

## The Effect of Hypertension and Control of Hypertension on Health Related Quality of Life in Hypertensive Patients Attending Consultation Clinic for Internist Diseases at Al-Kindy Teaching Hospital

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### Abstract

**Background:** Hypertension cause about 12.8% of annual deaths, the prevalence of hypertension in IRAQ was 40.4%. Hypertension has a significant impact on quality of life yet little is known about health related quality of life (HRQOL) in hypertensive patients in Iraq.

**Aim:** To find out the effect of hypertension on HRQOL and relationship between control of hypertension and quality of life.

**Method:** A WHOQOL instrument was used to measure HRQOL of 147 hypertensive patients attending consultation of internist clinic at Al-Kindy teaching hospital, 2017.

**Result:** Better QOL was noticed in female and there significant difference in physical and mental domain (p.0.01), employed (p.0.01) in physical and mental domain and patients with primary education (p.0.01) in physical and mental domain. Highest score was found in physical (53.9 ± 15.73) and environmental (57.95 ± 14.99) while lowest score was found in mental (47.06 ± 15.56) and social (41.04 ± 17.55). Uncontrolled hypertensive patient scored better QOL in all domains (p.0.03) in environmental domain.

**Keywords:** Hypertension; HRQOL; Al-Kindy teaching hospital; Baghdad

### Introduction

Worldwide, raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths. This accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS. Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke. Blood pressure levels have been shown to be positively and continuously related to the risk for stroke and coronary heart disease. In some age groups, the risk of cardiovascular disease doubles for each increment of 20/10 mmHg of blood pressure, starting as low as 115/75 mmHg [1]. If left uncontrolled, hypertension causes stroke, myocardial infarction, cardiac failure, dementia, renal failure and blindness, causing human suffering and imposing severe financial and service burdens on health systems [2,3]. In different studies conducted to assess the relation between QOL and hypertension, most of the studies reported lower scores in most dimensions as physical capacity, social functioning, mental health, psychological functioning, and vitality as compared to general population [4,5]. Hypertension markedly impairs quality of life in terms of both physical and mental health [6]. Carvalho and others pointed out that most of the time hypertension is clinically silent disease but still it impairs QOL [7].

### Hypertension

Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure [8]. Control of hypertension was defined as BP <140/<90 mmHg across all survey periods (Table 1) [9,10].

### Epidemiology

Hypertension (HTN) is an important public health problem in both economically developed and developing nations. As per World Health Organization report, about 40% of people aged more than 25

years had hypertension in 2008 [2]. The global prevalence of raised blood pressure (defined as systolic and/or diastolic blood pressure  $\geq 140/90$  mmHg) in adults aged 18 years and over was around 22% in 2014. The proportion of the world's population with high blood pressure or uncontrolled hypertension fell modestly between 1980 and 2010. However, because of population growth and ageing, the number of people with uncontrolled hypertension has risen over the years [3].

### Prevalence of hypertension (systolic and/or diastolic) in Iraq

Generally speaking, the prevalence of hypertension (SBP  $\geq 140$  mmHg and/or DBP  $\geq 90$  mmHg) was 40.4%. It was higher among male as compared to female (43.1 vs. 38.3). The prevalence of stage II hypertension (SBP  $\geq 160$  mmHg and/or DBP  $\geq 100$  mmHg) was 13.9% being higher among female than male (15.3 vs. 14.1 respectively). In both sexes, there is an evident increase in the prevalence of hypertension after the age group of (45 years) [11].

### Quality of life

World Health Organization defines QOL as "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns [12]. Quality of life (QOL) is the subjectively

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Category	Systolic (top number)		Diastolic (bottom number)
Normal	Less than 120	And	Less than 80
Prehypertension	120-139	Or	80-89
High blood pressure			
Stage 1	140-159	Or	90-99
Stage 2	160 or higher	Or	100 or higher

**Table 1:** Categories for blood pressure levels in adults (measured in millimeters of mercury, or mmHg) [9].

determined personal satisfaction with daily life, as influenced by the individual's evaluation of his/her physical, psychological, social, and spiritual wellbeing [13]. However, it is important not only to know whether a drug prolongs the life of patients, but also how it affects their well-being, their ability to perform daily activities and social roles, their satisfaction with their current health status, their physical and mental condition, as well as other areas of life. From the patient's perspective, whether and how the patient will comply with treatment recommendations depends on the above aspects of health, which today can be carefully measured [14]. To best of our knowledge, there is no study measuring QOL among hypertensive people in Baghdad.

Understanding QOL of individuals living with hypertension will help policy makers and healthcare managers design and implement culture specific support and care. Thus, this study aimed to examine the QOL among people living with hypertension in Baghdad (physical health, psychological, social relationship and environment) using the World Health Organization Quality of life - BREF instrument (WHOQOL-BREF) and its association with socio-demographic characteristics and factors related to treatment and effect of control of hypertension on HRQOL.

### Factors affecting the quality of life in patients with hypertension

There are many factors which affect QOL in hypertensive patients these factors are:

- Factors related to patients or their environment such as socioeconomic and demographic factors (e.g. age, gender, marital status, employment status, educational level, income residence etc.)
- Factors related to the disease (clinical factors) e.g. duration of disease, complications and control of blood pressure in hypertensive patients.
- Another factor which is risk factor found in hypertensive patients e.g. obesity, low physical activity, smoking etc. also other comorbidities that may hypertensive patients suffer from it in addition to hypertension.

Hypertension a silent disease and hypertensive patients do not experience symptoms however their QOL is highly affected and its lower than normal healthy individual [15] this effect on QOL may due to specific effect of hypertension itself, or attribute to the effect of diagnostic labeling (after diagnosis patients experience anxiety, stress, and symptoms not experienced before). As the number of risk factors in hypertensive patients increase the QOL decrease [16] lower QOL had been observed in hypertensive patients with heart failure, coronary artery disease, diabetic and arrhythmia. The presence of cardiovascular risk factors, such as lipid disorders, obesity, and low physical activity, is also associated with a reduced QOL they found that quality-adjusted life expectancy (QALE) in patients with hypertension is approximately 6 years shorter than that in healthy individuals and this is due to lower QOL [17]. The reduction of

QALE can be seen both in young hypertensive patients who are 18 years old have a short QALE by 2.2 years when compared to normal individuals this is done long term population study and also for hypertensive patients older than 50 years hypertension account 15% of disability and 20% for those older than 70 years as measured by disability-adjusted life years (DALYs) [18]. Apart of these factors there is an important factor affect QOL is age as the age of hypertensive patients increase the QOL decrease. Another factor which is also important is control of blood pressure in hypertensive patients they found that even achieving good blood pressure control in hypertensive patients will not improve QOL.

### Aim of Study

1. To find out the effect of hypertension on HRQOL in hypertensive patients attending consultation clinic for internist disease at Al-Kindy teaching hospital.
2. To explore the effect of control of hypertension on HRQOL in hypertensive patients attending consultation clinic for internist disease at Al-Kindy teaching hospital.

### Methods

#### Subject and method

- a) Study design:** the study is a descriptive cross-sectional study.
- b) Duration of study:** the study was done in a period of 3 months (1<sup>st</sup> January-31<sup>st</sup> March 2017).
- c) Setting place:** consultation clinic for internist disease at Al-Kindy teaching hospital.
- d) The sampling and sample technique:** a convenient sample of 147 hypertensive patients, attending consultation clinic for internist disease at Al-Kindy teaching hospital seeking treatment or advice regarding their hypertension state.
  - Inclusion criteria: Adult Patients diagnosed with hypertension, (blood pressure >140/90 mmHg) for more than 2 years.
  - Exclusion criteria: Patients with abnormal mental status, pregnant and lactating women, hypertensive patients with any chronic disease.

The data were collected by direct interview with the patients in consultant clinic. The interview carried out by the researchers them self, using the WHOQOL-BREF questionnaires Arabic version. The blood pressure was considered as controlled if the last three reading was below 140/90mmhg for each with at least 1 month space.

The questionnaire included information about two aspects:

**Social demographic aspect:** Contain question regarding the general social demographic information of the particular patients: age, sex, marital status, occupation, education, family income.

**QOL aspect:** Include 4 domains in a form of 24 questions.

- Domain 1 physical health including seven items
- Domain 2 psychological health including six items
- Domain 3 social relationship including 3 items
- Domain 4 environmental health including eighth items.

In addition to two questions one for general health and the other general QOL. The researchers started the interview by introducing themselves to the patients explaining the aim of study verbal consent of participants was taken, and privacy was insured. Each interview last for 15-20 min.

**Ethical consideration**

Approval of scientific and ethical committee in the Al-Kindy Medical College was approved. Oral consents of each patients were taken after explanation of the aim of the study and the data was confidential and will be used in purpose of research only. Age, parity, and body mass index (BMI) before pregnancy, gestational weeks of delivery, and infant body weight were evaluated. FGR was diagnosed according to Japanese fetal growth standards [14]. Soluble film-like growth factor 1 (sFlt-1) in serum was measured as a biomarker of HDP using a sFlt-1 ELISA kit (R&D Systems, Inc, USA).

**Dependent and independent variables**

In this study, the four domains of the WHOQOL-BREF questionnaire were considered dependent variables and other data (age, sex, education level, monthly income level, place of residence, and duration of disease) were considered independent variables. The education level of participants was classified as primary, secondary and university. Income level was divided into the three categories of <500,000, 500,000-1,000,000 and >1,000,000 Iraqi Dinar per month. The employment status was classified as employed, retired, and unemployed. The duration of hypertension categorized as <10 years and ≥10 years. The criterion of place of residence was categorized as urban and rural.

**Statistical analysis**

Data were translated into a computerized data base structure, statistical analysis were done using SPSS version 22 (statistical package for social science) in association with Microsoft Excel 2013. Frequency distribution for selected variables was done first and presented as tables and graphs.

For statistical significance of difference in means between more than two group analysis of variance (ANOVA) test was used. P value less than or equal 0.05 was considered statistically significant. For statistical significance of difference in means between two independent sample two sample t test was used. P value less than 0.05 was considered statistically significant.

**Scoring the WHOQOL-BREF**

The WHOQOL-BREF (Field Trial Version) produces a quality of life profile. It is possible to derive four domain scores. There are also two items that are examined separately: question 1 asks about an individual’s overall perception of quality of life and question 2 asks about an individual’s overall perception of their health. The four domain scores denote an individual’s perception of quality of life in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life) all 26 items of the assessment have a range from 1-5. Recording items as follow (1=1) (2=2) (3=3) (4=4) (5=5) except 3 items (Q3, Q4, and Q26) which are negatively reversed (1=5) (2=4) (3=3) (4=2) (5=1). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100. Explicit instructions for checking and cleaning data, and for computing domain scores, are given in Table 2 [2]. The first transformation method converts scores to range between 4-20, comparable with the WHOQOL-100. The second transformation method converts domain scores to a 0-100 scale where more than 20% of data is missing from an assessment, the assessment should be discarded. Where an item is missing, the mean of other items in the domain is substituted. Where more than two items are missing from the domain, the domain score should not be calculated (with the

Steps	SPSS syntax for carrying out data checking, cleaning and computing total scores
1. Check all 26 items from assessment have a range of 1-5	RECODE Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 (1=1) (2=2) (3=3) (4=4) (5=5) (ELSE=SYSMIS). (This recodes all data out with the range 1-5 to system missing).
2. Reverse 3 negatively phrased items	RECODE Q3 Q4 Q26 (1=5) (2=4) (3=3) (4=2) (5=1). (This transforms negatively framed questions to positively framed questions)
3. Compute domain scores	COMPUTE DOM1=MEAN.6 (Q3,Q4,Q10,Q15,Q16,Q17,Q18)*4. COMPUTE DOM2=MEAN.5 (Q5,Q6,Q7,Q11,Q19,Q26)*4. COMPUTE DOM3=MEAN.2 (Q20,Q21,Q22)*4. COMPUTE DOM4=MEAN.6 (Q8,Q9,Q12,Q13,Q14,Q23,Q24,Q25)*4. (These equations calculate the domain scores. All scores are multiplied by 4 so as to be directly comparable with scores derived from the WHOQOL-100. The [.6Z in [mean.6Z specifies that 6 items must be endorsed for the domain score to be calculated).
4. Delete cases with >20% missing Data	COUNT TOTAL=Q1 TO Q26 (1 THRU 5). (This command creates a new column [totalZ. [TotalZ contains a count of the WHOQOL-100 items with the values 1-5 that have been endorsed by each subject. The [Q1 TO Q26Z means that consecutive columns from [Q1Z, the first item, to [Q26Z, the last item, are included in the count. It therefore assumes that data is entered in the order given in the assessment). FILTER OFF. USE ALL. SELECT IF (TOTAL>=21). EXECUTE. (This second command selects only those cases where [totalZ, the total number of items completed, is greater or equal to 80%. It deletes the remaining cases from the data set)
5. Check domain scores	DESCRIPTIVES VARIABLES=DOM1 DOM2 DOM3 DOM4/STATISTICS=MEAN STDDEV MIN MAX. (Running descriptive should display values of all domain scores within the range 4-20
6. Save data set	Save data set with a new file name so that the original remains intact

**Table 2:** SPSS syntax for carrying out data checking, cleaning and computing total scores.

exception of domain 3, where the domain should only be calculated if <1 item is missing [19]. The following cut-offs points in this study were used in this study:

More than 70 good, 50-69 fair, less than 50 poor which is the same method of classification of QOL used by Silva [20].

## Results

The Socio-demographics characteristics were described in terms of gender, education, job and income. The distribution of gender was 52.4% female; education distribution primary 44.2%; job employed 44.9% and income <500 was 57.8%. Analysis of clinical data showed that 72% have uncontrolled blood pressure, 62.6% have hypertension for less than 10 years, and 34.7 have a negative family history (Table 3 and Figure 1).

The results showed that social domain the poorest score of QOL (41.04 ± 17.55) and the best score was achieved by environmental domain (57.59 ± 14.9), Physical 53.90 ± 15.73, mental 47.06 ± 15.56 (Figure 2).

The association between general QOL and control state of high blood pressure showed a significant difference between patients who are controlled their BP and who are not (p.0.049). Patients who had uncontrolled BP have a better QOL (Table 4).

The association between general health and control state of high blood pressure showed no significant difference. For patients who controlled their BP 36.58% good, 34.15% fair and 29.27% poor, while 38.67% good, 33.02% fair and 28.3% poor for patients with uncontrolled BP (P.0.937) (Table 5).

Difference between means of HRQOL according to different domains and educational level of hypertensive patients. In all four domains the patients with primary education had high score of HRQOL compared to secondary and university. It was 59.15 ± 16.28 (p.0.001), 53.97 ± 15.82 (p.0.001), 44.1 ± 17.28 (p.0.125) and 61.73 ± 13.36 (p.0.007) for physical, mental, social and environmental domains respectively (Table 6).

Difference between means of HRQOL according to different domains and employment state of hypertensive patients lower score was observed for patients who are retired and not employed while patients who are employed had a higher score for each domains 59.75

± 16.66 (p.0.001), 53.78 ± 14.64 (p.0.001), 45.07 ± 16.73 (p.0.02) and 59.85 ± 13.93 (p.0.244) for physical, mental, social, and environmental respectively (Table 7). As shown in Table 8 patients with lower income had a better QOL than other economic levels in all domains.

Difference between means of HRQOL according to different domains and family history of hypertension among hypertensive patients. Patients with positive family history had a better QOL Even the difference was not significant. 55.45 ± 14.95 (P.0.101), 47.91 ± 15.49 (p.0.366), 40.97 ± 17.0 (p.0.947) and 56.9 ± 15.02 (p.0.477) for physical, mental, social, and environmental respectively (Table 9).

Differences between means of HRQOL according to different domains and control state of blood pressure among hypertensive patients. High score was observed for patients with uncontrolled BP in physical (p.0.117), mental (p.0.044), social (p.0.437) and environmental (p.0.03) domains (Table 10).

Difference between means of HRQOL according to different domains and gender among hypertensive patients. Hypertensive men had lower HRQOL score than women in all domains, physical (p.0.001) mental (p.0.001) social (p.0.259) environmental (p.0.122) (Table 11).

There is an inverse relationship between duration of hypertension and HRQOL score in both physical (p.0.346) and mental (p.0.504) while the reverse situation was noticed regarding social and environmental domain were QOL increased when duration increase (Table 12).

## Discussion

To our knowledge this is one of first studies measures QOL of hypertensive patients in Iraq except one study done in Kurdistan [21]. As we expected we founded that 72% of hypertensive patients had uncontrolled blood pressure although they are on antihypertensive medications this was closed in different studies done in Baghdad [22], Kurdistan [21,23], Brazil [24] and WHO document [25]. Surprisingly patients with uncontrolled BP had better QOL in this study and this goes with what has been mentioned by DJTrevisolin Brazil [26] that showed the same result on the other hand, Erickson and associates reported lower HRQOL due to symptoms associated with drug treatment [27]. While other study showed a better QOL in patients with controlled blood pressure Shakor [21] and Youssef et al. [28]. It seems that patients who try to control their BP to as normal as possible through repeated visits to the doctor, day by day examination of BP and highly compliant to treatment which may expose them to more

		Count	Column N%
Gender	Male	70	47.6%
	Female	77	52.4%
Education	Primary	65	44.2%
	Secondary	50	34.0%
	University	32	21.8%
Job	Employee	66	44.9%
	Non-employee	60	40.8%
	Retired	21	14.3%
Income (Iraqi Dinar)	>500	85	57.8%
	500-1000000	41	27.9%
	<1000000	21	14.3%
Duration (years)	<10	92	62.6%
	≥10	55	37.4%
Family history	Positive	96	65.3%
	Negative	51	34.7%

**Table 3:** Frequency distribution of studied hypertensive patients according to different variables.



stress and obsession which may make their QOL less than indifference uncontrolled BP of hypertensive patients this might reflect a shortage in the reassurance that doctor must pay attention to other factor may affect QOL of patients on treatment like a high price of drug and side effect of anti-hypertensive drug.

Lower score in social and mental domain in this study is not similar to Rayan Abdul Rahim result who found that lower score in social and environmental [29] and Ana Carolina found that lower score in environmental and physical and domains [24]. Again high price of anti-hypertensive drugs and long term use of medications may affect mental and social aspect of QOL of hypertensive patient in Baghdad.

Patients with primary level of education and low income found to score better QOL than higher socioeconomic group and this may reflect indifference and underestimation of complications of hypertension and this goes in contrast to Rayan Abdul Rahim study [29].

We found that hypertensive women had a better QOL than men although there is no significant difference in both social and environmental and a significant difference in physical domain [30] showed poor state of physical role in male. To understand the gender differences, biological factors may explain some of the differences but the main explanation is presumably gender disparities in work, economy, daily living, social life, and expectations between women and men. Rahim et al. found no gender discrepancy in any of the 4 QOL domains [18].

Another observation that employed patients had a better QOL and there is a significant association in physical and mental. Qusaier et al. [29] and Khalifeh et al. [31] showed the highest score in physical, psychological and environmental health domains.

The longer the time of diagnosis of hypertension, the lower the HRQOL in both physical and mental domains, Robbins et al. [32] also observed this relationship among women. However, Youssef et al. [28] did not find a statistically significant correlation between time of diagnosis of hypertension and QOL. The longer the duration of hypertension the more the complications occur and this may affect QOL of hypertensive patients.

Regarding the family history patients with positive family history had a better QOL even no significant difference were found and this may be due to patients with positive family history being more aware about the disease and try to modify his lifestyle and taking care.

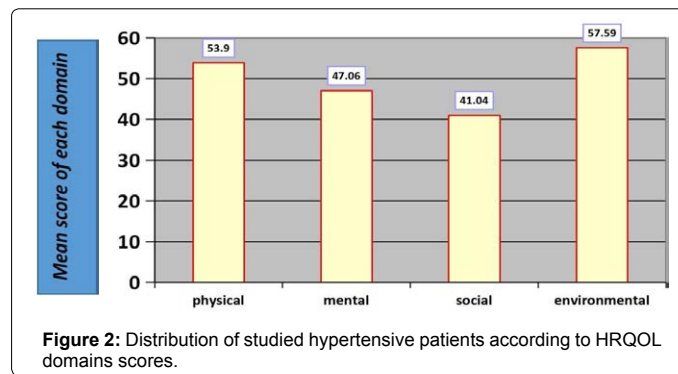
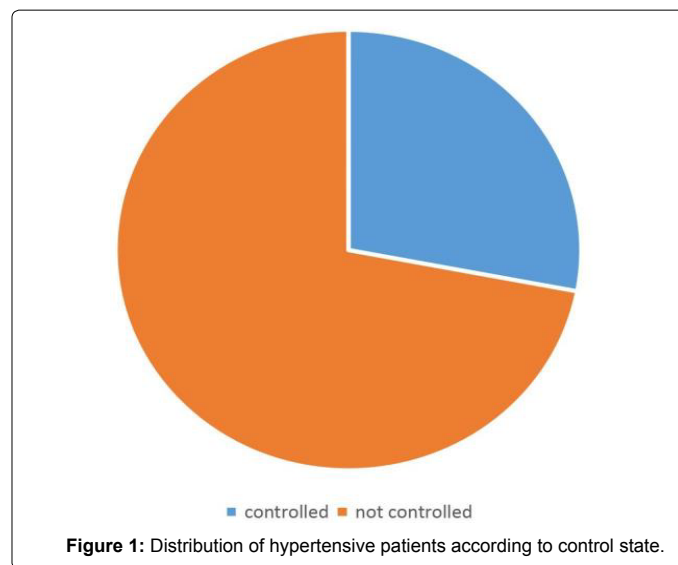
### Conclusion

Hypertensive patients had impaired health related QOL in all physical, mental, environmental and social domains and the social

and mental domains are mostly impaired than other. From analyzing the demographic and socioeconomic data we observed that female, primary education, employed, and low income had a better QOL. Analyzing the clinical data we noticed that with uncontrolled BP, patients with positive family history and patients with duration less than 10 years had a better QOL.

### Recommendation

The assessment HRQOL of hypertensive patients is complex because the association and interaction between various aspects of hypertension and its management and patients' demographic,



	Good		Fair		Poor		Sig
	N	%	N	%	N	%	
Controlled	10	24.39	14	34.14	17	41.46	0.049
Not controlled	48	45.28	31	29.24	27	25.47	
Total 147	58	39.45	45	30.61	44	29.93	

**Table 4:** Association between general quality of life and control state of high blood pressure.

	Good		Fair		Poor		Sig
	N	%	N	%	N	%	
Controlled	15	36.58	14	34.15	12	29.27	0.973
Not controlled	41	38.67	35	33.02	30	28.30	
	55	37.41	49	33.33	42	28.57	

**Table 5:** Association between general health and control state of high blood pressure.

Domains	Education	N	Mean	Standard Deviation	Sig	Pairwise comparisons		
						1 and 2	1 and 3	2 and 3
Physical	Primary	65	59.51	16.28	0.001	0.001	0.009	0.99
	Secondary	50	49.28	13.33				
	University	32	49.75	14.79				
Mental	Primary	65	53.97	15.82	0.001	0.001	0.001	0.929
	Secondary	50	41.12	13.94				
	University	32	42.32	11.69				
Social	Primary	65	44.10	17.28	0.125	0.396	0.125	0.710
	Secondary	50	39.83	16.86				
	University	32	36.72	18.55				
Environmental	Primary	65	61.73	13.36	0.007	0.005	0.205	0.569
	Secondary	50	53.00	14.83				
	University	32	56.34	16.46				

**Table 6:** One way ANOVA shows differences between means of HRQOL according to different domains and educational levels of hypertensive patients.

Domains	Occupation	N	Mean	Standard Deviation	Sig	Pairwise comparisons		
						1 and 2	1 and 3	2 and 3
Physical	Employed	66	59.75	16.66	0.001	0.001	.303	0.154
	Not employed	60	47.33	13.46				
	Retired	21	54.28	11.28				
Mental	Employed	66	53.78	14.64	0.001	0.001	0.241	0.076
	Not employed	60	40.06	14.08				
	Retired	21	45.93	13.75				
Social	Employed	66	45.07	16.73	0.020	0.015	0.709	0.449
	Not employed	60	36.38	19.16				
	Retired	21	41.66	11.78				
Environmental	Employed	66	59.85	13.93	0.244	0.224	0.224	0.678
	Not employed	60	55.41	16.56				
	Retired	21	56.69	13.01				

**Table 7:** One way ANOVA shows differences between means of HRQOL according to different domains and employment state of hypertensive patients.

Domains	Income (Iraqi Dinar)	N	Mean	Standard Deviation	Sig	Pairwise comparisons		
						1 and 2	1 and 3	2 and 3
Physical	<500	85	56.4706	16.64660	0.033	0.024	0.754	0.448
	500-1000000	41	48.6829	13.53226				
	≥1000000	21	53.7143	13.88936				
Mental	<500	85	49.9025	16.47943	0.032	0.036	0.286	0.919
	500-1000000	41	42.6344	14.03514				
	≥1000000	21	44.2462	12.32300				
Social	<500	85	42.6471	18.60828	0.295	0.752	0.280	0.655
	500-1000000	41	40.2439	16.01970				
	≥1000000	21	36.1100	15.66486				
Environmental	<500	85	61.0687	14.83513	0.003	0.018	0.023	0.890
	500-1000000	41	53.4317	14.73785				
	≥1000000	21	51.6405	12.60196				

**Table 8:** One way ANOVA shows differences between means of HRQOL according to different domains and economic state of hypertensive patients.

Domains	Family history	N	Mean	Standard Deviation	Sig
Physical	Positive FH	96	55.45	14.95	0.101
	Negative FH	51	50.98	16.87	
Mental	Positive FH	96	47.91	15.49	0.366
	Negative FH	51	45.46	15.7	
Social	Positive FH	96	40.97	17.00	0.947
	Negative FH	51	41.17	18.73	
Environmental	Positive FH	96	56.90	15.02	0.447
	Negative FH	51	58.88	15.00	

**Table 9:** Two sample t test shows differences between means of HRQOL according to different domains and family history of blood pressure among hypertensive patients.

Domains	Control	N	Mean	Standard Deviation	Sig
Physical	Uncontrolled	106	55.1698	16.56817	0.117
	Controlled	41	50.6341	12.94943	
Mental	Uncontrolled	106	48.6640	15.40394	0.044
	Controlled	41	42.9393	15.41199	
Social	Uncontrolled	106	41.7453	17.83655	0.437
	Controlled	41	39.2271	16.89895	
Environmental	Uncontrolled	106	59.2595	14.49131	0.03
	Controlled	41	53.2800	15.59263	

**Table 10:** Two sample t test shows differences between means of HRQOL according to different domains and control state of blood pressure among hypertensive patients.

Domains	Gender	N	Mean	Standard Deviation	Sig
Physical	Male	70	49.31	13.51	0.001
	Female	77	58.07	16.51	
Mental	Male	70	42.47	15.61	0.001
	Female	77	51.24	14.38	
Social	Male	70	39.28	18.39	0.259
	Female	77	42.64	16.72	
Environmental	Male	70	55.58	14.80	0.122
	Female	77	59.41	15.03	

**Table 11:** Two sample t test shows differences between means of HRQOL according to different domains and gender among hypertensive patients.

Domain	Age group	N	Mean	Standard Deviation	Sig
Physical	<10year	92	52.95	14.98	0.346
	≥10 year	55	55.49	16.93	
Mental	<10year	92	46.40	15.49	0.504
	≥10 year	55	48.18	15.76	
Social	<10year	92	41.21	18.75	0.879
	≥10 year	55	40.75	15.52	
Environmental	<10year	92	59.95	15.86	0.013
	≥10 year	55	53.63	12.58	

**Table 12:** Two sample t test shows differences between means of HRQOL according to different domains and duration among hypertensive patients.

socioeconomic and clinical factors. It's necessary for physician and health professional to put these factors in their mind when treating hypertensive patients and to give a special attention for those with deteriorated QOL.

Improving the QOL of hypertensive patients requires multidisciplinary actions from screening and early diagnosis for highly risk group to implement targeted lifestyle modifications in association with pharmacotherapy So it comprehensive assessment of all aspects that interact with hypertension and affect QOL.

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#### References

- World Health Organization. Global Health Observatory (GHO) data. Raised blood pressure. Situation and trends. WHO, Geneva. 2017.
- World Health Organization. A global brief on hypertension. Silent killer, global public health crisis. WHO, Geneva. 2013.
- World Health Organization. GLOBAL STATUS REPORT on noncommunicable diseases 2014. "Attaining the nine global noncommunicable diseases targets; a shared responsibility". WHO, Geneva. 2014.
- Khaw WF, Hassan STS, Latiffah AL (2011) Health-related Quality of Life among Hypertensive Patients Compared with General Population Norms. *Journal of Medical Sciences* 11: 84-89.
- Kaliyaperumal S, Hari SB, Siddela PK, Yadala S (2016) Assessment of Quality of Life in Hypertensive Patients. *J Appl Pharma Sci* 6: 143-147.
- Bhandaria N, Bhusal BR, Takma KC, Lawotd I (2016) Quality of life of patient with hypertension in Kathmandu. *Int J Nurs Sci* 3: 379-384.
- Carvalho MV, Siqueira LB, Sousa ALL, Jardim PCBV (2013) The influence of hypertension on quality of life. *Arq Bras Cardiol* 100: 164-174.
- World Health Organization. Health topics. Hypertension. WHO, Geneva.
- Collins F (2013) High Blood Pressure, a Global Health Threat. National institutes of health.
- Egan BM, Zhao Y, Axon RN, Brzezinski WA, Ferdinand KC (2011) Uncontrolled and Apparent Treatment Resistant Hypertension in the U.S. 1988-2008. *Circulation* 124: 1046-1058.
- World Health Organization. Chronic Non-Communicable Diseases Risk Factors Survey In Iraq 2006. A STEP wise Approach. WHO, Geneva. 2006.
- World Health Organization. WHOQOL measuring quality of life. Programme on Mental Health. WHO, Geneva. 1997.
- Kimmel PL (2000) Just whose quality of life is it anyway? Controversies and consistencies in measurement of quality of life. *Kidney Int* 57: S113-S120.
- Jaszcz KK, Klocek M. (2016) The expectancy and quality of life in hypertension. *Post N Med* 29: 682-687.
- Trevisol DJ, Moreira LB, Kerkhoff A, Fuchs SC, Fuchs FD (2011) Health-related quality of life and hypertension: a systematic review and meta-analysis of observational studies. *J Hypertens* 29: 179-188.
- Shetty SM, Kundapur R, Ganapathy KK, Kiran NU, Kodyalamoole NK, et al. (2016) Quality of life and risk factors in hypertensive individuals in the field practice areas of a tertiary-care hospital in coastal Karnataka. *Int J Med Sci Public Health* 5: 1883.

17. Jia H, Zack MM, Thompson WW (2013) The effects of diabetes, hypertension, asthma, heart disease and stroke on quality-adjusted life expectancy. *Value Health* 16: 140-147.
18. Rahimi K, Emdin CA, MacMahon S (2015) The epidemiology of blood pressure and its worldwide management. *Circ Res* 116: 925-936.
19. World Health Organization. WHOQOL-BREF: INTRODUCTION, administration, scoring and generic version of the assessment: Field trial version, December 1996. WHO, Geneva. 1996.
20. Silva PA, Soares SM, Santos JF, Silva LB (2014) Cut-off point for WHOQOL-bref as a measure of quality of life of older adults. *Rev Saude Publica* 48: 390-397.
21. Shakor JK, Qader SS, Ahmed BH, Karim MA (2015) Assessment of Health Related to Quality of Life in Hypertensive and Diabetic Mellitus patients in Kurdistan/Iraq. *Kufa Journal for Nursing Sciences* 5.
22. Al-Lami F (2007) Proportion and Determinants of Uncontrolled Hypertension among Treated Hypertensive Patients. *J Fac Med Baghdad* 49: 56-63.
23. Khidder BB, Ismail KH (2013) Uncontrolled hypertension in a group of hypertensive patients in Erbil. *Journal of Kufa for Nursing Science* 3.
24. Melchioris AC, Correr CJ, Pontarolo R, Santos Fde O, Paula e Souza RA (2010) Quality of Life in Hypertensive Patients and Concurrent Validity of Minichal-Brazil. *Arq Bras Cardiol* 94: 337-344.
25. Whitworth JA, World Health Organization, International Society of Hypertension Writing Group (2003) 2003 World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. *J Hypertens*. 21: 1983-1992.
26. Trevisol DJ, LB Moreira, FD Fuchs, SC Fuchs (2012) Health-related quality of life is worse in individuals with hypertension under drug treatment: results of population-based study. *J Hum Hypertens* 26: 374-380.
27. Erickson SR, Williams BC, Gruppen LD (2001) Perceived symptoms and health-related quality of life reported by uncomplicated hypertensive patients compared to normal controls. *J Hum Hypertens* 15: 539-548.
28. Youssef RM, Moubarak II, Kamel MI (2005) Factors affecting the quality of life of hypertensive patients. *East Mediterr Health J* 11: 109-118.
29. Qusaier RA, Al-Tiqiqi YE, Al-Ahmadi HS, Al-Qarni AM, Felemban AM (2016) Quality of life among hypertensive patients attending primary healthcare centers in JEDDAH, Saudi Arabia. *Int J Adv Res* 4: 2203-2214.
30. Xu X, Rao Y, Shi Z, Liu L, Chen C, et al. (2016) Hypertension Impact on Health-Related Quality of Life: A Cross-Sectional Survey among Middle-Aged Adults in Chongqing, China. *Int J Hypertens* 2016.
31. Khalifeh M, Salameh P, Hajje AA, Awada S, Rachidi S, et al. (2015) Hypertension in the Lebanese adults: Impact on health related quality of life. *J Epidemiol Glob Health* 5: 327-336.
32. Robbins MA, Elias MF, Croog SH, Colton T (1994) Unmedicated blood pressure levels and quality of life in elderly hypertensive women. *Psychosom Med* 56: 251-256.