QUALITY OF LIFE IN A SAMPLE OF HYPERTENSIVE PATIENTS ATTENDING PRIMARY HEALTH CARE FACILITIES IN AL-KHOBAR, SAUDI ARABIA

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خلفية : ارتفاع ضغط الدم من اكثر الأمراض المزمنة شيوعا في المملكة العربية السعودية، كما انه يعد من العوامل الرئيسة المسببة لأمراض القلب والشرايين و أحد أهم أسباب مراجعة الأطباء ووصف الأدوية 0 على الرغم من ذلك لم تصل درجة التحكم في ضغط الدم إلى المستوى المرضي ، وقد يكون سبب ذلك تردي الحالة الجسدية والنفسية لدى المريض مما يؤدي إلى عدم الانضباط في استخدام العلاج أو الانقطاع عنه 0 تهدف هذه الدراسة إلى تقييم الجودة النوعية لحياة مرضى الضغط المسجلين في مراكز الرعاية الصحية الأولية بمحافظة الخبر .

طريقة الدراسة: لمعرفة مدى تأثير الخصائص السكانية والسريرية على الجودة النوعية للحياة، تمت مقارنة 202 مريض ضغط مع مجموعة ضابطة مساوية في العدد ومماثلة في العمر والجنس من كل مركز صحي داخل عينة البحث وذلك باستخدام استبيان مخصص لهذا الغرض **(SF-36)** بعد أن تمت ترجمته للعربية والتأكد من مصداقيته وثباته في الاستقصاء .

نتائج الدراسة: بينت الدراسة إلى أن الجودة النوعية للحياة لدى مرضى الضغط متدنية بمقدار كبير مقارنة بالمجموعة الضابطة كما كان العبء الأكبر لارتفاع ضغط الدم يتركز في البعد الجسماني أكثر منه في البعد النفسي حيث كانت نتيجة الوسط الحسابي للبعد الجسماني39.3 و50.8 لحالات الضغط والمجموعة الضابطة على التوالي، بينما كانت نتيجة الوسط الحسابي للبعد النفسي 43.7 لحالات الضغط و50.8 للمجموعة الضابطة . كانت أهم المتغيرات المستقلة المتعلقة بسوء الجودة النوعية لحياة مرضى الضغط هي زيادة الفئة العمرية - الإناث – الغير متزوجين – مرض الضغط المصحوب بمضاعفات – داء السكري – استخدام عقار الألد ومت – قصر فترة الإصابة بمرض الضغط .

الخلاصة والتوصيات : خلصت الدراسة إلى أن الجودة النوعية لحياة مرضى الضغط متدنية بمقدار كبير مقارنة بالمجموعة الضابطة ، كما كانت الاختلافات في الجودة النوعية لحياة مرضى الضغط لجميع المتغيرات التابعة المشروحة بالخصائص السكانية والسريرية قليلة، مما يدل على أن هناك متغيرات مستقلة أخرى تؤثر على الجودة النوعية لحياة مرضى الضغط مما يدعو إلى الحاجة للقيام بدراسة مماثلة لاكتشاف تلك العوامل . من منظور سريري يجب الأخذ بعين الاعتبار أهمية قياس الجودة النوعية لحياة مرضى الضغط لتقدير العبء الناتج عن المرض ومراقبة المحصلة النهائية للتدخل العلاجي.

الكلمات المرجعية : الجودة النوعية للحياة ، ضغط الدم المرتفع ، الرعاية الصحية الأولية ، استبيان (SF-36).

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Background: Hypertension is one of the most prevalent chronic conditions in Saudi Arabia. It is the leading risk factor for cardiovascular diseases and a major reason for visits to clinic and prescription of medications. Inspite of this, the degree of its control is not to the optimum. This could be due to its impact on patients' quality of life (QOL). Impaired physical and psychological well-being may lead to non-compliance or even the withdrawal of treatment. The aim of this study was to assess QOL of hypertensive patients registered in Al-Khobar.

Methods: *The QOL of hypertensive patients was compared with QOL of a control group. A total of 404 subjects (202 cases and 202 controls) were interviewed. The cases and controls were matched for age and sex. Patients' self-assessment of QOL was measured with an Arabic version of SF-36, a 36-item Short Form Health Survey Questionnaire encompassing two main dimensions, physical and mental.*

Results: *The QOL of hypertensive patients was substantially impaired in comparison to the control group. The mean scores for the physical component summary scale (PCS) were 39.3 and 50.8 for cases and controls respectively. The mean scores for the mental component summary scale (MCS) were 43.7 and 50.8 for cases and controls respectively. The burden of hypertension was concentrated in the physical dimension of health. Older age, female gender, unmarried patients, patients with hypertension complications, comorbid DM, use of Aldomet and shorter duration of hypertension were independently related to poorer QOL. The variability of the two summary measures explained by selected demographic and clinical characteristics was 24.3% and 10% for the PCS and MCS respectively.*

Conclusions and recommendations: *The QOL of hypertensive patients was substantially impaired in comparison to the control group. Notably, the total explained variation of QOL by the selected characteristics was small, suggesting that the determinants of QOL are multi-factorial. Further research to explore the determinants and indices of QOL in hypertensive patients is warranted. From a clinical perspective, QOL should be considered in the monitoring of hypertensive patients to estimate the burden of hypertension and monitor their outcome.*

Key Words: *Quality of life, hypertension, primary health care, SF-36 questionnaire*

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INTRODUCTION

The impact of hypertension reaches far beyond the expectation of treating physicians by affecting physical function, psychosocial function, and other activities of daily living. Individuals with hypertension may have no symptoms of illness. The 'labeling effect' and the adoption of the sick role by people diagnosed to be hypertensive and therapeutic intervention, raises interest in QOL assessments.[1] WHOQOL group has provided a definition of QOL as the "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."[1] The measurement of QOL has become an emerging science in the last few decades when QOL is a reflection of symptoms and concerns. There is now recognition that meaningful measures of QOL should be used to monitor the health of the general population, estimating the

burden of different conditions and monitoring outcomes. The paternalistic adage: "doctor knows best" is no longer valid. How the patient feels is as important as symptoms response and survival rates, particularly where patients are treated for a chronic condition like hypertension. Impaired physical and psychological well-being may lead to non-compliance or even withdrawal of treatment.[2] Physical well-being is likely to be affected by the side effects of treatment, while psychological well-being may be affected by anxiety and depression, which have been shown to be more likely to occur in hypertensive patients.[2] Since hypertension is a common health problem in Saudi Arabia and the level of its control is not at its optimum,[3] it is important to study its effect on QOL. The aim of this study was to assess QOL of hypertensive patients in Al-Khobar area, the Eastern Province of Saudi Arabia. The hypothesis of this study was that the QOL of hypertensive patients was lower than that of normotensive subjects.

METHODOLOGY
The study population was drawn from the registered hypertensive patients in the primary health care (PHC) centers in Al Khobar area during the year1420 H(1999 G). A two-stage random sampling technique was used. In the first stage, out of the ten PHC centers in Al Khobar, five were selected using simple random sampling procedure. In the second stage, within each selected PHC center, a systematic sampling of one-in-three was used to select hypertensive patients by means of their records. The total number of registered hypertensive patients in Al-Khobar in 1420H, was 1411, 212 (15 %) of whom were chosen. These were proportionally distributed among the five-selected PHC centers. A reserve sample of 5% was also

selected in case that non-response rate might be high. Controls were defined as persons with no history of hypertension or other chronic diseases. They were randomly selected from non-hypertensive subjects registered in the same PHC center with trivial complaints or those who were just accompanying other patients. They were interviewed in a way similar to the cases, in the same place and by the same interviewers. Controls were matched with cases for age group, gender, and the number of cases from each center.

The hypertensive patients were individually interviewed in a quiet room within each PHC center using the Arabic version of SF-36.[4] Patients who were not found or who refused to participate in the study were replaced by the next on the list. Demographic variables studied were age, gender, educational level, occupation, marital status and nationality. Clinical characteristics comprised duration of hypertension, anti-hypertensive drugs used, compliance with drug therapy, hypertension-related complications, coexisting chronic diseases, drugs other than anti-hypertensives, and the last three blood pressure readings.

QOL was measured with an Arabic version of SF-36 after it had been validated. The SF-36 contains 36 items, which measure eight dimensions: physical functioning (extent to which health limits physical activity), social functioning (extent to which physical or mental health interferes with normal social activities), role-physical (extent to which physical health interferes with daily activities), role-emotional (extent to which emotional problems interfere with daily activities), mental health (general mental health, including anxiety and depression), energy/vitality (feeling energetic and full of pep), bodily pain (intensity of pain and effect of pain on normal work, both inside or outside the home), and general

health perception (personal evaluations of current health, health outlook, and resistance to illness).

The SF-36 scores of the cases were compared with the SF-36 scores of the controls. SF-36 scores were transformed to a scale of 0 to 100, a higher score indicating a better QOL state. The physical component summary (PCS) and mental component summary (MCS) were constructed and scored to reduce SF-36 from an eight-scale profile to two summary measures without substantial loss of information.

Scoring of the PCS and MCS involved three steps.[5] First, the eight SF-36 scales were standardized using means and standard deviations from the general population. Second, they were aggregated by means of factor score coefficients from the general population. Finally, aggregate PCS and MCS scores were standardized with a linear T-score transformation to give a mean of 50 and a standard deviation of 10, in the general population.

All collected data were checked and entered into a personal computer. QOL was scored from all related variables. Student t-test was used to differentiate between mean scores of QOL for both cases and controls. Chi-square test was used to measure associations among qualitative variables. The level of significance was set at < 0.05. The SPSS-PC was used for data entry & analysis.[6]

RESULTS
Out of a total of 404 participants interviewed, 212 were hypertensive subjects. Of the hypertensives, 8 refused to be interviewed and 2 were not found. The response rate was 95.3% for the hypertensive subjects. The socio-demographic characteristics of the study population are shown in Table 1.

Table 2 shows the clinical characteristics of the hypertensive cases. More than one-third of the hypertensives had their blood pressure controlled, with a mean $\pm$ 1SD of 129.96 $\pm$ 6.80 mmHg for SBP and 83.21$\pm$ 4.03 mmHg for DBP.

The majority of the hypertensives (82.1%) were on a single anti-hypertensive drug. More than half of the hypertensives (55.4 %) were on Tenormin (atenolol). The use of Esidrex (hydrochlorothiazide) was reported by 6.9 %, while the use of both Tenormin and Esidrex was only reported by 3.5 % of patients. The use of ACE inhibitors namely, Capoten, Zestril or Renitec was reported by 14.5 % of the patients. The use of Adalat (nifedipine) and Aldomet (methyldopa) was reported by 9.4 % and 4.5 % respectively. Compliance with the anti-hypertensive drugs was reported by 81% of the patients. Coexisting DM was reported by 44 % of the hypertensive patients.

The results of the QOL questionnaire are shown in Table 3. The mean scores from the eight SF-36 Health Survey Profile and the two summary measures were found to be significantly lower in the hypertensives as compared to the controls. The difference was statistically significant.

The demographic and clinical characteristics of hypertensive patients were regressed as independent variables with the two summary scales, PCS and MCS as dependent variables.

The independent variables were regressed with PCS as a dependent variable. R^2 was 0.243, with a standard error of 12.654. In other words, around 24% of the variability in PCS was determined by the variables in the equation (Table 4). Significantly, the older subjects scored less than younger subjects. Married subjects significantly scored more than those who were divorced, single, or widow. Patients with comorbid

Table 1: *Socio-demographic characteristics of cases and controls*

Characteristics	Cases (%) N=202	Controls (%) N=202	p-value (x^2)
Age* group (years):			1.00000
25-34	4 (2.0)	4 (2.0)	
35-44	49 (24.2)	49 (24.2)	
45-54	76 (37.6)	76 (37.6)	
55-64	63 (31.2)	63 (31.2)	
≥ 65	10 (5.0)	10 (5.0)	
Sex:			0.8388
Male	81 (40.1)	79 (39.1)	
Female	121 (59.9)	123 (60.9)	
Marital Status:			0.6729
Single	4 (2.0)	3 (1.5)	
Married	165 (81.7)	169 (83.7)	
Divorced	6 (3.0)	9 (4.5)	
Widow	27 (13.4)	21 (10.4)	
Occupation:			0.0001
Governmental	46 (22.8)	53 (26.2)	
Military	6 (3.0)	25 (12.4)	
Housewife	112 (55.4)	103 (51.0)	
Private	18 (8.9)	17 (8.4)	
Retired	20 (9.9)	4 (2.0)	
Education:			0.3502
Illiterate	72 (35.6)	55 (27.2)	
Read and write	38 (18.8)	54 (26.7)	
Primary	36 (17.8)	40 (19.8)	
Intermediate	23 (11.4)	22 (10.9)	
Secondary	20 (9.9)	17 (8.4)	
College and above	13 (6.4)	14 (6.9)	
Nationality:			0.0153
Saudi	154 (76.2)	175 (86.6)	
Non-Saudi	48 (23.8)	27 (13.4)	

*Mean age: Cases 51.73 ± 8.49; Controls 49.64 ± 8.69

Table 2: *Clinical characteristics of hypertensive patients*

Variable	Mean $\pm$ ISD	p-value
Duration of hypertension	106.41 ± 8.58 months	
Duration of treatment	87.38 ± 9.40 months	
Systolic blood pressure:		
Controlled <140 mmHg	129.95 ± 6.80 mmHg	<0.0001
Uncontrolled	156.94 ± 11.75 mmHg	
Diastolic blood pressure:		
Controlled <90 mmHg	83.21 ± 4.03 mmHg	<0.0001
Uncontrolled	95.41 ± 6.51 mmHg	

Table 3: *Comparisons of scores of QOL between cases and controls*

QOL*	Cases (n=202) Mean ± ISD	Controls (n=202) Mean ± ISD	p-value (t-test)
Physical functioning	60.02 ± 23.76	81.71 ± 14.79	<0.0001
Role physical	43.93 ± 41.24	73.76 ± 30.92	<0.0001
Bodily pain	63.99 ± 26.44	79.48 ± 23.11	<0.0001
General health	58.17 ± 18.03	75.51 ± 12.20	<0.0001
Vitality	53.09 ± 15.33	66.76 ± 15.60	<0.0001
Social functioning	68.01 ± 25.25	85.33 ± 18.18	<0.0001
Role emotional	52.31 ± 44.33	79.37 ± 31.51	<0.0001
Mental health	60.81 ± 17.26	71.43 ± 16.95	<0.0001
Physical component summary	39.31 ± 12.80	50.77 ± 9.11	<0.0001
Mental component summary	43.69 ± 10.70	50.79 ± 9.51	<0.0001

*Increasing score indicates increasing QOL

Table 4: *Multiple linear regression model to predict QOL from PCS scale for hypertensive patients*

Variables	Regression Coefficient (B)	SEB	p-value
Age	-0.332	0.112	0.0036
Sex	5.402	2.026	0.0084
Marital status	4.916	2.453	0.0466
Hypertensive complications	-5.140	2.540	0.0445
Comorbid diabetes mellitus	-3.861	1.929	0.0468
Use of Esidrex	25.769	12.777	0.0452
Use of Aldomet	-8.845	3.248	0.0071
Constant	53.794	6.171	

DM just significantly scored less than those with hypertension only. Males scored significantly more than females. Patients who reported hypertensive complications significantly scored less than those who were without complications. The PCS of patients, who were only on Esidrex was positively affected, while that of those on Aldomet was negatively affected.

MCS scale as a dependent variable was regressed with the independent variables. R^2 was 0.102, with standard error of 10.535. This means that 10% of variability in MCS was determined by the independent variables in the equation (Table 5). Patients with longer duration of hypertension scored more than those with shorter duration. However, the difference was not statistically significant. Male hypertensives scored significantly more than females. Patients who were on Adalat scored significantly more than patients who were on other anti-hypertensive medications.

Table 5: *Multiple linear regression model to predict QOL from MCS scale for hypertensive patients*

Variables	(B)	SEB	p-value
Sex	5.519	1.582	0.0006
Hypertension duration	0.0228	0.012	0.0789
Use of Adalat	7.316	3.639	0.0458
Constant	42.900	1.028	

DISCUSSION
The assessment of QOL indicated that QOL of hypertensive patients was significantly lower than that of the controls on all

dimensions. These findings appear to support the previous study of Stewart et al,[7] which found that patients with chronic conditions including hypertension had marked decrement in SF-36 scores compared to patients with no chronic conditions. Moreover, Batterson et al[2] in their case-control community-based study assessed QOL in treated hypertension, they showed impaired QOL of hypertensive patients compared with controls. They had a lower health status index, more absence from work, greater symptomatic complaint, and impaired psychological well-being.

The large and significant decline in the levels of all domains of QOL among hypertensive patients might have been slightly exaggerated. The mean age of the controls (49.6 years) was lower than that of the hypertensives (51.7 years) and since SF-36 scores are negatively related with age,[8] this might have resulted in overestimation of the differences in QOL.

The multiple regression analysis revealed that older patients, females, unmarried patients, patients with complications of hypertension, comorbid DM, and the use of aldomet were the most important independent explanatory factors for poorer PCS, while shorter duration of hypertension and female gender were the most explanatory factors for poorer MCS.

Significant declines were observed for both PCS and MCS in female patients. That is to say females showed more impairment of QOL than male patients. These findings are in agreement with the conclusions of Wachtel et al,[9] in which they state that older age and female gender were associated with lower scores of QOL in several health dimensions. However, the difference between both sexes in terms of QOL might have been exaggerated because, at baseline, females tend to have lower QOL than males.[10,11]

The finding of the negative influence of older age on the PCS in the absence of a significant influence on the MCS seems reasonable and in accordance with the previous study done by Wachtel et al.[9] Moreover, physical health tends to decrease with age but not mental health.[4] The negative influence of the complications of hypertension on the PCS in the absence of a significant influence on the MCS could be attributed to the additive effect of comorbid chronic conditions on the physical dimension of health.

Comorbid DM adversely affected the PCS, which could be due to the additive effects of the symptoms of diabetes, the side effects of treatment, or its complications. These data appear to support previous studies of Stewart et al[7] who found that patients with multiple chronic conditions had a greater decrement in QOL scores than those with one condition alone.

Large and significant improvement was observed among patients using Esidrex for the PCS scale. This improvement could be due to the low-dose and simple regimen. The finding of a positive influence of Esidrex is in accordance with former studies.[12,13] However, there was a significant decline of the PCS scale among patients on Aldomet. This could be due to the side effects of the drug. Croog et al[14] found that captopril improved the QOL from the baseline whereas Aldomet worsened it. Bulpitt and Dollary[12] found an association between Aldomet and drowsiness. However, it is unsafe to draw conclusions about whether antihypertensive drugs offer pharmacologic advantages in terms of QOL without verification from randomized controlled clinical trials.

The multivariate analysis revealed a positive effect of the duration of hypertension on the MCS. That could be explained by the fact that these hypertensive

patients might have had more time to adjust their lifestyle and emotional reactions.[8]

The variability of the two summary measures explained by selected demographic and clinical characteristics was 24.3 % and 10 % for the PCS and MCS respectively. It is reasonable to assume that the level of QOL is a result of a complex interaction of the outcome of disease, personal traits, ability to cope, social support, and quality of the care received.[8]

In conclusion, the present findings indicate that in hypertensive patients, QOL is substantially impaired. Notably, the total explained variation of QOL by the selected characteristics was small, suggesting that the determinants of QOL are multi-factorial. Further research to explore the determinants and indices of QOL in hypertensive patients is warranted. Perhaps there should be emphasis on the adverse effects of anti-hypertensive medications and disease-targeted indices. From a clinical perspective, QOL should be considered in the monitoring of hypertensive patients to estimate the burden of hypertension and monitor the outcome.

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