# Assessment of Health Related to Quality of Life in Hypertensive and Diabetic Mellitus patients in Kurdistan/Iraq

# تقييم نوعية الحياه للمرضى المصابين بارتفاع ضغط الدم والداء السكري في كوردستان/العراق

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**الخلاصة**

**خلفية البحث:** ارتفاع ضغط الدم وداء السكري هما من الامراض المزمنة لذلك فان لديهما التاثير السلبي على نوعية الحياه للمرضى المصابين به.
**الهدف:** الهدف من هذه الدراسة هو تقييم نوعية الحياة للمرضى المصابين بارتفاع ضغط الدم وداء السكري من خلال قياس حالتهم الاقتصادية والاجتماعية، وحالتهم الطبية والمتعلقات المرضية الاخرى.
**المنهجية:**أجريت دراسة مقطعية في كوردستان العراق لاستبيان نوعية الحياة الصحية للمرضى المصابين بارتفاع ضغط الدم وداء السكري للفترة من ١٥ اب ٢٠١٣ ولغاية ١ كانون الثاني ٢٠١٤.واستخدم مقياس الصحة المتعلقة بنوعية الحياة. والمسمى **SF -12** (الاستمارة المختصرة) وتم اختيار العينة المناسبة والمتوفرة لجمع البيانات.
**النتائج:** كان متوسط المسح الصحي للاستبيان SF-١٢ هو ٣٩.٠ ± ١.٦٤ درجه ومتوسط مكونات الحالة الجسمية هو ٣٦.٦ ± ١.٩ ومتوسط االحالة النفسية هو ٤١.٥ ± ١.٦.وكانت نوعية الحياة الصحية للمرضى المصابين بارتفاع ضغط الدم ومرض السكري ضعيفة في كردستان العراق ومن ناحية أخرى كانت نوعية لحياه الصحية للمرضى الذين يعانون من ارتفاع ضغط الدم اقل وكان المتوسط ٣٩.٧ ± ١.٧ مقارنة مع مرضى السكري ٤١.٩ ± ١.٦ وان المشاركون من الإناث وكبار السن وغير المتزوجات والتي ليس لديها وظيفة أو تقاعد كانت نوعية حياتهم اسوأ. تم استخدام الاختبار التائي لتحليل البيانات.
**الاستنتاج:** إن نوعية الحياة الصحية لمرضى ارتفاع ضغط الدم ومرض السكري كانت سيئة في كردستان بالمقارنة مع بلدان أخرى وخصوصا للمشاركات بالبحث من العنصر النسوي وغير المتزوجات وليس لديهن وظيفة أو تقاعد
**التوصيات :** توصي الدراسة باجراء دراسات اخرى على مدى اطول لتقييم نوعية الحياة لكلا المرضين (ارتفاع ضغط الدم والداء السكري) وبشكل منفصل .
**الكلمات المفتاحية :**الامراض المزمنة،الصحة،نوعية الحياة،كردستان/عراق

**Abstract**

**Background**: Hypertension and diabetes mellitus are chronic diseases, therefore; they had negative effect on quality of life of affected patients.
**Aim:** The aim of this study was to assess health related to quality of life of hypertensive and diabetes mellitus patients through measuring their socioeconomic status, medical conditioning and co-morbidity.
**Methodology:** This is cross sectional study that has been carried out in Kurdistan- Iraq. Health Survey Questionnaire, Short form-12 was used for measuring health related quality of life. Conventional sampling method was carried out for collecting of data. T- Test was used to analyze the data
**Result:** Mean Health Survey Questionnaire, Short Form-12 score was 39.0±1.64, mean of physical component summary was 36.6±1.9 and mean of mental component summary of was 41.5±1.6. Health related quality of life among hypertensive and diabetes mellitus patients were poor in Kurdistan. On the other hand, poor health related quality of life was less observed in hypertension patients 39.7±1.7 as compared with diabetic patients 41.9±1.6.

Participants who were female, elder, did not have spouse and did not have job and/or retired were significantly and negatively associated with poor health related quality of life.

**Conclusions**: Health related quality of life among hypertensive and diabetes mellitus patients were poor in Kurdistan as compared with other countries. Included participants, who were female, elder, did not have spouse, did not have job and/or retired were significantly had poor health related quality of life.

**Recommendation:** Further recommends study longitudinal for assessing components of health related quality of life in both diseases separately(hypertension and diabetes).

**Keywords: Chronic disease, Health, Quality of life, Kurdistan/Iraq.**

# INTRODUCTION

Chronic disease due to its burden of lifelong disability has effect on quality of life. In other word, and considering to the effect of socio economic states and the type/number of chronic disease have different effect on the health related quality of life (HRQoL) [(1)] . HRQoL has being defined as the patient's subjective perception about the influence of disease on their everyday life [(2)], which is comprise two components, physical (PCS) and mental (MCS) component. Each Components of HRQoL are influenced in each specific chronic disease, but the types of this relation are not concluded yet[(3)]. For instance, lower PCS and MCS of (HRQoL) have been observed in diabetic and hypertension patient[(4)], and same relation have been seen in stroke, visual impairment, number of symptom associated with BP[(5)]. While in some other study, chronic heart failure negatively has correlated with only physical dimension, but not emotionally dimension of HRQoL[(6)]. Furthermore, a study on hypertension patent have pointed out; being more than one chronic disorder is associated with worse HRQoL[(7)] while other study pointed out that there is no correlation between HRQoL and number of co morbidity with; like history of myocardial infarction, angina, hypertension, and diabetes [(6)].

Another prospective is socio demographic variable like age, sex, occupation, medical status which are the main indicator of HRQoL. For instance better physical health has been reported in younger men and mental health in older women compare with counterpart. As well as same study has pointed out that unemployment have larger negative effect on HRQoL of men in compared to women, and home and car ownership have positive effect on self-assessed physical health in women and self-assessed mental health in men [(1)].

From another prospective, poor health related quality of life in hypertension and other chronic disease could effect on the outcome of controlling condition [(7)]. There is a study which reveals on; better HRQoL in controlled hypertensive patient compared with non-controlled hypertensive patient [(7, 5, 8)]. While in some study a significant relation could not find [(9)] and in Nigerian study only mental component of HRQoL has been dictated to be higher in controlled hypertensive patent, but physical component have not shown a significant difference in

controlled hypertensive patient [5]. Patient-who under prescribed medication- with good HRQoL and strongly adhered to their medicine may results to controlled condition [10].

The aim of this study was to measure the health related quality of life in chronic disease patient under prescribed medicine by considering their socioeconomic status, medical condition, and cor-morbidity. As well as find the association of the health related quality of life on treatment outcome. This study would the first study in this area (Kurdistan).

## METHODS

**Study area:**

This is cross sectional study that has been carried out in Garmian is Kurdistan administrative area, three districts, Kalar, Kifry, Khanaqeen have been located in this area. Around 250000 peoples are resident in the study population area. This is hospital base study which is one general hospital in Kalar and three health centers from Kalar, Kifry and shaheed qasm have been included in this study.

**Study population:**

As a part of Kurdistan health system strategy for controlling of chronic disease; any diagnosed chronic conditions like cardio vascular, hypertension, diabetic, asthma, epilepsy and others have kept on target medicine. From this circumstance, around 5000 peoples have being recorded for administering their medication monthly in one General hospital in Kalar and around 1000 peoples in one health center in Kifry. Only some data, like name, age, sex, patient diagnosis, and drug and dose have enlisted in excel sheet. Hypertensions, cardiovascular and diabetic were the most highly diagnosed cases among enlisted population, but study population was only diabetic and hypertension patient in this list. Based on this reference, we recruited our sample size from study population to our study. We are collected, and interviewed patient at the time of administered medicine in Kalar general hospital and Kifry health center.

**Material and tool:**

Despite questions in interview schedule, many different tools and scales have been used in this study. Physical measurement which is conducted in this study; includes height, weight, blood pressure, and diabetic patients have been investigating for blood sugar. A calibrate mercury sphygmomanometer and stethoscope has been used in measuring blood pressure, and standardized digital glucometer has been used for measuring blood sugar. Validated digital scales have been used for measuring body weight.

From another side, eight item Morisky green scale was used of measuring adherence level, The MMAS-8 has been use in many studies in the world wide, developed from a previously validated four-item scale and additional items have been set to better capture barriers associated with adherence behavior [11]. However four item scales has been used in a study in Kurdistan, but we use MMAS-8 because of its higher sensitivity than the original 4-item scale [12]. This scale

has been demonstrated to have good concurrent and predictive validity and could be used as an initial tool for screening for lower adherence patients similarly can be used in outpatient clinic [13]. Sensitivity and specificity of the 8-item scale have been determined in a study to 93% and 53% respectively [13]. MMAS-8 scores can range from zero to eight in integers. The advantages of this instrument over other methods of measurement include its simplicity, quick administration and low-cost [14].

Short Form (Sf-12 was used for measuring health related quality of life (HRQoL). This tool has been used in many researches, even clinically in the worldwide. SF-12 is a shortened version of the SF-36 by including all eight concepts of SF-36 scales but it consist of 12 items not 36 items[15]. In SF-12, four of the eight health concepts were been measured by using two items (question), and the other four concepts were been measured by using one item for each [16]. Sf-12 has scored based on two main health component; physical component summary (PCS) and mental component summary (MCS). Physical components have consisted of (physical functioning, role limitations due to physical health problems, pain, and general health) and mental components have consisted of (vitality, social functioning, role-emotional and emotional well-being). Satisfied reliability and validity of both (PCS) and (MCS) have been reported in chronic disease [17].

## Measurement:

Uncontrolled higher blood pressure have been considered to once record of systolic blood pressure more than 140 mmHg, and diastolic more than 90mm Hg. As well as, un-controlled blood sugar similarly has been defined as random blood sugar more than 200 dl at once.

General obesity was described by body mass index (BMI). BMI was estimated using the formula: (BMI= body weight (kg)/ the square of body height in meters ($m^2$). Participants were defined as obese when BMI$\geq$ 30 kg/$m^2$, and overweight if BMI $\geq$ 25 kg/$m^2$.

Treatment adherence has been categorized depend MMAS-scores). Good adherence was defined as MMAS scores greater than 6 points, (Middle adherence, 5-6), (low adherence, 0-4) out of a total score of 8 points.

The items of SF-12 were been labeled for 2, 3 and 5 categorical answer, which was scored from 0 to 100 by using equal intermediate. For example, items with 5 categorical answers were scored like 0, 25, 50, 75 and 100. These scores measured patient's point of view about their HRQoL. High score indicate good HRQoL. Mean of overall SF-12 and its both component, PCS and MCS were been calculated for each subjects.

## Statistical analysis

Demographic and socioeconomic status are considered as undependable variables which are included age, sex, place of resident, education, occupation, family income, having own house or car. Also variables like adherence to treatment (medications) and conditional control was

considered to undependable. Health related quality of life is mains concerning data which have been considered as outcome variable.

Mean of overall SF-12 score and it's both components, PCS and MCS were compared per socioeconomic, medical condition, and treatment outcome. T- Test was used for understanding the significantly difference of that relation.

## RESULTS

**Table(1) health related quality of life versus demographic variable**

| Variables | Total (N) | Health related quality of life | | | | | |
|---|---|---|---|---|---|---|---|
| | | PCS- score (mean) | P-value | MCS-score (mean) | P-value | T- HRQoL (mean) | P-value |
| Sex | | | | | | | |
| Male | 102 | 43.0±1.9 | 0.00 4.2 | 46.5±1.5 | 0.00 3.8 | 44.7±1.6 | 0.00 4.3 |
| Female | 238 | 33.6±1.8 | | 39.3±1.5 | | 36.4±1.5 | |
| Age | | | | | | | |
| Below 60 years | 187 | 38.2±1.9 | 0.062 1.87 | 42.9±1.5 | 0.069 1.82 | 40.5±1.6 | 0.047 2.04 |
| 60 years and above | 153 | 34.2±1.9 | | 39.7±1.6 | | 37.0±1.6 | |
| Marital status | | | | | | | |
| Without spouse | 76 | 31.0±1.8 | 0.005 -2.85 | 36.4±1.4 | 0.001 -3.29 | 33.7±1.5 | 0.001 -3.310 |
| With spouse | 261 | 38.1±1.9 | | 43.2±1.6 | | 40.7±1.6 | |
| Education | | | | | | | |
| Illiterate | 267 | 36.1±1.8 | 0.686 -0.40 | 41.0±1.5 | 0.294 -1.051 | 38.5±1.5 | 0.45 -0.756 |
| Literate | 70 | 37.2±2.2 | | 43.2±1.8 | | 40.2±1.9 | |
| Occupation | | | | | | | |
| Having job or retired | 63 | 35.1±1.9 | 0.004 -2.90 | 40.4±1.5 | 0.002 -3.077 | 37.8±1.6 | 0.001 -3.234 |
| Don't have job | 271 | 42.9±1.9 | | 47.2±1.5 | | 45.1±1.6 | |
| Family size | | | | | | | |
| Below 5 member | 183 | 37.2±1.6 | 0.521 0.643 | 42.7±1.3 | 0.21 1.253 | 39.9±1.3 | 0.321 0.995 |
| 5 and above 5 member | 150 | 35.8±2.1 | | 40.5±1.8 | | 38.1±1.9 | |
| House ownership | | | | | | | |
| Yes | 270 | 37.3±2.0 | 0.111 1.598 | 42.3±1.6 | 0.099 1.656 | 39.8±1.6 | .080 1.75 |
| No | 66 | 33.1±1.6 | | 38.6±1.3 | | 35.9±1.3 | |
| Car ownership | | | | | | | |
| Yes | 110 | 36.1±2.2 | .844 -.197 | 42.1±1.6 | .689 .400 | 39.1±1.8 | .937 .080 |
| No | 223 | 36.6±1.7 | | 41.3±1.5 | | 38.9 ±1.5 | |
| Total | | 36.6±1.9 | | 41.5±1.6 | | 39.0±1.64 | |

Table 1 shows that, mean sf-12 score was been 39.0(1.64), mean of (PCS) of sf-12 was 36.6(1.9) and mean of (MCS) of sf-12 was 41.5(1.6). Sf-12 score was significantly less in:

female 36.4(1.5) (p- value= 0.001), aged more than 60 years 37.0(1.6) (p- value= 0.04), having not spouse 33.7(1.5) (p- value= 0.001), having job or retired 37.8(1.6) (p- value= 0.001). Similarly both component, PCS and MCS were significantly less in female, without spouse and having job or tired.

**Table( 2) Health related quality of life versus medical condition**

| Variables | Total (N) | Health related quality of life | | | | | |
|---|---|---|---|---|---|---|---|
| | | PCS- score (mean) | P-value | MCS-score (mean) | P-value | T-HRQoL (mean) | P-value |
| Diagnosis | | | | | | | |
| Hypertension | 152 | 37.1±1.9 | 0.001 6.904 | 42.2±1.7 | 0.251 1.388 | 39.7±1.7 | 0.013 4.405 |
| Diabetic | 88 | 41.2±2.0 | | 42.7±1.5 | | 41.9±1.6 | |
| Diabetic &hypertension | 100 | 31.0±1.7 | | 39.2±1.4 | | 35.1±1.4 | |
| Cor-morbidity | | | | | | | |
| Present with DM or BP | 134 | 38.6±2.1 | 0.004 5.648 | 42.8±1.8 | 0.254 1.376 | 40.7±1.8 | 0.022 3.867 |
| Present with DM or BP with other NCD | 106 | 38.7±1.7 | | 41.8±1.4 | | 40.2±1.4 | |
| Present with DM and BP | 44 | 30.3±1.7 | | 39.4±1.4 | | 34.8±1.4 | |
| Present with DM and BP with other NDC | 56 | 31.6±1.7 | | 39.0±1.4 | | 35.3±1.5 | |
| Living with condition | | | | | | | |
| Up to 5 years | 208 | 40.3±1.7 | 0.000 4.967 | 43.2±1.4 | 0.008 2.654 | 41.8±1.4 | 0.000 4.223 |
| 5 years and over | 129 | 29.9±2.0 | | 38.5±1.8 | | 34.2±1.8 | |
| Availability of medicine at hospital | | | | | | | |
| Available | 176 | 37.7±1.9 | 0.441 .771 | 42.4±1.5 | .446 .763 | 40.1±1.6 | .407 .830 |
| Sometime available | 148 | 36.1±1.8 | | 41.1±1.6 | | 38.6±1.6 | |
| Number of drug administered | | | | | | | |
| One medicine | 136 | 38.3±2.1 | .173 1.365 | 42.4±1.7 | .551 .597 | 40.3±1.8 | .275 1.094 |
| Two medicine | 193 | 35.4±1.7 | | 41.3±1.5 | | 38.3±1.5 | |
| Body weight and obesity | | | | | | | |
| Normal body weight | 69 | 34.7±1.8 | .640 0.447 | 40.1±1.9 | .697 0.361 | 37.4±1.7 | .622 0.475 |
| Overweight | 127 | 37.4±2.0 | | 42.1±1.6 | | 39.8±1.7 | |
| Obese | 141 | 36.7±1.8 | | 41.7±1.4 | | 39.2±1.5 | |
| Smoking habit | | | | | | | |
| Smoker | 31 | 39.2±2.2 | | 41.3±1.7 | | 40.3±1.8 | |
| No smoker | | 36.1±1.9 | | 41.5±1.6 | | 38.8±1.6 | |
| Consuming high fruit and vegetable | | | | | | | |
| Yes | 296 | 38.0±1.9 | 0.000 3.89 | 42.5±1.5 | 0.002 3.084 | 40.2±1.6 | 0.000 3.819 |
| No | 44 | 26.0±1.8 | | 34.5±1.7 | | 30.3±1.5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Doing physical exercise | | | | | | | |
| Yes | 35 | 45.9±2.3 | 0.001<br>3.228 | 46.3±1.8 | 0.064<br>1.860 | 46.1±1.9 | 0.005<br>2.815 |
| No | 283 | 34.7±1.8 | | 40.8±1.6 | | 37.7±1.6 | |

Table 2 has shown that the SF-12 scored significantly (p- value= 0.03) less hypertension 39.7(1.7) patient compared with diabetic 41.9 (1.6) and it was worse in those who diagnosed with both condition 35.1(1.4),

but this difference was regarding to high significant difference in PCS (p- value= 0.001), because there was not seen a significant difference in MCS (p- value= 0.25). SF-12 scored almost same between patient diagnosed with HTN or DM and HTN or DM patient with other comorbidity. This is same for both component of HRQoL.

Living with condition is main significant indicator of health related quality of life in this study. Sf-12 scored very less in those who live 5 years or more with condition 34.2(1.8), and this finding is similar for PCS of sf-12 which is scored 29.9(2.0) and MCS of sf-12 which is scored 38.5(1.8), and over all of these difference were highly significant (p- value= 0.000).

High heath related quality of life was high in those who consuming fruit and vegetable, SF-12 (p- value= 0.001), and both dimension of SF-12, PCS (p- value= 0.001), MCS (p- value= 0.001), were observed highly significant. Similarly in those who doing physical exercise, a significant high health related quality of life was observed, SF-12 (p- value= 0.001), PCS (p-value= 0.001)

**Table (3) means PCS, MCS and HRQoL in controlling condition and drug adherence level**

| **Variables** | **Total (N)** | **Health related quality of life** | | | | | |
|---|---|---|---|---|---|---|---|
| | | **PCS-score (mean)** | **P-value** | **MCS-score (mean)** | **P-value** | **T-HRQoL (mean)** | **P-value** |
| | Controlling of condition | | | | | | |
| control group | 124 | 39.8±1.8 | 0.018<br>2.385 | 43.2±1.5 | 0.143<br>1.468 | 41.5±1.5 | 0.034<br>2.127 |
| Un control group | 214 | 34.6±1.9 | | 40.5±1.6 | | 37.5±1.6 | |
| Adherence level | | | | | | | |
| Strong | 63 | 39.3±2.0 | | 44.8±1.7 | | 42.0±1.7 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| adherence | | | 0.186<br>1.690 | | 0.139<br>1.985 | | 0.127<br>2.074 |
| Moderate adherence | 163 | 36.0±1.9 | | 40.7±1.6 | | 38.4±1.7 | |
| Low adherence | 96 | 33.5±1.7 | | 39.8±1.4 | | 36.6±1.4 | |
| Total population | 338 | 36.5±1.9 | | 41.5±1.6 | | 39.0±1.6 | |

Table 3 has shown that, health related quality of life was significantly high in those who their conditions are under control. According to the methodology of this study, those who had conditions, both diabetic and hypertension, consider under control if both blood pressure and blood sugar were control. High SF-12 score was observed in control group 41.5(1.5) compared with un-control group 37.5(1.6) (p- Value= 0.03), but significant difference was seen only in PCS dimension of health related quality of life (p- Value= 0.03) not MCS dimension (p- Value= 0.14).

Health related quality of life was high in those who more adherence to drug. High SF-12 and both condition of health related quality of life were high in strong adherence compared to moderate and moderate compared with low adherence, but this difference statistically was not significant.

## DISCUSSION

Assessment of the health related quality by considering the socioeconomic status, medical condition, cor-morbidity, and its association with treatment outcome was aim of this study. This study was found a significant correlation between some socio-demographic variables, medical condition, and treatment out come with HRQoL.

Poor HRQoL, especially PCS was observed in patients with chronic diseases including hypertensive and diabetes mellitus patients in Kurdistan. Mean SF-12 score was 39.0±1.64, mean of PCS was 36.6±1.9 and mean of MCS of was 41.5±1.6. This results show worse HRQoL in compare with the results the Australian study which was found, (mean of PCS for male 43, for female 42,3, and mean of MCS for male 50, for female 48.3)[(1)]. Poor HRQoL among patient with chronic condition in Kurdistan may relate to socio-economic condition and health services in this country.

Gender, age, marital status, occupation were the main indicator of HRQoL in this study. These variables have same effect on physical and mental component of HRQoL. Patient who were female, elder, did not have spouse and did not have job and/or retired were significantly and negatively associated with poor health related quality of life. Similarly, a study has had the same finding [(1)].

HRQoL are been affected different in hypertension and diabetic condition, and number of disease. Poor HRQoL was less observed in hypertension patients 39.7±1.7 compared with diabetic patient 41.9±1.6, and those who diagnosed both conditions was worst 35.1[(1.4)]. In same instance same significant difference was seen in PCS but not MCS of HRQoL. While more than two chronic diseases have not shown a significant difference. However a study in Turkey supports this finding in this study, being more than one chronic disorder is associated with worse HRQoL [(7)] but this study could not find the correlation between numbers of co-morbidity with HRQoL. Because there is a study which reveals on, there not relation between numbers of co-morbidity likes history of myocardial infarction, angina, hypertension, and diabetes with HRQoL [(6)].

Living with condition for more than 5 years is another indicator of HRQoL. Poor HRQoL with both components were observed in patient who live more than 5 years with condition, Sf-12 scored was 34.2±1.8, PCS scored 29.9±2.0 and MCS scored 38.5±1.8. In this study SF-12 scale was used for measure the patient point of view about physical and mental component of HRQoL. From the patients point of view coping with chronic diseases in terms of physical and mental aspects need time, and patients feel better with HRQoL after 5 years of having experience with hypertension of diabetes mellitus.

In this study there is significant association between treatment outcome (control/ uncontrolled condition) and health related quality of life (HRQoL) as well as both component of HRQoL, PCS and MCS. High score of SF-12 for HRQoL, PCS and MCS was been seen in those patient who under control condition. Similarly HRQoL, PCS and MCS were associated with strong adherence to medicine but this association was not significant. The relation of HRQoL with treatment outcome could be related to adherence to medicine; however there was not a significant relation between HRQoL and adherences in this study, because study population in this study were all under prescribed medicine and good adherence to would results to control condition too [(10)].

## CONCLUSIONS

HRQoL among hypertensive and diabetes mellitus patients were poor in Kurdistan as compared with other countries. Included participants, who were female, elder, did not have spouse, did not have job and/or retired were significantly had poor HRQoL. HRQoL are been affected differently in hypertensive and diabetic patients. Living with these two chronic diseases for more than 5 years will allow this population to copy with the their physical and mental aspect of HRQoL . In this study there is significant association between treatment outcome (control/uncontrolled condition) and HRQoL, PCS and MCS.

## RECOMMENDATION:

**1.** Further longitudinal study is required for assessing components of HRQoL in both diseases separately, and correlation between HRQoL and this population.

**2.** This study recommends that beside drug therapy an education program should be introduced for this population.

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