

Assessment of Knowledge, Perception, Attitude and Practice of Elevated Blood Pressure in Hypertensive Patients (Iraqi population)

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Abstract:

Background: the patient's perceptions about hypertension play an important role to reach the best control of this chronic disease. However, many hypertensive patients particularly the elderly present with uncontrolled blood pressure, which is a leading factor for mortality. Patient's knowledge and modifications of life style can contribute in the controlling of hypertension and preventing their long-term complications.

Methods: Cross-sectional study, data from 212 hypertensive patients was collected from medical outpatient clinics in Baghdad along period of more than one year. Level of knowledge, attitude, perceptions and practice about hypertension were assessed using questionnaire sheet prepared for this purpose.

Results: There were 212 hypertensive patients, 138 (65.1%) were women and 47 (34.9%) were men. Mean \pm standard deviation age of patients was 56.56 ± 9.58 years. Most of the patients had completed high school ($n = 179, 84.43\%$), and nearly half of them were have a job as average ($n = 114, 53.8\%$).

In general, more than half of participants revealed good knowledge, attitude and perception about elevated blood pressure, but unfortunately there are still a cogent percent of Iraqi patients present with poor knowledge and practice regarding to risk factors of hypertension, benefits of life style modifications mainly exercise, and taking healthy diet. Patient's knowledge, attitude, perception & practice were positively related to the educational level of hypertensive patients.

Conclusion: This study demonstrated a non-convincing knowledge, attitude and perception and poor practice about hypertension in patients with elevated blood pressure in the study population. More efforts should be made to educate patients about the acquaintance of hypertension and the suitable individual way of treatment.

Keywords: Hypertension, Patient's knowledge, perception, attitude, practice.

تقييم مدى المعرفة، الإدراك، الأسلوب والممارسة من ارتفاع ضغط الدم في مرضى ارتفاع ضغط الدم في المجتمع العراقي الخلاصة:

يعتبر فهم المريض وإدراكه لمرض ارتفاع ضغط الدم بجوانبه المختلفة عامل مهم للوصول الى السيطرة على هذا المرض المزمن. ومع هذا فان العديد من مرضى ارتفاع ضغط الدم وخاصة كبار السن لا يستطيعون السيطرة على المرض مما يزيد من نسبة الوفيات. من الواضح ان زيادة معرفة المريض بالمرض وإيمانه بضرورة تغيير نمط الحيات اليومية ممكن ان يعزز السيطرة على المرض ويمنع حدوث المضاعفات طويلة الامد.

شملت هذه الدراسة 212 مريض مصاب بارتفاع ضغط الدم تم جمعهم من العيادات الطبية الخارجية في بغداد لفترة سنة كاملة. تم قياس مستوى معلومات المريض عن المرض والتصورات الخاصة به وكيفية التعامل مع المواقف الطارئة عن طريق استبيان خاص صمم لهذا الغرض.

من أصل 212 مريض مشاركين بالدراسة، 138 (65.1%) كانوا من النساء و 47 (34.9%) كانوا من الرجال. وكان معدل عمر المرضى \pm الانحراف المعياري 56.56 ± 9.58 سنة. معظم المرضى المشاركين بالدراسة قد اكملوا الدراسة الاعدادية (179 (84.43%))، وكان تقريبا نصف المرضى لديهم عمل ودخل ثابت 114 (53.8%).

بشكل عام أظهرت نتائج الدراسة بأن أكثر من نصف المشاركين لديهم معلومات وتصورات وطريقة تعامل جيدة مع مرض ارتفاع ضغط الدم، مع خبرة ضعيفة ببعض جوانب المرض. لكن لسوء الحظ يبقى هناك نسبة لا يستهان بها من المرضى العراقيين المشاركين بهذه الدراسة يفتقرون الى الامام بمعطيات المرض وإدراك مدى خطورته وقيمة العلاج بالإضافة الى

الخبرة في كيفية التعامل مع هذا المرض. لذا ينبغي بذل المزيد من الجهود لتثقيف المرضى حول مرض ارتفاع ضغط الدم وكيفية السيطرة عليه واستخدام الطريقة المناسبة للعلاج لكل مريض.

Introduction:

Hypertension is a leading risk factor of serious cardiovascular complications and disease burden (1). The high preponderance of hypertension jointly with its deleterious effect on health makes it a large public health problem (2). The recommended management for hypertension includes lifestyle modification, such as decreasing salt intake, weight reduction, increasing physical activity, decrease alcohol intake, and avoidance of psychological stress, in addition to a wide range of effective antihypertensive medications. However, in spite of these recommendations and available therapies, the percentage of patients with uncontrolled blood pressure is relatively high (3).

Patient's perspective is usually very different from that of his or her doctor. Patients with low knowledge of their disease condition can determine the reason behind the difficulties to control their blood pressure (4).

In developing countries, patients may use different treatment options other than the use of modern medicines, particularly herbal medicine and spiritual treatment which are quite notable in these populations, those patients present with poor information and understanding features about the disease and drugs used for its treatment (5). Socioeconomic differences may play an important role in the health status of populations; influence the pathogenesis of hypertension and access to preventive health services (6). Several studies have investigated that those with the greatest education have the lowest prevalence of hypertension and the lowest mortality rates from hypertension (7-9).

Patients compliance and adherence to medical instructions that physician provide play an important role to control the blood pressure; compliance could be influenced by many patient's characters as age, gender, race, socio-economic class and on

healthcare providers knowledge, attitude as well as healthcare delivery system, health condition and finally compliance also affected by medications characteristics such as number, cost and adverse effect (10-14). USA studies proved that compliance is a serious problem in hypertension and evidence shows that only 50% of patients who start drug treatment are adherent after one year therapy. However, poor or noncompliance output uncontrolled hypertension that will lead to worsen condition and higher chance for developing complications like ischemic heart disease, cerebrovascular accidents, renal failure and others (11, 15). In Iraq, study by (Al-Banna 2010) demonstrates that patient's compliance in general is low. Whereas compliance rate is more in female patients, with no family history, whose using single drug medication, non-smokers, with no other chronic diseases, and in patients with disease duration of more than 10 years. Patient's knowledge about their disease is insufficient because there are no health educational programs (16).

The aim of this study was to establish the relation between patient's perception about hypertension, educational level and maintaining controlled blood pressure, and to evaluate the patient's awareness of hypertension and its complications.

Patients and Methods

A descriptive, cross-sectional study was conducted to identify the perception, attitudes, awareness, and practice in a hypertensive population, which influences the controlled blood pressure levels of patients with hypertension.

The data collected from an aptness sample of (212) hypertensive patients, both sex, aged above 18 years old, were randomly selected from different Iraqi regions between May 2016 and January 2017.

At enrollment, patients completed a structured questionnaire (modified according to this study) consisting of standardized questions related to demographic items, lifestyle habits, comorbidities, socioeconomic status, and their knowledge about hypertension (17,18,19).

The data were analyzed by the statistical analysis system (SPSS) program to describe the distribution of the study results, and P value <0.05 considered significantly different, and P value <0.01 is highly significant difference.

Results

A total of 212 patients returned completed patient questionnaires. The response rate was 100% available and used for statistical analysis.

Patients' demographics and disease characteristics:

Among 212 patients included in the analysis, mean \pm standard deviation age of patients was 56.56 ± 9.58 years. 138 (65.1%) were women and 47 (34.9%) were men. Most of the patients had completed high school (n = 165, 77.83%), and nearly half of them were have a job as average (n = 114, 53.8%). Most of the patients had no comorbid disease (n = 133, 62.7%), and have no family history of hypertension (n = 134, 63.2%). Most of the patients were none smokers (n=148, 69.8%), as shown in table-1.

Descriptive statistics of the pertinent about their systolic blood pressure showed that most (yet not significant difference, $P>0.05$) of them were in stage 1 (n=125, 58.9%) while those in prehypertension

stage, stage 2 and stage 3 (sever) were as average (n=30, 14.1%; n=51, 24.1% and n=6, 2.8% respectively). The diastolic blood pressure showed no significant difference ($P>0.05$) among patients in these stages. The average diastolic blood pressures were prehypertension stage (n=26, 11.3%), stage 1 (n=47, 28.7%), stage 2 (n=87, 46.2%) and stage 3 (n=55, 13.7%).

Patient's knowledge toward hypertension Descriptive statistics pertinent to 8 items comprised by the brief questionnaire showed that, in general, patients with hypertension tended to view their hypertension as high blood pressure (n=137, 64.6%), extremely dangerous (n=68, 40.6%) or somewhat dangerous (n=92, 43.4%) that can be well controlled with some measures (n=146, 68.9%). They were rather deeply convinced that lowering high blood pressure improve a person's life (n=144, 67.9%) and lowering blood pressure even a little bit improve health (n=159, 75%).

According to patients' beliefs, the important reading in blood pressure measurement was top (n=69, 32.5%), bottom (n=45, 21.2%), both (n=89, 42%) and those who do not know (n=9, 4.2%). Their beliefs on what are the two numbers 140/90 reported for blood pressure mean were systolic/diastolic (n=150, 70.8%), heart rate/diastolic (n=16, 7.5%), diastolic/systolic (n=1, 0.5%) and those who do not know (n=45, 21.22%). Most of them were aware about the high blood pressure and belief that the normal blood pressure should be not 140/90 or 150/70 (n=161, 75.9%), as shown in table-2.

Table-1: Patients' demographics and disease characteristics (n = 212):

Variable	Elementary N=47 (%)	High school N=65 (%)	College N=38 (%)	PG N=29 (%)	Other N=33 (%)	Total N=212(%)	P Value
<i>Age Group</i>							
30S	0(0.0%)	6(6.2%)	2(5.3%)	5(17.2%)	0(0.0%)	13(6.1%)	<0.001
40S	4(8.5%)	7(10.8%)	11(28.9%)	9(31.0%)	5(15.2%)	36(17%)	
50S	14(29.8%)	34(52.3%)	18(47.4%)	8(27.6%)	7(21.2%)	81(38.2%)	
60S	23(48.9%)	18(27.7%)	5(13.2%)	7(24.1%)	16(48.5%)	69(32.5%)	
70S	6(12.8%)	0(0.0%)	2(5.3%)	0(0.0%)	5(15.2%)	13(6.1%)	
<i>Gender</i>							
Male	20(42.6%)	23(35.4%)	10(26.3%)	9(31.0%)	12(36.4%)	47(34.9%)	<0.001
Female	27(57.4%)	42(64.6%)	28(73.7%)	20(69.0%)	21(63.6%)	138(65.1%)	
<i>Occupation</i>							
No	27(57.4%)	34(34.2%)	13(34.2%)	1(3.4%)	23(69.7%)	98(46.2%)	<0.001
Yes	20(42.6%)	31(47.7%)	25(65.8%)	28(96.6%)	10(30.3%)	114(53.8%)	
<i>Smoking</i>							
No	24(51.1%)	50(76.9%)	35(92.1%)	24(82.8%)	15(45.5%)	148(69.8%)	<0.001
Yes	23(48.9%)	15(23.1%)	3(7.9%)	5(17.2%)	18(54.5%)	64(30.2%)	
<i>Comorbidity</i>							
No	24(51.1%)	44(67.7%)	31(81.6%)	18(62.1%)	16(48.5%)	133(62.7%)	<0.001
Yes	23(48.9%)	21(32.3%)	7(18.4%)	11(37.9%)	17(51.5%)	79(37.3%)	
<i>Family History</i>							
No	29(61.7%)	40(61.5%)	23(60.5%)	18(62.1%)	24(72.7%)	134(63.2%)	0.81
Yes	18(38.3%)	25(38.5%)	15(39.5%)	11(37.9%)	9(27.3%)	78(36.8%)	
<i>Systolic BP</i>							
Prehypertension	8(17.0%)	9(13.8%)	5(13.2%)	5(17.2%)	3(9.1%)	30(14.1%)	0.5
Stage 1	26(55.3%)	43(66.2%)	24(63.2%)	18(62.1%)	14(42.4%)	125(58.9%)	
Stage 2	12(25.5%)	12(18.5%)	8(21.0%)	5(17.2%)	14(42.4%)	51(24.1%)	
Stage 3 (sever)	1(2.1%)	1(1.5%)	1(2.6%)	1(3.4%)	2(6.0%)	6(2.8%)	
<i>Diastolic BP</i>							
Prehypertension	5(10.6%)	8(12.3%)	3(7.9%)	5(17.2%)	5(9.1%)	26(11.3%)	0.42
Stage 1	12(25.5%)	26(40.0%)	11(29.0%)	7(24.1%)	18(15.2%)	74(28.7%)	
Stage 2	22(46.8%)	25(38.5%)	18(47.3%)	15(51.7%)	7(54.5%)	87(46.2%)	
Stage 3 (sever)	8(17.0%)	6(9.2%)	6(15.8%)	2(6.9%)	33(21.2%)	55(13.7%)	

- Data are expressed as mean \pm SD.

- n= number of patients

- 30S= thirties, 40S= forties.....etc.

- P<0.05 is significantly different

- P<0.01 is highly significant difference

Table-2: Patients' Knowledge towards hypertension (n = 212)

Variable	Elementary N=47 (%)	High school N=65 (%)	College N=38 (%)	PG N=29 (%)	Other N=33 (%)	Total N=212(%)	P Value
<i>What does the term Hypertension mean?</i>							
High BP	7(14.9%)	59(90.8%)	35(92.1%)	29(100.0%)	7(21.2%)	137(64.6%)	<0.001
High Level Stress	13(27.7%)	2(3.1%)	1(2.6%)	0(%)	6(18.2%)	22(10.3%)	
Nervous Condition	13(27.7%)	2(3.1%)	2(5.3%)	0(%)	5(15.2%)	22(10.3%)	
High Blood Sugar	1(2.1%)	0(%)	0(%)	0(%)	1(3.0%)	2(0.9%)	
Over Activity	10(6.4%)	2(3.1%)	0(%)	0(%)	6(18.2%)	18(8.5%)	
Do not know	3(6.4%)	0(%)	0(%)	0(%)	8(24.2%)	11(5.2%)	
<i>How Dangerous is hypertension?</i>							
Extremely	25(53.2%)	26(40%)	13(34.2%)	9(31.0%)	13(39.4%)	86(40.6%)	<0.001
Somewhat	18(38.3%)	28(43.1%)	20(52.6%)	13(44.9%)	13(39.4%)	92(43.4%)	
Not at all	4(8.5%)	11(16.9%)	5(13.2%)	7(24.1%)	1(3.0%)	28(13.2%)	
Do not know	0	0	0	0	6(18.2%)	6(2.8%)	
<i>What are the two numbers 140 / 90 reported for blood pressure mean?</i>							
Systolic/diastolic	19(40.4%)	58(89.2%)	31(81.6%)	29(100%)	13(39.4%)	150(70.8%)	<0.001
Heart rate/diastolic	7(14.9%)	3(4.6%)	1(2.6%)	0	5(15.2%)	16(7.5%)	
Diastolic/systolic	1(2.1%)	0	0	0	0	1(0.5%)	
Other	20(42.6%)	4(6.2%)	6(15.8%)	0	15(45.5%)	45(21.22%)	
<i>Which measure (s) is (are) more important?</i>							
Top	14(29.8%)	24(36.9%)	13(34.2%)	8(27.6%)	10(30.3%)	69(32.5%)	0.66
Bottom	9(19.1%)	12(18.5%)	7(18.4%)	10(34.5%)	7(21.2%)	45(21.2%)	
Both	21(44.7%)	26(40.0%)	18(47.4%)	11(37.9%)	13(39.4%)	89(42.0%)	
Do not know	3(6.4%)	3(4.6%)	0	0	3(9.1%)	9(4.2%)	
<i>Would lowering high blood pressure improve a person's health?</i>							
Yes	13(27.7%)	58(89.2%)	36(94.7%)	29(100%)	8(24.2%)	144(67.9%)	<0.001
No	10(21.3%)	4(6.2%)	1(2.6%)	0	7(21.2%)	10.4%	
Do Not Know	24(51.1%)	3(4.7%)	1(2.6%)	0	18(54.5%)	46(21.7%)	
<i>Can people do thing to lower their blood pressure?</i>							
Yes	34(72.3%)	38(58.5%)	27(71.1%)	21(72.4%)	26(78.8%)	146(68.9%)	0.21
No	4(8.5%)	4(6.2%)	0	2(6.9%)	0	10(4.7)	
Do Not Know	9(19.1%)	23(35.4)	11(28.9%)	6(20.7%)	7(21.2%)	56(26.4%)	
<i>Can lowering blood pressure even a little bit improve health?</i>							
Yes	31(66.0%)	51(78.5%)	30(79.0%)	21(72.4%)	26(78.8%)	159(75.0%)	0.19
No	1(2.1%)	5(7.7%)	4(10.5%)	3(10.4%)	1(3.0%)	14(6.6%)	
Do Not Know	15(31.9%)	9(13.8%)	4(10.5%)	5(17.2%)	6(18.2%)	39(18.4%)	
<i>What should normal blood pressure levels be?</i>							

140/90	17(36.2%)	6(9.2%)	5(13.2%)	0	17(51.5%)	45(21.2%)	<0.001
150/70	2(4.3%)	1(1.5%)	0	0	3(9.1%)	6(2.8%)	
Other	28(59.5%)	58(89.2%)	33(86.9%)	29(100%)	13(39.4%)	161(75.9%)	

- Data are expressed as mean \pm SD.
- n= number of patients
- P<0.05 is significantly different
- P<0.01 is highly significant difference

Patients' attitudes toward the lifestyle modification

The investigation into the lifestyle of hypertensive patients showed that, most of them were agree or strongly agree about the belief that hypertension is a disease of elderly (n=110, 52%; n=39, 18% respectively).

Most of the patients were agree or strongly agree that avoiding extra-added salts to the diet is essential recommended dietary regimens in hypertension (n = 66, 31; n=136, 64% respectively), and only 10 patients (5%) were not care about the effect of extra-added salts to their diet. Most of the patients also were agree or strongly agree that green vegetables should be included in their diet to control their blood pressure (n=151, 71%; n=51, 24% respectively).

Most of the patients also were agree (n=108, 51%) or strongly agree (n=83,

39%) that changing life style would help in lowering their blood pressure. in this context they were agree (n=109, 51%) or strongly agree (n=39, 18%) about avoiding excess alcohol that can worse hypertension. However 17% (n=37) did not agree about effect of alcohol in hypertension.

Most of patients were agree (n=120, 57%) or strongly agree (n=50, 24%) about the recommended physical activity schedules (exercise) to control raised blood pressure. However, 18% (n=38) were disagree about that measure.

About the risk factors and consequences of hypertension, most patients were agree (n=112, 53%) or strongly agree (n=59, 28%) that obesity would be a risk factor for hypertension and hypertension may results in renal problem (n=103, 49% and 81, 38%) respectively, as shown in table-3.

Table-3: Patients' attitudes towards lifestyle modification (n = 212)

Variable	Elementary N=47 (%)	High school N=65 (%)	College N=38 (%)	PG N=29 (%)	Other N=33 (%)	Total N=212(%)	P Value
<i>It is good to include green vegetables in your daily diet</i>							
Strongly disagree	0	2(3%)	0	1(3%)	0	3(1%)	0.03
Disagree	4(9%)	2(3%)	0	1(3%)	0	7(3%)	
Agree	38(81%)	37(57%)	31(82%)	22(76%)	23(70%)	151(71%)	
Strongly agree	5(11%)	24(37%)	7(18%)	5(17%)	10(30%)	51(24%)	
<i>It is good to avoid extra-added salts in your diet</i>							
Disagree	1(2%)	6(9%)	2(5%)	1(3%)	0	10(5%)	0.15
Agree	9(19%)	21(32%)	16(42%)	8(28%)	12(36%)	66(31%)	
Strongly agree	37(79%)	38(58%)	20(53%)	20(69%)	21(64%)	136(64%)	
<i>Changing life style helps to lower blood pressure</i>							
Strongly disagree	0	2(3%)	0	0	0	2(1%)	0.7
Disagree	3(6%)	6(9%)	5(13%)	2(7%)	3(9%)	19(9%)	
Agree	21(45%)	36(55%)	18(47%)	17(59%)	16(48%)	108(51%)	

Strongly agree	23(49%)	21(32%)	15(39%)	10(34%)	14(42%)	83(39%)	
<i>Hypertension is a disease of elderly</i>							
Strongly disagree	3(6%)	11(17%)	7(18%)	8(28%)	0	29(14%)	<0.001
Disagree	3(6%)	7(11%)	11(29%)	8(28%)	5(15%)	34(16%)	
Agree	31(66%)	40(62%)	15(39%)	8(28%)	16(48%)	110(52%)	
Strongly agree	10(21%)	7(11%)	5(13%)	5(17%)	12(36%)	39(18%)	
<i>Excess alcohol can worsen the blood pressure level</i>							
Strongly disagree	3(6%)	2(3%)	1(3%)	0	0	6(3%)	0.46
Disagree	10(21%)	11(17%)	4(11%)	6(21%)	6(18%)	37(17%)	
Agree	18(38%)	34(52%)	26(68%)	13(45%)	18(55%)	109(51%)	
Strongly agree	16(34%)	18(28%)	7(18%)	10(34%)	9(27%)	60(28%)	
<i>Regular exercise is essential to control raised blood pressure</i>							
Strongly disagree	1(2%)	1(2%)	1(3%)	0	1(3%)	4(2%)	0.55
Disagree	7(15%)	15(23%)	7(18%)	7(24%)	2(6%)	38(18%)	
Agree	29(62%)	33(51%)	18(47%)	19(66%)	21(64%)	120(57%)	
Strongly agree	10(21%)	16(25%)	12(32%)	3(10%)	9(27%)	50(24%)	
<i>Hypertension may results in renal problem</i>							
Strongly disagree	0	2(3%)	0	1(3%)	2(6%)	5(2%)	<0.001
Disagree	10(21%)	7(11%)	0	0	6(18%)	23(11%)	
Agree	33(70%)	42(65%)	5(13%)	0	23(70%)	103(49%)	
Strongly agree	4(9%)	14(22%)	33(87%)	28(97%)	2(6%)	81(38%)	
<i>Obesity is a risk factor of hypertension</i>							
Strongly disagree	3(6%)	2(3%)	0	3(10%)	0	8(4%)	0.43
Disagree	2(4%)	16(25%)	3(8%)	6(21%)	6(18%)	33(16%)	
Agree	26(55%)	27(42%)	25(66%)	15(52%)	19(58%)	112(53%)	
Strongly agree	16(34%)	20(31%)	10(26%)	5(17%)	8(24%)	59(28%)	

- Data are expressed as mean \pm SD.
- n= number of patients
- P<0.05 is significantly different
- P<0.01 is highly significant difference

Patients' perception of hypertension

Table 4 shows that the distribution of hypertensive patients according to their perceptions of hypertension.

The table shows that about 64.2% (n=136) were significantly disagree that the hypertension can be cure (P<0.001) and 65.6% (n=139) were significantly agree and 20.3% (n=43) were significantly strongly agree that it is a life-long disease (P<0.01).

Perception regarding that hypertension is a serious concern for person's health show that 39.6% (n=84) of patients were agree and 47.2% (n=100) of them were strongly agree with this idea (P<0.01).

Patients also were asked about the role of medicines in keeping their blood pressure under control. In this context significant perception revealed that 50.9% (n=108) of patients were agree and 39.32% (n=83) were strongly agree to stick to their medications for improving their blood

pressures. In addition, significant results showed that 47.6% (n=101) of patients were agree and 18.4% (n=39) were strongly agree that medicine is the most

important factor in controlling high pressure; while 25% (n=53) of them were disagree with that idea (P<0.001), as shown in table-4.

Table-4: Patients' perceptions of hypertension (n = 212)

Variable	Elementary N=47 (%)	High school N=65 (%)	College N=38 (%)	PG N=29 (%)	Other N=33 (%)	Total N=212 (%)	P Value
<i>Do you think that hypertension is something you can cure?</i>							
Strongly disagree	0	3(4.6%)	17(44.7%)	18(62.1%)	0	38(17.9%)	<0.001
Disagree	37(78.7%)	47(72.3%)	19(50.0%)	7(24.1%)	26(78.8%)	136(64.2%)	
Agree	7(14.9%)	12(18.5%)	2(5.3%)	3(10.3%)	6(18.2%)	30(14.2%)	
Strongly agree	3(6.4%)	3(4.6%)	0	1(3.4%)	1(3.0%)	8(3.8%)	
<i>Do you think that hypertension is a lifelong disease?</i>							
Strongly disagree	1(2.1%)	0	0	0	2(6.1%)	3(1.4%)	0.002
Disagree	8(17.0%)	13(20.0%)	2(5.3%)	0	4(12.1%)	27(12.7%)	
Agree	33(70.2%)	43(66.2%)	22(57.9%)	18(62.1%)	23(69.7%)	139(65.6%)	
Strongly agree	5(10.6%)	9(13.8%)	14(36.8%)	11(37.9%)	4(12.1%)	43(20.3%)	
<i>Do you think that hypertension is a serious concern for personal health?</i>							
Strongly disagree	0	0	0	1(3.4%)	0	1(0.5%)	0.01
Disagree	5(10.6%)	4(6.2%)	9(23.7%)	6(20.7%)	3(9.1%)	27(12.7%)	
Agree	24(51.1%)	21(32.3%)	17(44.7%)	7(24.1%)	15(45.5%)	84(39.6%)	
Strongly agree	18(38.3%)	40(61.5%)	12(31.6%)	15(51.7%)	15(45.5%)	100(47.2%)	
<i>Do you think that taking medicines is important to keep blood pressure under control?</i>							
Disagree	12(25.5%)	5(7.7%)	1(2.6%)	0	3(9.1%)	21(9.9%)	0.003
Agree	16(34.0%)	32(49.2%)	23(60.5%)	20(69.0%)	17(51.5%)	108(50.9%)	
Strongly agree	19(40.4%)	28(43.1%)	14(36.8%)	9(31.0%)	13(39.4%)	83(39.2%)	
<i>Do you think that taking medicine is the single most important factor in controlling high blood pressure?</i>							
Strongly disagree	1(2.1%)	6(9.2%)	3(7.9%)	8(27.6%)	1(3.0%)	19(9.0%)	<0.01
Disagree	7(14.9%)	12(18.5%)	19(50.0%)	14(48.3%)	1(3.0%)	53(25.0%)	
Agree	27(57.4%)	36(55.4%)	13(34.2%)	5(17.2%)	20(60.6%)	101(47.6%)	
Strongly agree	12(25.5%)	11(16.9%)	3(7.9%)	1(3.4%)	12(36.4%)	39(18.4%)	

- Data are expressed as mean \pm SD.
- n= number of patients
- P<0.05 is significantly different
- P<0.01 is highly significant difference

Patient's practice in hypertension

Descriptive statistics pertinent to 6 items regarding patient's practice while they are hypertensive comprised by the brief questionnaire showed bad habit in eating unhealthy diet (n=158, 74.5%); while good practice in avoiding extra-added salt (n=171, 80.7%). Meanwhile, the patients take regular prescribed medicines with regular follow-up (n=150, 70.8%). However, they are away from physical exercise to maintain their weight (n=180, 84.9%).

Regarding their practice in examine their eyes within one year, last year, last two years or never check they showed nearly equal number (average n=53, 25%). The data regarding their monitoring of blood sugar showed that 20.8% (n=44) were never check their blood sugar; while those checked it within different schedules (once in 15 days, once in 1 month, once in 3 months and once in 6 months) were 25% (n=53), 16% (n=34), 18.9% (n=40) and 19.3 (n=41) respectively, as shown in table-5.

Table-5: Patients' practice in hypertension (n = 212)

Variable	Elementary N=47 (%)	High school N=65 (%)	College N=38 (%)	PG N=29 (%)	Other N=33 (%)	Total N=212(%)	P Value
Are you taking regular prescribed medicine and going for regular follow-up?							
Yes	26 (55.3%)	41(63.1%)	37(97.4%)	24(82.8%)	22(66.7%)	150(70.8%)	0.001
No	21(44.7%)	24(36.9%)	1(2.6%)	5(17.2%)	11(33.3%)	62(29.2%)	
Are you taking healthy diet?							
Yes	6(12.8%)	14(21.5%)	18(47.4%)	13(44.8%)	3(9.1%)	54(25.5%)	<0.001
No	41(87.2%)	51(78.5%)	20(52.6%)	16(55.2%)	30(90.9%)	158(74.5%)	
Are you doing physical exercise to maintain your weight?							
Yes	1(2.1%)	12(18.5%)	8(21.1%)	8(27.6%)	3(9.1%)	32(15.1%)	0.015
No	46(97.9%)	53(81.5%)	30(78.9%)	21(27.4%)	30(90.9%)	180(84.9%)	
Are you avoiding extra-added salt in your daily diet?							
Yes	34(72.3%)	61(93.8%)	32(84.2%)	19(65.5%)	25(75.8%)	171(80.7%)	0.006
No	13(27.7%)	4(6.2%)	6(15.8%)	10(34.5%)	8(24.2%)	41(19.3%)	
When is your last Eye examination done?							
Within 1 year	13(27.7%)	10(15.4%)	6(15.8%)	4(13.8%)	18(54.5%)	51(24.0%)	0.003
Within last year	13(27.7%)	16(24.6%)	12(31.5%)	12(31.0%)	4(21.1%)	54(25.5%)	
Within last 2 year	11(23.4%)	25(38.5%)	9(23.7%)	7(24.1%)	5(15.2%)	57(26.9%)	
Never checked	10(21.2%)	14(21.5%)	11(29.0%)	9(31.0%)	6(18.2%)	50(23.6%)	
What is the frequency of checking your blood sugar level?							
Once in 15 days	16(34.8%)	13(20.0%)	7(18.4%)	4(13.8%)	13(38.2%)	53(25.0%)	<0.001
Once in 1 month	11(23.9%)	11(17.0%)	4(10.5%)	6(20.7%)	2(5.9%)	34(16.0%)	
Once in three months	5(10.9%)	14(21.5%)	8(21.1%)	4(13.8%)	9(26.5%)	40(18.9%)	
Once in 6 months	8(17.4%)	13(20.0%)	8(21.1%)	5(17.2%)	7(20.6%)	41(19.3%)	
Never checked	6(13.0%)	14(21.5%)	11(28.9%)	10(34.5%)	3(8.8%)	44(20.8%)	

- Data are expressed as mean \pm SD.
- n= number of patients
- P<0.05 is significantly different

- $P < 0.01$ is highly significant difference

Discussion:

Patients' knowledge about HTN and benefits of lifestyle modifications seems to be the key to successful control of HTN. However, lifestyle changes are not easily achieved. Adherence to treatment increases when the patients are active [20].

Educational status and level of knowledge about hypertension were shown to promote positively the control of high blood pressure, but the additional effects of these factors were found to be minimal [21]. Similarly, Xu LJ, et al 2014 found that educating patients about hypertension enabled reduction in systolic blood pressure of 19.03 mmHg and diastolic blood pressure of 10.33 mmHg [22]. However, in this study, patient's knowledge about smoking, co-morbidities and their relation to the progression and severity of hypertension was found to be increased proportionally with higher degree of educational status.

Hypertensive smoker patients are more likely to develop sever form of hypertension, including malignant and reno-vascular hypertension, an effect likely due to an accelerated atherosclerosis [23]. Reducing smoking in those with low socioeconomic position and hypertension could potentially reduce social inequality stroke incidence [24].

In the present study, 70.8% of patients were know what the two numbers (systolic & diastolic) of blood pressure means, and 84% of patients be familiar with their blood pressure as dangerous condition if it is not controlled well (40.6% & 43.4% as extremely dangerous & somewhat dangerous, respectively), which are significantly different from patient that possess less information or do not know as shown in table 2. Most of patients (particularly those with higher education) had cognize that lowering the high blood pressure could improve the patients' health. A study on hypertensive patients at three different blood pressure measurements

clinics showed that lack of knowledge of target systolic blood pressure goal was an independent predictor of poor blood pressure control [25]. Patients who were aware that increased blood pressure reduced life span had a higher level of compliance with checkups and medication use [26]. These findings suggest the importance of hypertension knowledge and awareness in improving BP control and ultimately long-term outcomes.

Many studies have been conducted in different countries on awareness regarding hypertension, compliance with antihypertensive treatment, prevalence of hypertension, and awareness of hypertensive patients regarding lifestyle modifications [27-32]. However; there is no study that has comprehensively assessed hypertensive patient's knowledge, perception, attitudes and practices on the importance of lifestyle modification in controlling hypertension in Iraqi population. Therefore, this study was aimed to assess knowledge, attitude and practice of life style changes for blood pressure control among the patients with hypertension in Iraq. 90 % of participants in this study believed that changing life style helps to lower blood pressure as 51% answered by strongly agree and 39% answered by agree, as shown in table-3.

Study by (Mpinda et al 2014) showed that patients' perceptions of their illness accounted for a significant proportion of the variance between clinical disease severity and outcome [33]. While another study (Anthony et al 2012) suggests that patients do not see hypertension as a chronic disease requiring adherence to treatment recommendations, but rather as a health condition mainly related to stress, that may actually have no consequences if left untreated [34].

Most participants in this study (86.8%) had agreed or strongly agreed (39.6% & 47.2% respectively) that hypertension is a serious condition that affects their health. Some

participants also had knowledge that hypertension is a lifelong condition and cannot be cured, and most of participants ratified that taking medicines are necessary to keep blood pressure under control. However, 66% conceived that, in addition to medicines, there are another factors that important in controlling high blood pressure.

Patient's compliance with antihypertensive can be affected by several factors including; drugs medication-related factors, patient attitude, sociodemographic factors and a health care provider factor [35].

Recent Iraqi study (Alsallami 2015) demonstrated that good compliance with treatment was present in only 24.8% of the sample and 57.9% had poor compliance. Nearly 90% of patients tend to measure their blood pressure at governmental clinics, 34.1% do not remember their last blood pressure reading; 33.4% do not know the normal reading and 21.3% tend to measure their blood pressure every 3 months or more and good control of blood pressure was present only in 22.3% of patients [36].

In the present study, result demonstrated that about three-quarter of patients were taking regular prescribed medications and going for regular follow up (major percentage for those with high level of education). However, only 25.5% of patients committed to taking healthy diet and only 15.1% of patients doing exercise to maintain their weight.

This study further advocate the importance of securing patients fully understands treatment goals in order to support attitudes for controlled blood pressure. We can provide patients with more information about their illness to put them on the right way. This educational effort could be reflected into improving patients' perception and thence improving their quality of life.

Conclusion:

This study demonstrated inadequate knowledge, attitude and perception and poor practice about hypertension among patients with elevated blood pressure in Iraqi population. This study highlights certain approaches of hypertension education that need to be improved. Patients are different, thus they need different kinds of education, care and support. Therefore, it is important to enhance physicians' ability to educate patients individually regarding to their attitudes and socioeconomic aspects.

Limitations:

There are some limitations to our study. Firstly, the study population consisted of patients collected mainly from Baghdad, that's why the results may not be extrapolated to general population of Iraq. Secondly, this is a cross-sectional study depended on answers of patients, thus these answers may be biased. Thirdly, hypertensive patients in our sample may differ from the general hypertensive population in terms of access to medical care, access to prescription drugs, employment status, general health/comorbidity status, and/or other factors

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