British Hypertension Society (BHS) VALIDATED DEVICE ONLY i.e. mercury or oscillometric device and NOT an anaeroid one .

• Ensure that an appropriate sized cuff is used for overweight patients

• Measure BP in both arms as part of the initial assessment to detect stenosis and or occlusion of a large artery. A difference of >20 mmHg is significant and may indicate a stenosis in the arm with the lower BP. The arm with the higher BP reading should be used subsequently. Measure BP in lower limbs and radiofemoral delay to detect coarctation of aorta.

• Be aware of heavily calcified arteries which can lead to falsely elevated measurements or *pseudohypertension* (palpable vessel despite cuff inflated to >SBP = Osler's manoeuvre/sign) [2]

Management of HTN:

1. NONPHARMACOLOGIC TREATMENT

(a) Lifestyle interventions

I) Measures to reduce blood pressure

Recent trials have confirmed that lifestyle changes can indeed lower BP.

Intervention

weight reduction aiming to maintain ideal body mass index (20–25kg/m2)this can be achieved by :

1- Consumption of diet rich in fruit, vegetables and fibre, but low in fat and reduced sodium intake.

2- Physical activity, regular aerobic physical activity e.g., brisk walking for at least 30 min at least 5 days/wk.

II) Other measures to reduce CVD risk rather than lowering BP per se

- cessation of smoking

- reduced total fat and saturated fat intake

- replacement of saturated fats with mono-unsaturated fats

- increased oily fish consumption (1-2 portions per week)

 - relaxation techniques (controversial!) [2]

2. Drug treatment of hypertension

I) Treatment with drugs should be started in patients with blood pressures ≥140/90 mm Hg in whom lifestyle treatments have not been effective.

Drug treatment can be delayed for some months in patients with:

 (a) Stage 1 hypertension who have no evidence of abnormal cardiovascular findings or cardiovascular risk factors.

(b) In patients with stage 2 hypertension (blood pressure ≥160/100 mm Hg), drug treatment should be started immediately after diagnosis, usually with a 2-drug combination, without waiting to see the effects of lifestyle changes.

Drug treatment can also be started immediately in all hypertensive patients in whom, for logistical or other practical reasons, the practitioner believes it is necessary to achieve more rapid control of blood pressure. The presence of other cardiovascular risk factors should also accelerate the start of hypertension treatment.

II) For patients older than 80 years, the suggested threshold for starting treatment is at levels ≥150/90 mm Hg. Thus, the target of treatment should be <140/90 mm Hg for most patients but <150/ 90 mm Hg for older patients (unless these patients have chronic kidney disease or diabetes, where BP <140/90 mm Hg should be considered).

III) The treatment regimen: Most patients will require more than one drug to achieve control of their blood pressure. In general, increase the dose of drugs or add new drugs at approximately 2- to 3-week intervals.

This frequency can be faster or slower depending on the judgment of the practitioner. In general, the initial doses of drugs chosen should be at least half of the maximum dose so that only one dose adjustment is required thereafter.

It is generally anticipated that most patients should reach an effective treatment regimen, whether 1, 2, or 3 drugs were used, within 6 to 8 weeks. If the untreated blood pressure is at least 20/ 10 mm Hg above the target blood pressure, consider starting treatment immediately with 2 drugs.

IV) Choice of drugs

This should be influenced by the age, ethnicity/race, and other clinical characteristics of the patient. The choice of drugs will also be influenced by other conditions (eg, diabetes and coronary disease) associated with the hypertension. Pregnancy also influences drug choice. Long-acting drugs that need to be taken

only once daily are preferred to shorter-acting drugs that require multiple doses because patients are more likely to follow a simple treatment regimen.

For the same reason, when more than one drug is prescribed, the use of a combination product with two appropriate medications in a single tablet can simplify treatment for patients, although these products can sometimes be more expensive than individual drugs. Once-daily drugs can be taken at any time during the day, most usually either in the morning or in the evening before sleep. If multiple drugs are needed, it is possible to divide them between the morning and the evening.

The choice of drugs will further be influenced by their availability and affordability. In many cases, it is necessary to use whichever drugs that have been provided by government or other agencies. For this reason, we will only make recommendations for drug classes, not individual agents, recognizing that there may be a limited selection of drugs that can be prescribed by a practitioner. Even among generic drugs there can be a wide variation in cost.[1]

Although many efficacious medical treatments exist, a recent institute of medicine report identified a gap between current treatment success rates and those believed to be achievable[3] . This gap has been attributed partly to (a) Lack of patient adherence to recommended treatment[3,4]. (b) Poor medication adherence is common[5,6]. Studies have consistently shown that 20% to 30% of medication prescriptions are never filled and that approximately 50% of medications for

chronic disease are not taken as prescribed[7,8]. This lack of adherence has dramatic effects on health[7,9-18]. Patient knowledge and awareness of BP play important roles in the ability to successful control of hypertension[19-20] Astudy showed an association between hypertension knowledge and compliance in hypertensive patients[21]. Recently, lack of knowledge of target systolic blood pressure levels was shown to be an independent predictor of poor BP control[22]. Studies on patients' awareness of hypertension and clinicians' adherence to standard treatment guidelines carried out in developed countries showed poor performance[23].

Adherence has been defined as the "active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behaviour to produce a therapeutic result[24,25]. This definition implies that the patient has a choice and that both patients and providers mutually establish treatment goals and the medical regimen[24]. Medication adherence usually refers to whether patients take their medications as prescribed, and whether they continue to take the medication[26,27].

Patient education:

Effective patient education entails providing patients with health information that will improve their overall health status. The Latin origin of the word doctor ("docere") means "to teach," and the education of patients, their families, and communities is the responsibility of all physicians. Family physicians are

uniquely suited to take a leadership role in patient education. Patient education is a collaborative effort between family physicians and patients, with the primary goal being to increase patient adherence to medical treatment. Family physicians build up long-term, trusting relationships with patients, providing opportunities to encourage and reinforce changes in health behavior. For these reasons, patient education is an essential component of residency training for family physicians[28].

Chapter 3

Aim

Aim:

The aim of this study is to evaluate the effectiveness of interventional program to help patients with HTN in improving:

1- Disease state knowledge.

2-Adherence to treatment regimen.

3- Improvement of blood pressure control.

Chapter 4

Methods & Subjects

Methodology:

Sitting: Ras-Lanofe out patients clinic.

Study design: Cohort (intervention), pre and post health education assessment study.

Patients: patients were seen during the period from 1st of February 2014 to 31st of May 2014. Patients who agreed to participate were briefed on the nature and objectives of the study and followed for six months.

Study included 100 patients Aged 18 years and above with essential hypertension, and using antihypertensive agents for the last 6 months, pregnant patients and patients with co-morbidities were excluded. Data included age, sex, level of education, duration of hypertension, history of smoking for males, history of passive smoking for females, body mass index, level of systolic blood pressure before and after health education, level of diastolic blood pressure before and after health education, hypertension knowledge items of patients blood pressure before and after health education, and medication adherence items before and after health education.

Response rate: 5 patients defaulted, giving response rate of 95% (did not complete the post health education assessment).

Data collection

Two different questionnaires were used for the data collection, and both instruments were pilot tested for validity by Saleem's et al study. (Appendix).

1. The Hypertension Fact Questionnaire (HFQ) was used to assess the level of knowledge, 2. Drug Attitude Inventory (DAI-10) was used to measure the level of medication adherence of the hypertensive patients. The instruments, originally constructed in English, were translated into the Arabic language by the researcher. It was made sure that the essential meanings of the items were preserved during translation[29].

Knowledge assessment tool

HFQ, comprising 15 questions, was used to assess the knowledge of patients about hypertension, its causes, treatment and management. Each response was scored as 'yes', 'no' or 'do not know'. The HFQ was constructed by the research team after extensive literature survey. The scoring range of HFQ was 15 (maximum) to 0 (minimum). A cut off level < 8 was considered as poor, 8-12 average, and 13-15 as adequate, knowledge about hypertension. Knowledge scores for individuals were calculated and summed up to give the total knowledge score[29].

Measurement of adherence

DAI-10 was used to measure the rate of drug adherence in the study patients. DAI consisted of 10 items with responses in the form of 'yes' or 'no', with scores ranging from 10 as maximum to -10 as minimum.

Patients scoring in the negative range were considered non-adherent, 0 - 5 moderate adherent, and 6 - 10 adherent[29].

Statistical methods

Statistical analysis was per-formed using the SPSS version 18. For the comparison of continuous variables, independent T-test was applied. For categorical variables, chi-square test was applied. $P \leq 0.05$ was considered to be statistically significant. Spearman rank correlation test was used to measure the association between knowledge and drug adherence.

Chapter 5

Results

Results:

The study included 100 patients, however 5 patients defaulted, there was male and female. The mean age was 56.8± 6.2 years (42 – 65 years), age 14- 50 years accounted for 16.8% and 51-60 years 44.2%, while age > 60 years accounted for 39%. (table 1 and figure 1)

The majority of patients were males (70.5%) and females (29.5%). (table 2 and figure 2)

More than half of the patients had diploma (61.1%), while University graduation accounted for 38.9%. (table 3 and figure 3)

The mean duration of hypertension was 6.8± 2.8years (2 – 15 years). (table 4 and figure 4)

History of smoking in males was found in 26.9% of the patients, 71.9% never smoked and 1.2% were ex-smokers. (table 5 figure 5)

The majority of women were passive smokers accounted for 71.4%. (table 6 and figure 6)

The mean BMI was 26.2±2.02 (22.5 – 33 years), majority of the patients had BMI ≥ 25(76.8%). (table 7 and figure 7)

The majority (92.6%) of patients had SBP >140 before the health education, and this decreased to 78.9% after the health education sessions.

There was improvement in level of SBP, where it is decreased after the health education sessions, and this decrease was statistically significant ($P = 0.013$), also

there was highly statistically significant difference between the means of two systolic measurements before and after the health education ($P = 0.000$). (table 8 and figure 8)

A diastolic blood pressure >90 was recorded in 70.5% of patients before health education and decreased to 24.2% after the health education.

The decrease in DBP, after the health education sessions, and this decrease was highly statistically significant ($P = 0.000$). The mean level of DBP before health education was 91.7± 5.4 mmHg, and after health education it was 87.3± 5.3mmHg, this difference between the means of two diastolic measurements before and after the health education statistically significant ($P = 0.000$). (table 9 and figure 9)

There were statistically significant difference in most of HTN Knowledge items between before and after health education, which means that there was improvement in the knowledge of patients after health education. There were no significant difference in four items namely: before health education almost all the patients know the normal values of blood pressure, elevated BP is called HTN, HTN is a treatable condition, and HTN can lead to other life-threatening diseases but unfortunately most of them answer yes before and after health education for this question eating more salt has no effect on blood pressure. (table 10)

Knowledge assessment scale, poor knowledge was 51.6% before the health education and become 1.1% after health addiction, average was 32.6% before

health education and become 2.1% after health education and adequate knowledge was 15.8% before health education and increased to 96.8% after health education.

Mean of the score knowledge before health education was 8.2± 3.04 and the median was 7, and after health education the mean was 14.8 ± 1.2 and the median was 15, there was statisticaly significant difference between the mean knowledge score before and after health education, (P 0.000). (table 11 and figure 10)

Although the patients had average knowledge about hypertension, the level of adherence was poor, for most of medication adherence items before and after health education there were no statistical difference both before and after health education, poor adherence was apparent in responses to questions 2, 5 and 9. (table 12)

Moderate adherence scores was 11.6% before health education and increased to 38.9% after health education, good adherence was 22.1% before health education and increased to 27.4% after, and poor adherence was 66.3% before health education and decreased to 33.7% after health education.

Mean adherence before health education was -1.11±5.7, median was -4, and after health education, mean adherence was1.6 ±4.6, median was (0.0) this difference was statistically significant ($P = 0.000$). (table 13 and figure 11)

Spearman Rank order correlation coefficient between total score of knowledge and total score of adherence before health education was 0.066.

Spearman Rank order correlation coefficient between total score of knowledge and total adherence after health education was inverse - 0.059.

In the present study, knowledge had no significant or inverse relationship to drug adherence.

Table 1: Distribution of patients according to age.

Age (year)	No.	%
≤ 50	16	16.8
51 – 60	42	44.2
> 60	37	39
Total	95	100

Mean age = 56.8. ± =6.2years (42-65).
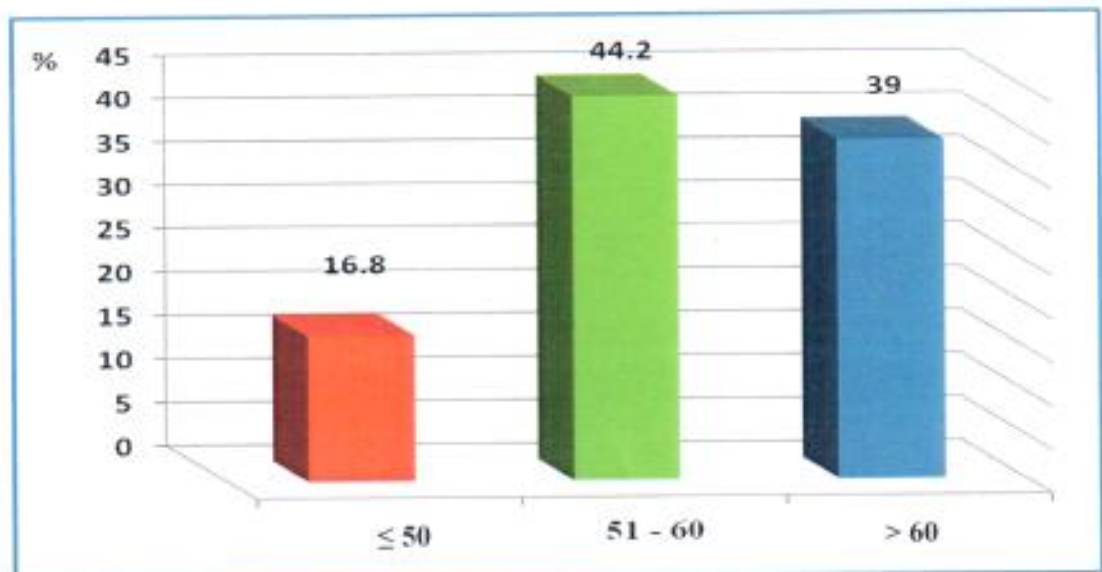
Fig. 1: Distribution of patients according to age.

Table 2: Distribution of patients according to the sex.

Sex	No.	%
Male	67	70.5
Female	28	29.5
Total	95	100
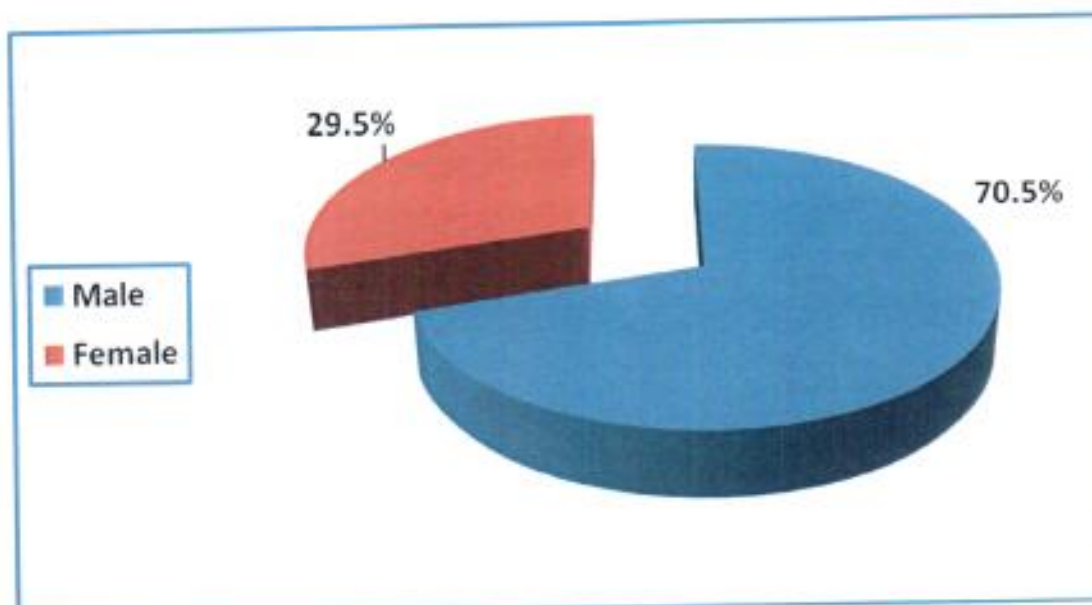
Fig. 2: Distribution of patients according to the sex.

Table 3 : Distribution of patients according to level of education.

Level of education	No.	%
Diploma	58	61.1
University	37	38.9
Total	95	100
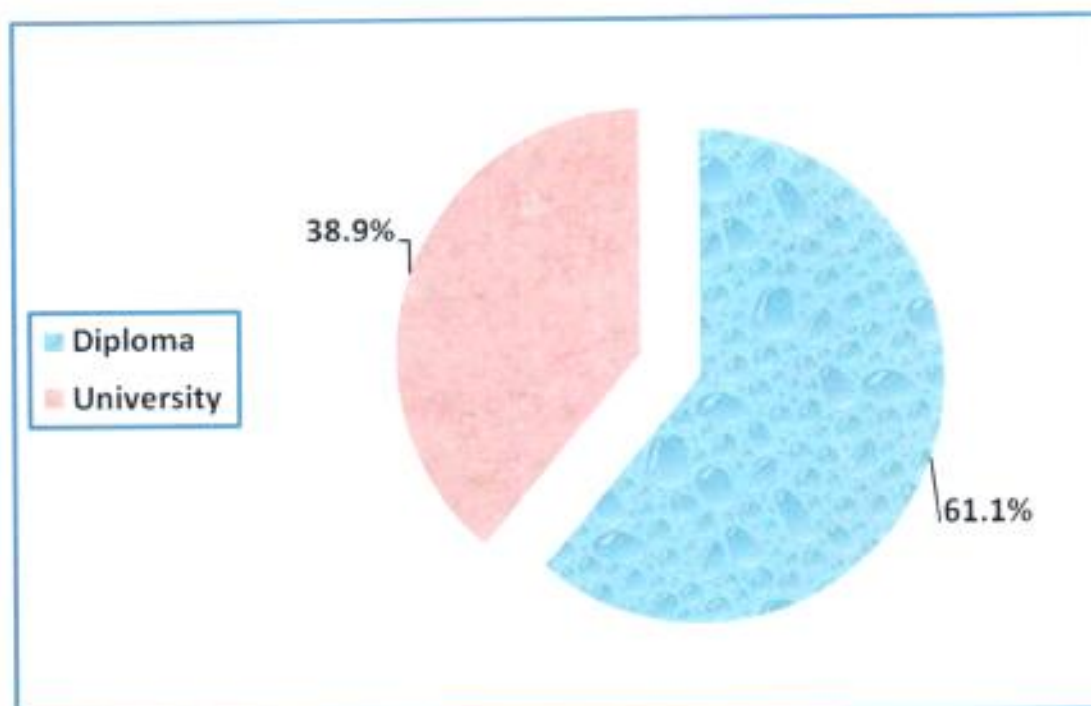
Fig.3 : Distribution of patients according to level of education.

Table 4:Distribution of patients according to duration of hypertension.

Duration of hypertension (years)	No.	%
< 6	37	38.9
6 – 10	47	49.5
>10	11	11.6
Total	95	100

Mean duration = 6.8 ± 2.8 (2-15y).
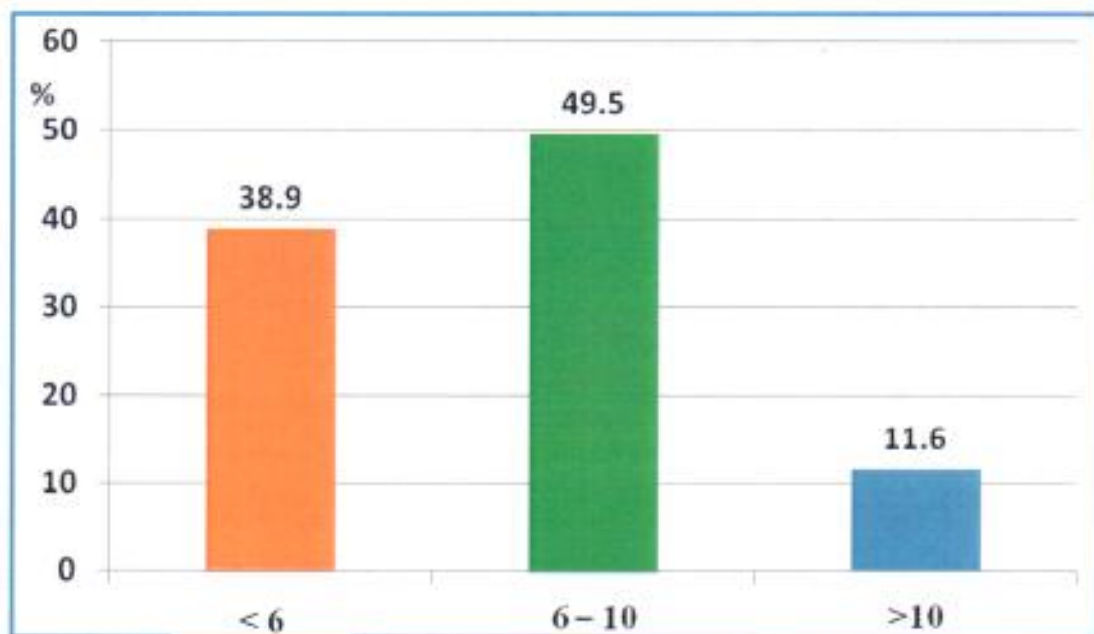
Fig. 4:Distribution of patients according to duration of hypertension.

Table 5: Distribution of patients according to history of smoking for males.

Smoking status	No.	%
Smoker	18	26.9
Never smoked	48	71.6
Ex-Smoker	1	1.5
Total	67	100
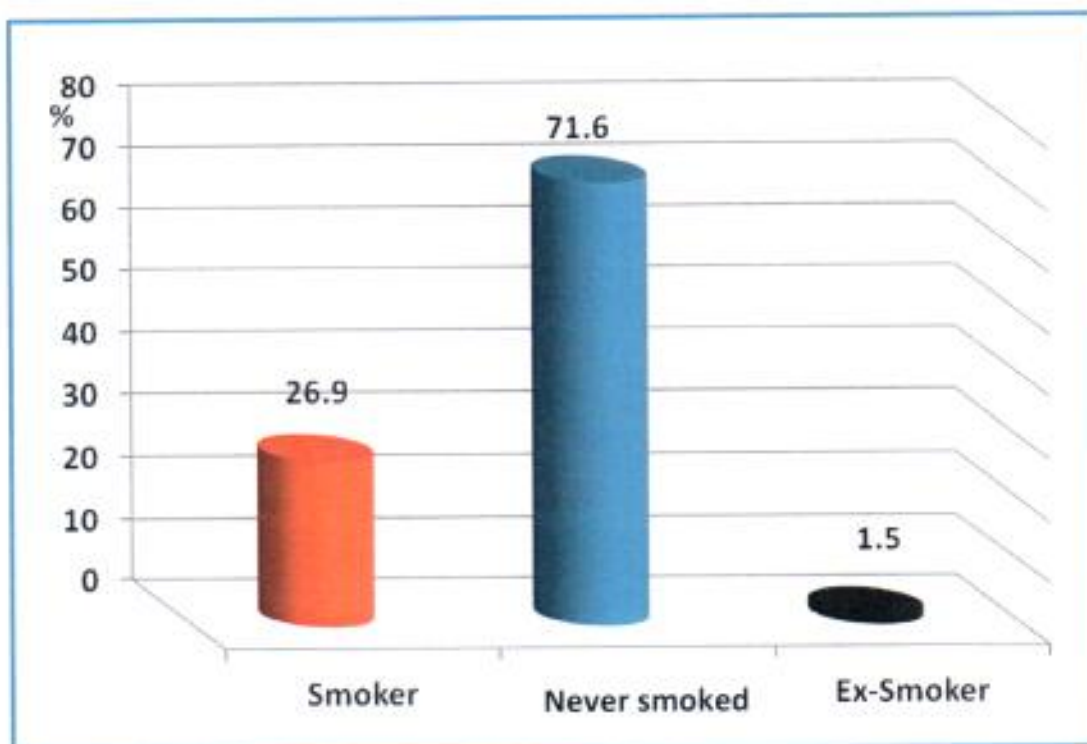
Fig. 5: Distribution of patients according to history of smoking for males.

Table 6: Distribution of patients according to history of passive smoking for females.

Passive smoking	No.	%
Yes	20	71.4
No	8	28.6
Total	28	100
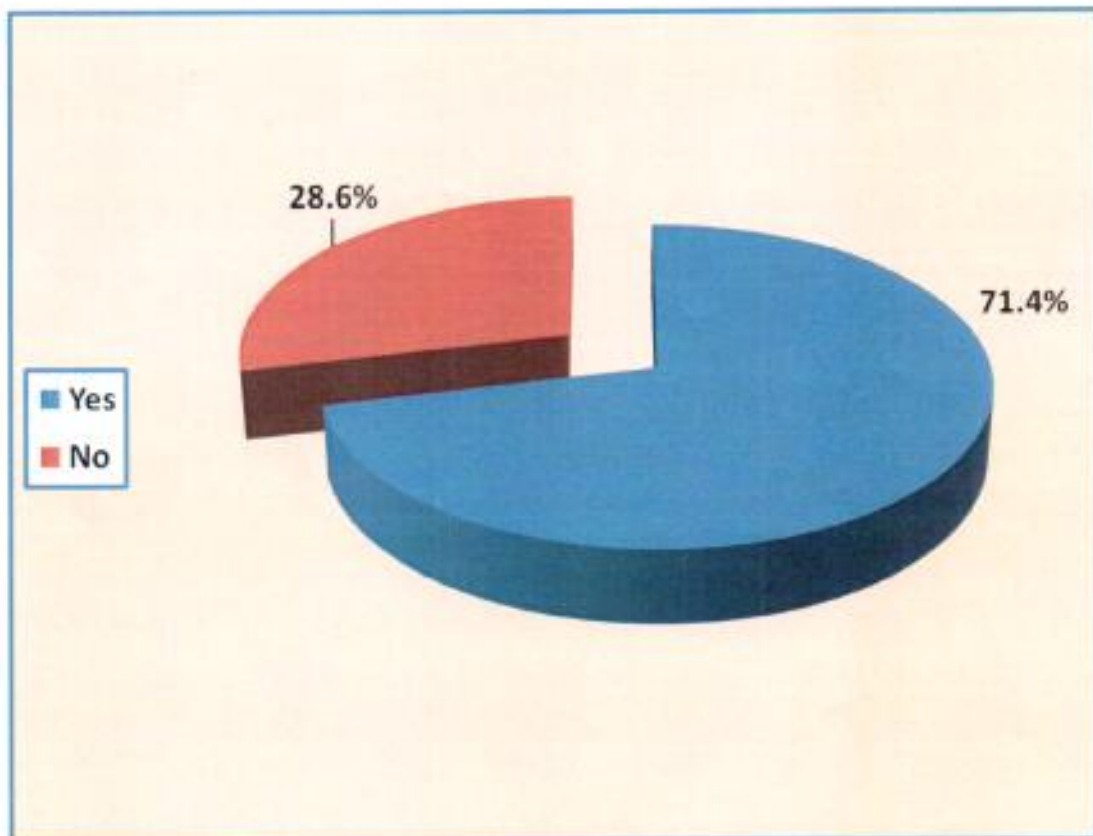
Fig. 6: Distribution of patients according to history of passive smoking for females.

Table 7: Distribution of patients according to BMI (Kg/M^2).

BMI	No.	%
18.5 – 24.9	22	23.2
≥ 25	73	76.8
Total	95	100

Mean BMI = 26.2. ± 2.02 (22.5-33 Kg/M^2)
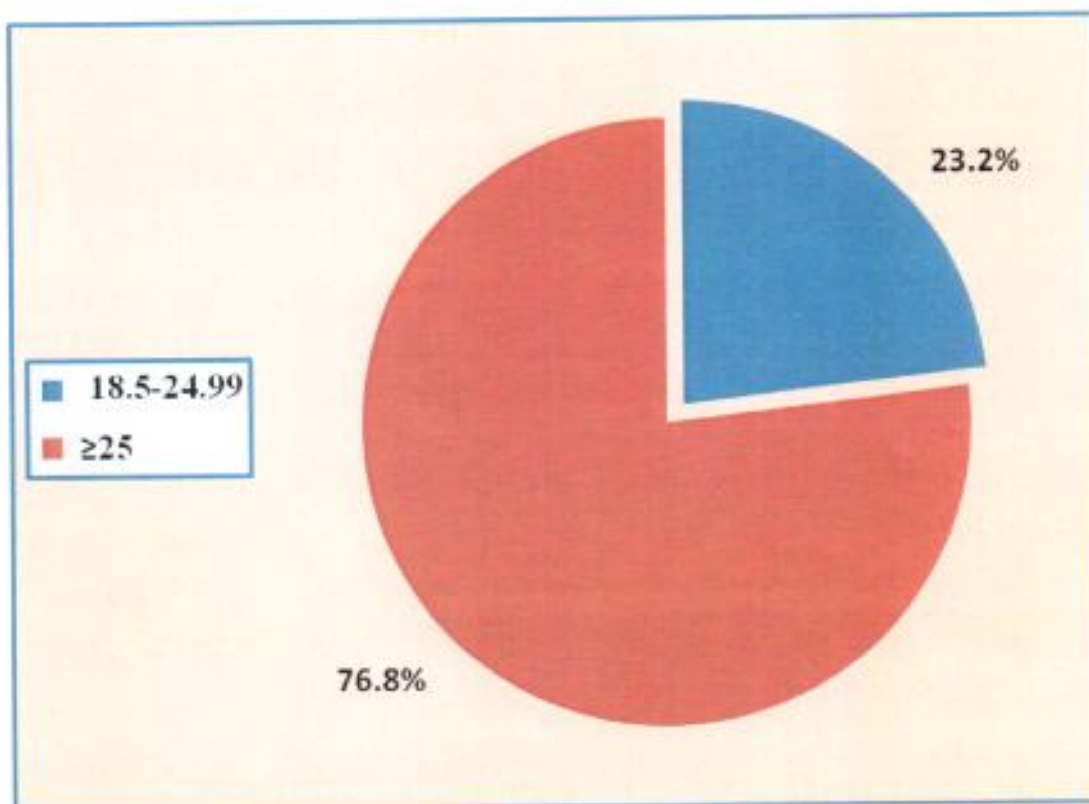
Fig. 7: Distribution of patients according to BMI.

Table 8 :Distribution of patients according to level of systolic blood pressure before and after health education .

| Level of systolic blood pressure/ mm/Hg | Systolic blood pressure | | | |
| | Before | | After | |
	No.	%	No.	%
< 140	7	7.4	20	21.1
≥140	88	92.6	75	78.9
Total	95	100	95	100

P= 0.013.

Before health education :Mean = 154.6. ± 9.1 mmHg (120-171 mmHg)

After health education :Mean =147.1. ± 8.3mmHg (125-165mmHg).

t =   5.935 with 188 degrees of freedom; *P* = 0.000 (Significant).

Fig. 8 :Distribution of patients according to level of systolic blood pressure before and after health education .

Table 9 :Distribution of patients according to level of diastolic blood pressure before and after health education .

Level of diastolic blood pressure/ mmHg	Diastolic blood pressure			
	Before		After	
	No.	%	No.	%
< 90	28	29.5	72	75.8
≥ 90	67	70.5	23	24.2
Total	95	100	95	100

X^2= 39.034; P= 0.000 (Significant).

Before health education :Mean = 91.7. ± 5.4 mmHg (70-105 mmHg)

After health education :Mean = 87.3 ± 5.3 mmHg (75 – 100 mmHg)

t =   5.668 with 188 degrees of freedom; P = 0.000 (Significant)
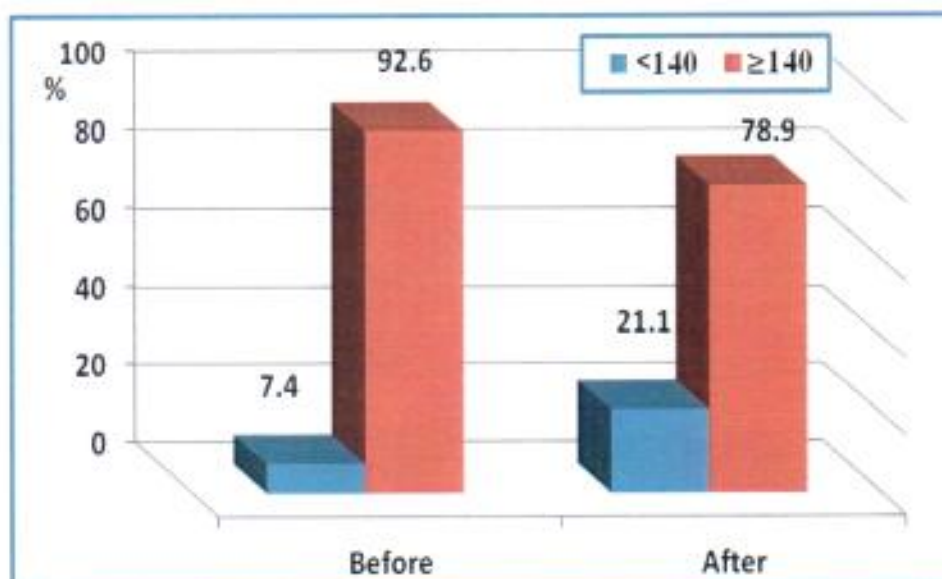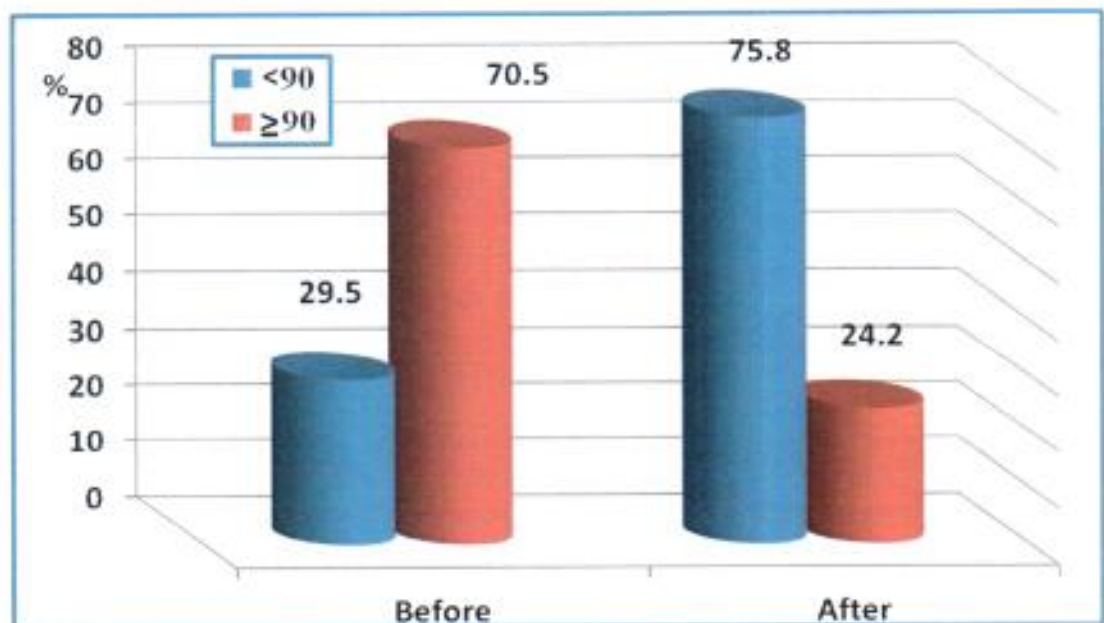

Fig. 9 :Distribution of patients according to level of diastolic blood pressure before and after health education .

Table 10: HTN Knowledge of patients before and after health education.

HTN Knowledge items	Before			After			P Value
	Yes	No	Don't know	Yes	No	Don't know	
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	
Do you know the normal values of blood pressure?	91 (95.8)	3(3.2)	1(1.1)	95(100)	0(0)	0(0)	---
Elevated Bp is called HTN	95(100)	0(0)	0(0)	95(100)	0(0)	0(0)	----
HTN is a condition which can progress with age	63(66.3)	2(2.1)	30(31.6)	94(98.9)	1(1.1)	0(0)	0.000*
Both men and women have equal chance of developing HTN	2(2.1)	39(41.1)	54(56.8)	1(1.1)	93(97.8)	1(1.1)	0.000*
HTN is a treatable condition.	92(96.8)	3(3.2)	0(0)	93(97.9)	2(2.1)	0(0)	1.00**
The older person is the greater their risk of having HTN	74(77.9)	4(4.2)	17(17.9)	94(98.9)	1(1.1)	0(0)	0.000*
Smoking is a risk factor for HTN	34(35.8)	19(20)	42(44.2)	94(98.9)	1(1.1)	0(0)	0.000*
Eating fatty food affects blood cholesterol level which is a risk factor for developing HTN	30(31.6)	21(22.1)	44(46.3	92(96.8)	2(2.1)	1(1.1)	0.000*
Being overweight increases risk for HTN	21(22.1)	25(26.3)	49(51.6)	94(98.9)	0(0)	1(1.1)	0.000*
Regular physical activity will lower a person's chance of getting	18(18.9)	26(27.4)	51(53.7)	93(97.8)	1(1.1)	1(1.1)	0.000*
Eating more salt has no effect on blood pressure	2(2.1)	93(97.9)	0(0)	4(4.2)	91(95.8)	0(0)	0.678**
Dietary approaches to reduce HTN do no good	2(2.1)	71(74.7)	22(23.2)	1(1.1)	93(97.8)	1(1.1)	0.000*
White meat is as good as red meat in HTN	5(5.3)	34(35.8)	56(58.9)	1(1.1)	93(97.8)	1(1.1)	0.000*
Medication alone can control HTN	56(58.9)	22(23.2)	17(17.9)	2(2.1)	93(97.9)	0(0)	0.000*
HTN can lead to other life-threatening diseases	95(100)	0(0)	0(0)	93(97.9)	2(2.1)	0(0)	0.477**

*Significant   **Not significant

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Table 11: Knowledge assessment score .

Score	Before		After	
	No.	%	No.	%
0 – 7	49	51.6	1	1.1
8 – 12	31	32.6	2	2.1
13 – 15	15	15.8	92	96.8
Total	95	100	95	100

Before health education: Mean knowledge=8 ± 3.04 (3 – 14)

After health education: Mean knowledge = 14.8 ± 1.2 (6-15)

$t = -19.683$ with 188 degrees of freedom; $P = 0.000$(highly significant difference).

Note: Knowledge was assessed by giving 1 to correct answer and 0 to the wrong answer. The "don't know" response was also taken as 0. The scale measured knowledge from maximum 15 to minimum 0. Scores < 8 were taken as poor, 8 - 12 average, and 13 - 15 adequate knowledge of hypertension.
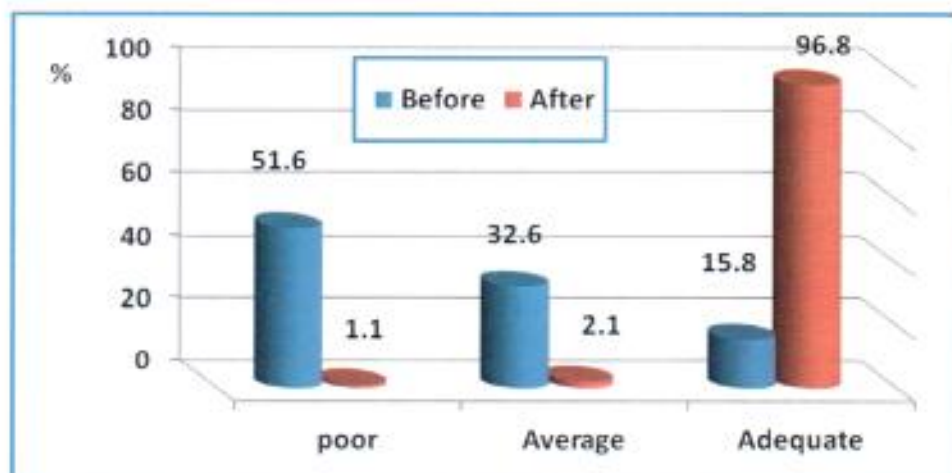
Fig.10: : Knowledge assessment score

Table 12: Medication adherence items before and after health education.

Medication adherence items	Answers								P Value
	Before				After				
	True		False		True		False		
	No.	%	No.	%	No.	%	No.	%	
For me ,the good things about medication out weight the bad	26	27.4	69	72.6	27	28.4	68	71.6	1.000**
I feel uncomfortable on medication	53	55.8	42	44.2	52	54.7	43	45.3	1.000**
I take medication on my own choice	75	78.9	20	21.1	3	3.2	92	96.8	0.000*
Medications make me feel more relaxed	44	46.3	51	53.7	44	46.3	51	53.7	---
Medication makes me feel tired and sluggish	40	42.1	55	57.9	41	43.2	54	56.8	1.000**
I take medication only when I am sick	51	53.7	44	46.3	1	1.1	94	98.9	0.000*
I feel more normal on medication	55	57.9	40	42.1	54	56.8	41	43.2	1.000**
It is unnatural for my mind and body to be controlled by medication	74	77.9	21	22.1	73	76.8	22	23.2	1.000**
My thought are clearer on medication	28	29.5	67	70.5	29	30.5	66	69.5	1.000**
By staying on medications I can prevent getting sick	93	97.9	2	2.1	94	98.9	1	1.1	1.000**

*Significant   **Not significant

Table 13: Adherence assessment score

Score	Before		After	
	No.	%	No.	%
0 – 5	11	11.6	37	38.9
6 – 10	21	22.1	26	27.4
-10 -- (-1)	36	66.3	32	33.7
Total	95	100	95	100

Before health education :Mean adherence = -1.11 ± 5.7 (- 8 – 10).

After health education: Mean adherence =1.6 ± 4.6 (- 4 – 10).

t = -3.606 with 188 degrees of freedom; P = 0.000(highly significant difference).

Note: Adherence was assessed by giving 1 to correct answer and -1 to the wrong answer. The scale measured adherence from a maximum of 10 to a minimum of -10. Any negative score was rated as poor adherence ,0 - 5 as moderate adherence and 6 - 10 as good adherent.
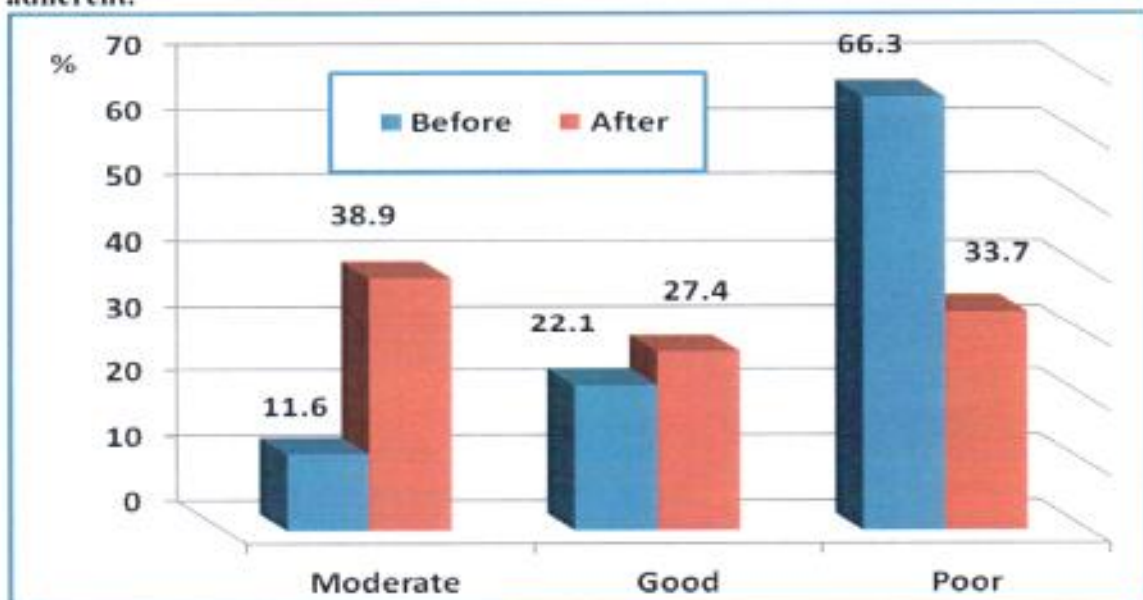

Fig.11: Adherence assessment score .

Spearman Rank order correlation coefficient between total score of knowledge and total adherence before health education was 0.066.

Spearman Rank order correlation coefficient between total score of knowledge and total adherence after health education was reversed - 0.059.

Chapter 6

Discussion

Discussion:

The study included 100 patients, however 5 patients defaulted, the mean age was 56.8± 6.2years, (42-65 years), age 42- 50 years accounted for 16.8% and 51-60years 44.2%, while age > 60 years accounted for 39%. In the study by Saleem et al, the mean age of the patients was 39.0 ± 6.6 years, and nearly half (48.3%) of patients aged 28- 37years and only (6%) were older than 48[29]. Also in a study in Nigeria it was found that the age ranged from 19-83 years with a mean age of 49.29 ± 1.04 years and majority of the participants were within the age group 40-49 years[30]. The majority of patients in this study were males (70.5%) and females (29.5%), this is in agreement with the studies carried out in Pakistan, 68.8 % of patients were males [29], however in another study female patients were the majority 63.8%[30].

All of our patients were educated with more than half of the patients in this study had diploma (61.1%), while University graduation constitute to 38.9% however, in a Nigerian study more than half of the study population 59.2% had no formal education[30]. In another study 63.5 % either received primary education or no formal education[23].

Mean duration of hypertension was 6.8± 2.8years, (2-15 years), this is in agreement with the studies carried out in Nigeria the peak category of duration of the disease since diagnosis was 2-5 years (50.7%) with a mean of 5.93 ± 6.4 years[30], But in other study the mean duration of hypertension was 3.01 ± 0.94

years[29], which is less than the mean duration of our study, may due to earlier diagnosis than in Pakistan.

History of smoking in males was found in 26.9% of the patients, 71.9% never smoked and 1.5% were ex-smokers. In a similar study 83% of patients never smoked[23]. Women's were exposed to passive smoking constitute to 71.4%.

The mean BMI was 26.2±2.02 (22.5 – 33), majority of the patients had BMI ≥ 25(76.8%). In contrast to other study 74.1% were either overweight or obese[23]. Where obesity and overweight pose a major risk for chronic diseases including HTN.

The majority (92.6%) of our patients had SBP >140 before the health education, and this decreased to 78.9% after the health education sessions, however, in another study 53.5% of the patients had their systolic blood pressure ≥ 160 mmHg[23].

There was improvement in level of systolic blood pressure, were it is decreased after the health education sessions, and this decrease was statistically significant ($P = 0.013$), also there was highly statistically significant difference between the means of two systolic measurement before and after the health education ($P= 0.000$).

A diastolic blood pressure >90 was recorded in 70.5% of patients before health education and decreased to 24.2% after the health education, in another study 53.5% of patients had diastolic blood pressure ≥ 100 mmHg[23] .

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There was a decrease in DSP, were it is decreased after the health education sessions, and this decrease was highly statistically significant ($P = 0.000$). The mean level of DSP before health education was 91.7 ± 5.4 mmHg, and after health education it was 87.3 ± 5.3 mmHg, there was statistically significant difference between the means of two diastolic measurements before and after the health education ($P = 0.000$).

A significant difference in most of HTN Knowledge items between before and after health education were observed, this may imply improvement in the knowledge of patients after health education.

After health education knowledge assessment scale showed improvement.

Mean of the score knowledge before health education was 8.2 ± 3.04 and the median was 7, and after health education the mean was 14.8 ± 1.2 and the median was 15, there was statistical significant difference between the mean of knowledge score before and after health education, ($P = 0.000$).

In other study the overall mean score was 8.03 ± 0.42 and median score 8, which is similar to the score of this study before the health education[29].

In Pakistan study they found 37.9% were within the poor knowledge range, 61.3% moderate and only 0.8% showed adequate general knowledge about hypertension[29].

Although the patients had average knowledge about hypertension, the level of adherence was poor, most of medication adherence items before and after health education there were no statistical difference between before and after health education, Poor adherence was apparent in responses to questions 2, 5 and 9, may be they need more session of health education or may be other factors affecting the adherence to medication, this similar to other study[29].

In this study moderate adherence scores was 11.6% before health education and increased to 38.9% after health education, good adherence was 22.1% before health education and increased to 27.4% after, and poor adherence was 66.3% before health education and decreased to 33.7% after health education. In another study 64.7 % were categorized as poor adherent, and 35.3% as moderate adherent to their therapies. No patient was considered good adherent. which similar to result of this study before the health education[29].

Mean adherence before health education was -1.11±5.7, median was -4, and after health education, mean adherence was1.6 ±4.6, median was (0.0) these difference was statistically significant were ($P = 0.000$).

In a study from Pakistan, the overall mean score -1.74 ±2.154 and median

score -2, this result similar to this study result before the health education[29].

Spearman Rank order correlation coefficient between total score of knowledge and total score of adherence before health education was 0.066.

Spearman Rank order correlation coefficient between total score of knowledge and total adherence after health education was inverse - 0.059.

In the present study, knowledge had no significant or inverse relationship to drug adherence, suggesting that there are other factors for the patients' non-adherence which need to be explored.

In Pakistan study the Spearman Rank order 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[29].

There is evidence that knowledge or information can indeed have an influence on the level of drug adherence. A number of studies supported such an association in which a positive relationship was found between knowledge and adherence[32,33].

In contrast, other studies that found no association[34].

Since adherence is a multi–factor phenomenon, success or failure of therapy is

not dependent on a single factor. Other factors such as age, gender, low socioeconomic status, prescribed drugs, posology, lack of social support, poor patient provider relationship, cost, forgetfulness, and presence of psychological problems(especially depression) should also be kept in mind and evaluated before coming to a conclusion[5].

Chapter 7

Conclusion

Conclusions:

- Our patient had poor knowledge about HTN.

- Education has resulted in significant improvement in patient's knowledge about HTN.

- Drug adherence was very poor in the majoring of patients.

- Unfortunately, education didn't resulted in striking improvement in drug adherence.

- Education has resulted in significant improvement in BP control, making it a corner stone in the management of HTN.

Chapter 8

Recommendations

Recommendations:

1. Patients must be educated not only about HTN, but also about the benefits of medications on treatment outcomes and quality of life.

2. Family physicians and other health care providers should assess their current educational practices about medications and enhance personal communication skills to increase patients' knowledge about their medications.

3. Since the number of patients in this study is small we recommend further studies to identify the major contributory factor to non-adherence.

Chapter 9

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Chapter 10

Appendix

Appendix

The Hypertension Fact Questionnaire (HFQ) was used to assess the level of knowledge.

S.N	HTN Knowledge Items	Yes(%)	No(%)	Don't know(%)
1	Do you know the normal values of blood pressure?			
2	Elevated BP is called HTN			
3	HTN is a condition which can progress with age			
4	Both men and women have equal chance of developing HTN			
5	HTN is a treatable condition.			
6	The older person is the greater their risk of having HTN			
7	Smoking is a risk factor for HTN			
8	Eating fatty food affects blood cholesterol level which is a risk factor for developing HTN			
9	Being overweight increases risk for HTN			
10	Regular physical activity will lower a person's chance of getting			
11	Eating more salt has no effect on blood pressure			
12	Dietary approaches to reduce HTN do no good			
13	White meat is as good as red meat in HTN			
14	Medication alone can control HTN			
15	HTN can lead to other life-threatening diseases			

Drug Attitude Inventory (DAI-10)

S.N	Medication Adherence Items	True (%)	False (%)
1	For me, the good things about medication outweigh the bad.		
2	I feel uncomfortable on medication		
3	I take medications of my own choice.		
4	Medications make me feel more relaxed.		
5	Medication makes me feel tired and sluggish.		
6	I take medication only when I am sick.		
7	I feel more normal on medication.		
8	It is unnatural for my mind and body to be controlled by medications.		
9	My thoughts are clearer on medication		
10	By staying on medications I can prevent getting sick		

الملحق

استبيان حقائق ارتفاع ضغط الدم (HFQ) الذي استخدم لتحديد مستوى المعرفة

لا أعرف (%)	لا (%)	نعم (%)	بنود المعرفة لارتفاع ضغط الدم	ت
			هل تعرف المعدل الطبيعي لضغط الدم؟	1.
			زيادة ضغط الدم يطلق عليه ارتفاع ضغط الدم؟	2.
			ارتفاع ضغط الدم هو حالة يمكن أن تتطور مع تقدم السن؟	3.
			كلا الجنسين من الذكور والإناث لديهم فرص متساوية من اكتساب ارتفاع ضغط الدم؟	4.
			ارتفاع ضغط الدم هو حالة يمكن التحكم فيها؟	5.
			من أكبر المخاطر لدى كبار السن هو إصابتهم بارتفاع ضغط الدم؟	6.
			التدخين هو عامل خطر لارتفاع ضغط الدم؟	7.
			تناول الأطعمة الدهنية تؤثر على مستوى كولسترول في الدم والذي بدوره يعد عامل خطورة للإصابة بارتفاع ضغط الدم؟	8.
			زيادة الوزن تزيد من خطر ارتفاع ضغط الدم؟	9.
			ممارسة النشاط البدني بانتظام مستقل من إمكانية إصابة الشخص بارتفاع ضغط الدم؟	10.
			تناول الكثير من الملح ليس له أي أثر على ضغط الدم؟	11.
			اتباع طرق الحمية الغذائية للحد من ارتفاع ضغط الدم غير ذات جدوى؟	12.
			اللحوم البيضاء كاللحوم الحمراء مفيدة لارتفاع ضغط الدم؟	13.
			يمكن التحكم بارتفاع ضغط الدم بالدواء فقط؟	14.
			ارتفاع ضغط الدم يمكن أن يؤدي إلى أمراض أخرى تهدد الحياة؟	15.

قائمة الالتزام بالدواء (DAI-10)

خطأ (%)	صح (%)	بنود الالتزام بالدواء	ت
		بالنسبة لي، الأمور الجيدة عن الدواء تفوق الأمور السيئة.	1.
		لا أشعر بالراحة مع الدواء.	2.
		أتناول الأدوية باختياري.	3.
		الدواء يجعلني أشعر بالراحة أكثر.	4.
		الدواء يجعلني أشعر بالتعب والخمول.	5.
		أتناول الدواء فقط عندما أكون مريضاً.	6.
		أشعر بأنني طبيعي أكثر بالدواء.	7.
		إنه من غير الطبيعي بالنسبة لعقلي وجسمي أن يسيطر عليه عن طريق الدواء.	8.
		أفكاري أكثر وضوحاً مع الدواء.	9.
		يمكن أن أمنع الإصابة بالمرض بالمداومة على الدواء.	10.

التوصيات: يجب تثقيف المرضى ليس فقط على ارتفاع ضغط الدم، ولكن أيضاً

عن المنافع العلاجية، ونتائج العلاج، وجودة الحياة.

هناك استبيانان مختلفان يستخدمان لجمع البيانات. المتعلق بارتفاع ضغط الدم استخدم لتحديد مستوى المعرفة (HFQ) وسلوك العلاج (DAI-10) الذي استخدم لقياس مستوى التزام مرضى ارتفاع ضغط الدم. والتحليل الإحصائي في نتائج الدراسة أجري بواسطة برنامج الحزمة الإحصائية للعلوم الاجتماعية الإصدار 18.

النتائج: الدراسة تضمنت 95 مريض الذين أكملوا الدراسة، ومتوسط أعمارهم 56.8±6.2 سنة، والأغلبية كانوا رجالاً (70.5%)، ومتوسط فترة ارتفاع ضغط الدم كان 6.8±2.8 سنة . وهناك اختلاف إحصائي هام في بنود معرفة ارتفاع ضغط الدم قبل وبعد التثقيف الصحي. ونقاط تقييم المعرفة كانت 51.6% معرفة متدنية قبل التثقيف الصحي وأصبحت 1.1% بعد التثقيف، والمتوسط كان 32.6% قبل التثقيف الصحي، وأصبح 2.1% بعد التثقيف. المعرفة الكافية كانت 15.8% قبل التثقيف الصحي، وزادت إلى 96.8% بعد التثقيف. وعلى الرغم من أن المرضى كان لديهم معرفة متوسطة عن ارتفاع ضغط الدم، إلا أن مستوى الالتزام كان ضئيلاً، وأغلب الالتزام بالعلاج لم يختلف إحصائياً قبل وبعد التثقيف الصحي . الالتزام المعتدل كان 11.6% قبل التثقيف الصحي، وازداد إلى 38.9% بعده. الالتزام الجيد كان 22.1% قبل التثقيف الصحي، وزاد إلى 27.4% بعد التثقيف الصحي. الالتزام المتدني كان 66.3% قبل التثقيف الصحي، وتناقص إلى 33.7% بعد التثقيف. إن المعرفة ليس لها علاقة مهمة أو عكسية تؤخذ بعين الاعتبار للالتزام بالدواء، ويعني ذلك أن هناك عوامل أخرى لدى المرضى والتي تحتاج إلى الاكتشاف .

الملخص

مقدمة:

ارتفاع ضغط الدم (HTN) هو مرض يقتل بصمت، في كل من الدول النامية والمتقدمة في العالم، وهو أحد أهم عوامل الخطر على انتشار مرض الأوعية الدموية، واعتلال القلب، والوفيات الناتجة عن الضرر الذي يستهدف الأوعية الدموية في القلب، والدماغ، والكلى، والعينين.

إن التمسك بالعلاج على المدى الطويل لعلاج الأمراض المزمنة في الدول المتقدمة وصلت متوسطاتها إلى 50%، وفي البلدان النامية، المعدلات تكون أيضاً منخفضة.

كما أن ضعف التزام المرضى بتناول الأدوية على المدى الطويل يهدد بشدة فعالية العلاج، مما يجعل هذه المسألة حاسمة في صحة السكان من منظور نوعية الحياة والاقتصادات الصحية على حدٍ سواء.

الهدف: تقييم الفعالية (برنامج تدخل لمساعدة تحسن المرضى الذين يعانون من ارتفاع ضغط الدم: معرفة الحالة المرضية والالتزام بأسلوب العلاج).

الطريقة: دراسة (تدخل) جماعية قبل وبعد التثقيف الصحي، تتضمن 100 مريض استمرت لمدة 6 أشهر غير أن 5 مرضى منهم لم يكملوا المتابعة، من العيادة الخارجية برأس لانوف.

اختبار دور الطبيب في التثقيف الصحي لتحسين المعرفة لمرضى ارتفاع ضغط الدم

والالتزام بالعلاج في رأس لانوف – ليبيا

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رسالة مقدمة لكلية الطب كجزء لاستكمال متطلبات درجة الماجستير في الباطنة

رأس لانوف – ليبيا

2015