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Assessment of Health Related Quality of Life among Female Hypertensive Patients Attending Primary Health Care Centers in AL-Madinah, Saudi Arabia 2018

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Abstract: Introduction: Hypertension is associated with high morbidity that affects the quality of life ranging from complication from the disease itself or its treatment. The high burden of the disease imposed a load on health care professional to identify risk factors associated with patients' low quality of life and addresses them through different awareness campaigns. **Objective** This study was set out to assess the quality of life among elderly hypertensive Saudi female patients. And also to assess the risk factors for low quality of life. **Methods** A cross sectional study was conducted on patients from primary healthcare centers in Al-Madinah Al-Munawra. The study included female patients aged more than 18 years old and excluded any patients with disease caused hypertension e.g. malignancy or pregnancy. WHO-QOLBREF was used to assess the quality of life among the studied group. **Results** The study included 402 patients with average age of 52.49±. The patients had moderately high quality of life and achieved high median scores in the four domains. The highest scores were achieved in the social domain while the lowest scores were achieved in physical domains. We found that old age, diabetics, patients with kidney and heart dis-eases, and non-compliant patients had significantly lower scores in all domains. Multivariate regression analysis found that each domain had its associated risk factors for low scores Conclusion Elderly female hypertensive patients in Saudi Arabia have moderately high scores in all domains of WHOQOL-BREF. Compliance to treatment and treatment of associated comorbidities were associated with better scores throughout all domains.
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1. Introduction

1.1: Background

Hypertension is one of the most prevalent diseases worldwide with significant morbidity and mortality. It is called silent killer because of its well-known morbidities that eventually leads to high mortality rate 1. The prevalence of hypertension varies from country to country and within the same country from area to area 2. This is dependent upon the risk factors associated with the development of the disease. In a review that as-sassed the prevalence of hypertension worldwide found that India especially the rural areas had the least prevalence in the world reported as 3 per 100 men. Meanwhile, the highest prevalence was in Poland with prevalence up to 68.9% 2. In Saudi Arabia, it was found that the prevalence of hypertension in southwestern areas was 11.1%; it was found to be more in females than males unlike the worldwide proportions. It was also found that 76% of patients received treatment, however, only 20% were controlled which is considered a very low percent 3. A cross-sectional study found that the prehypertension was present in 54.9% of all participants and 4.9% had hypertension. Unlike the previous study, this study found that the prevalence of hypertension was more in males than females 4. Furthermore, another study found that 15.2% of Saudi people were hypertensive and 40.6% were borderline hypertensive. The urban population showed higher prevalence than the rural population 5. This variance of hypertension prevalence is mainly due to its variety of risk factors. obesity, atherosclerosis, smoking, race, drugs as oral con-receptive pills and high fat diet are all associated with the development of hypertension 6-8. In Saudi Arabia, it was reported that obesity was the most reported risk factors for the development of hypertension 3-5. It was found that class I obese had three times more risk of hypertension com-pared to non-obese. Other risk factors included men who have higher prevalence, older age, obesity, diabetes, and hypercholesteremia 3-5. The comorbidities associated with hypertension are associated with the decreased quality of life. It was

found that hypertension was associated with high risk of stroke. It was also associated with incurring organ dam-age 9-12. Moreover, the anti-hypertensive drugs exhibit broad range of side effects that was found to affect the life of hypertensive patients 13,14. The high burden of hypertension either economically or its complications interfered with the life of hypertensive patients. All these factors affected the quality of life in hypertensive patients 15. Comparison of normal individual to hypertensive individuals found that they have higher quality of life 16. Furthermore, it was found that hypertensive females usually had lower quality of life 7,17,18. Other risk factors included age, obesity, presence of comorbidities and drugs 7,11,16-19. In Saudi Arabia, many studies investigated the quality of life and they found the aforementioned risk factors to be significantly associated with low quality of life 20-22. However, there are still gaps related to the quality of life in female hypertensive patients in Saudi Arabia. Hence, our target is to investigate the quality of life in hypertensive females and risk factors for low quality of life in this neglected segment of patients.

1.2- Rational:

Health related quality of life is one of the new emerging studies worldwide, and as it is related to empower the chronic disease patients by improving their quality of life and decrease their heath burden, we chose this study to be done on female hypertensive patients in AL-Madinah.

1.3-Research question:

Is the HRQOL significantly different among hypertensive patients from non-hypertensive patients? And if any, in which scope or area? And what are its importance?

1.4- Research hypothesis:

The HRQOL of hypertensive patients was lower than that of non-hypertensive subjects.

1.5- General Objective:

To assess the Quality of Life (HRQOL) among Female Hypertensive Patients attending Primary Health Care Centers in AL-Madinah, Saudi Arabia.

1.6- Specific Objective:

1- To assess the quality of life in female hypertensive patients.
2- To determine the socio-demographic characters of the study group and to study their effect on the quality of life among them.
3- To evaluate the effect of the comorbidities and other clinical factors on the quality of life of the study group.

2.Literature review

In Silesia**,** a questionnaire ‐ based study was published in 2012 about Comorbidities and the quality of life in hypertensive patients., HRQOL was evaluated using 12 ‐ item Short ‐ Form Health Survey (SF ‐ 12). Resulting that). lower HRQoL values were associated with coexisting diseases. The HRQoL of hypertensive patients decreased significantly with age and duration of antihypertensive therapy (>2 years). HRQoL values were higher for men and participants with higher education and lower for participants who were obese or had visceral obesity. Chronic diseases concomitant with arterial hyper-tension negatively affect all dimensions of the HRQoL. In conclusion Chronic diseases concomitant with arterial hypertension negatively affect all dimensions of the HRQoL 10

In Sweden the study: relationship between hypertension and health- related quality of life (HRQL) using the questionnaire (SF-36),. Diabetes and angina pectoris were related to lower scores in. Previous myocardial infarction was associated with lower general health and vitality. Those with a previous stroke had lower scores in physical functioning, general health, vitality, and social functioning. In conclusion, this study showed that persons with hypertension in a general population have lower HRQL than normotensive, even after adjusting for diabetes, angina pectoris, previous infarction, and stroke. In conclusion The findings here suggest that co-morbidity is important to take into consideration when evaluating HRQL among hypertensives.21

In China**:** A cross-sectional survey about Hypertension and health- related quality of life: an epidemiological study in patients at-tending hospital clinics in China, 1999. The results showed that hypertensive subjects scored lower in the multiple linear regression analyses in most questions on the quality of life questionnaire than those without hypertension after controlling for age, sex, socio-demographic factors, and co-morbidity. Among treated subjects, those with controlled hypertension had higher health-related quality of life scores than those with poorly controlled hypertension. In conclusion Hypertensive individuals represent a vulnerable population that merits special attention from health-care providers and systems. This is especially important given that low health-related quality of life can be a risk factor for subsequent car-dio-vascular events or complications.18

In Spain 2001, a cross-sectional study with title Association be- tween awareness, treatment, and control of hypertension, and quality of life among older adults. HRQL using (SF-36) questionnaire . The result were neither hyper- tension nor antihypertensive

drug were associated with worse HRQL. These results were also observed among men, but in women there is statistically significant (P < .01) and clinically relevant reduction (a 4- to 7-point lower score) in all HRQL dimensions. In conclusion neither hypertension nor antihypertensive drug appears to lower HRQL in the elderly Spanish population. But, among women, hypertension is associated with lower HRQL.15

In China 2009, a survey, About the Impact of hyper-tension on health-related quality of life. The SF-36 dimension scores of hypertensive samples were compared with those of normotensive. Respondents with hypertension scored lower than those without hyper-tension. The physical problems was the most affected, whereas the mental health dimension was the least affected. Hypertensive subjects with comorbidity experienced lower SF-36 scores than hypertensive subjects without comorbidity. In conclusion hypertension markedly impairs quality of life in both physical and mental health. Comorbidity lead to deterioration in HRQL among people with hyper-tension. The findings suggest that people with hypertension represent a vulnerable population, and it is important to prevent and treat comorbidity of hypertension.6

In Kaunas a study about the impact of duration and treatment of arterial hypertension on health-related quality of life published in 2009. The patients' quality of life was evaluated using the (SF- 36 questionnaire). Result showed lower values compared to normotensive patients in the following domains: physical functioning (P=0.014), role limitations due to physical health (P=0.012), energy/ vitality (P=0.016), and general health evaluation (P=0.023). The patients whose treatment of AH was not effective reported lower quality of life in the following SF-36 domains: physical functioning (P=0.003), role limitations due to physical health (P=0.003), general evaluation of health (P=0.017), energy/vitality (P=0.008), and emotional status (P=0.015), if compared to the patients without AH. In conclusion Patients with AH reported lower quality of life in the following do-mains: physical functioning, When compared to patients without AH, the quality of life of the patients who had the effective treatment did not differ, whereas patients with ineffective treatment had the lower quality of life.19

In Turkey, a cross-sectional study about Prevalence of hyper-tension among individuals aged 50 years and over and its impact on health related quality of life, 2007. A SF-36 scale was used to assess HRQOL. The variables that most positively influenced hypertension (P < 0.05, for each one) were older age, single, no health insurance, consumption of animal fat in meals, and family history of hypertension. The HRQOL was better in hypertensive patients whose blood pressure was under control, whereas it was worse in those with at least one chronic disorder accompanying hypertension (P < 0.05, for each one).14

In Saudi Arabia, a case control study conducted in 1999 in al khobar city. And an Arabic version of SF-36, a 36-item was used. 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 hyper tension complications. 12

In US a study was published 2010 focuses on the literature published since 2000 on HRQOL in elderly hypertensive individuals as well as hypertensive with coexistent dis- eases, including chronic kidney disease, cardiovascular disease, and diabetes mellitus. worse HRQOL among hypertensive compared with the general population. Most of the studies found that hypertensive individuals with coexistent co-morbidities tend to have lower HRQOL than those with hyper-tension alone. The most pronounced effect was noted in the physical function domains of HRQOL.20

In Malaysia a cross-sectional study was carried out in 2009. HRQOL was assessed by SF-36. The mean SF-36 scale scores for the 388 adults with hypertension were significantly lower than the Malaysian norms for physical functioning. However, the scores for role limitations due to emotional problems and bodily pain were consistent with general population norms. Patients with hypertension and diabetes mellitus had lower health-related quality of life (HRQOL) scores than patients with hypertension on the physical function scale. There were no significant differences between hypertensive patients with diabetes mellitus and cardiovascular comorbidities in all SF-36 scales except for the role-emotional domain.17

In US (Michigan) a cross sectional study conducted at 2004 to determine the relationship between symptoms and health-related quality of life (HRQOL) in patients receiving drug therapy for hyper-tension. Two scores derived from the Short Form-36 (SF-36) the Physical Component Summary (PCS) and the Mental Component Summary (MCS) were used to assess HRQOL. Results were 48.7 +/- 9.3 for PCS, and 51.6 +/- 10.1 for MCS. Higher symptom counts and symptom distress scores were strongly associated with lower HRQOL scores in multivariate models, with standardized coefficients from -0.62 to -0.41.16

Also in China 2017, a cross-sectional study was done with A standardized questionnaire adapted from a previous validated WHO questionnaire was used for

the survey(36-item Short Form). Which means that patients who are more elderly and have lower education level, low self-management efficacy and poor health literacy get worse HRQL. 23

3. Methods

3.1. Ethical consideration

Written permission from the Ethical committee was obtained before the conduction of the research. Questionnaires were used for the inter-view of hypertensive patients with a personalized covering letter including written consent of agreement. The anonymity was assured, and the confidentiality of the data was confirmed.

3.2. Study settings and design:

A cross-sectional study was conducted in Al-Madinah Al-Munawara. Participants were recruited from Primary Health Care Centers.

3.3. Study population:

Hypertensive Female patients attending the chronic diseases clinics at the primary health care centers in AL Madinah. The study **included** all Female hypertensive patients aged ≥ 18 year diagnosed with hypertension and on treatment for at least three months.

The exclusion criteria were

1. Severely ill patients such as patients with malignancy
2. Pregnancy
3. Patient without established diagnosis with hypertension.

4. Sample size:

The total population of female hypertensive patients = 9901 (Sample size calculated by using Epi info-2000 software). The calculation is based on 50% response distribution. 5% margin of error and 95% confident interval. The assumption that the response rate is 50% . The calculated sample size was 37.2 to ensure accuracy, the sample size will be increased to 400 to account for any missing data or non-response rate.

5. Sampling technique:

In Madinah city there are 40 primary heath care centers. The PHCCs selection will be based on geographic clustering sampling (north, south, east, west) and from each area 1 PHC will be chosen by simple random sample. An interview Questionnaire will be carried out to every other hypertensive patient who fulfills inclusion criteria. Throughout the 5 days' work activities, during working hours to increase the response rate

5.1. Assessments and study tool:

Each subject was interviewed to fill a **questionnaire** consisting **of two sections: one for socio demographic data**

1- (name, age , gender , marital status , education level , Number of children , occupation, income)
2-smoking, physical activity
3-clinical data (for cases) including: i) duration of the illness, ii) number and types of the used antihypertensive drugs, number of daily doses, and compliance, iii) symptoms, iv) comorbidities as diabetes mellitus, renal disease, cardiac disease, stroke.

The second section included HRQOL assessment questions using Arabic version of WHOQOL questionnaire. This is 26 items self-administered generic questioners, developed by WHO as a short form of WHOQOL-100. The WHOQOL-BREF is one of the most commonly used generic QOL questioners which were developed simultaneously across abroad range of member countries. The instrument can capture broadly and totally all aspects of QOL

Including:

1- physical health (extent to which health limits physical activity)

2-psychological (general mental health, including anxiety and depression), energy/vitality (feeling energetic), bodily pain (intensity of pain and effect of pain on normal work, both inside or outside the home

3-social relationship (extent to which physical or mental health interferes with normal social activities)

4- Environment. It is composed of four domains: physical health (7 items), psychological health (6 items), social relation-ship (3 items) and environmental health (8 items) and overall QOL and general health items. The interpretation and calculation of mean scores were based on the guide provided by WHO. The mean scores ranged from 0 to 20 as the highest quality of life. Blood pressure was measured using mercury sphygmomanometer in the right arm.

5.2. Statistical analysis:

Descriptive statistics to summarize patients' characteristics were presented in the form of mean and standard deviation for continuous variables while categorical variables were presented in the form of frequency and percentage. Chi2 test (or Fisher's test, as appropriate) was used to compare between categorical variables, while Student's t-test (or Mann-Whitney test, as appropriate) was used to compare between the continuous variables. Pearson correlation was used to present the correlation between any numeric variables and domains of questionnaire. A multivariate

backward linear regression analysis was conducted to assess the influence of age, blood pressure, drugs and any comorbidity on each domain scores. All analyses were two-sided considering P-value <0.05 as statistically significant and were conducted by using SPSS.

6.Results

6.1. Patients characteristics the study included 402 female hypertensive participants who were followed up in primary health care.

-The mean age was 52.94± 11.6.

-Most patients were married (71%).

-Only 2.5% of participants were smoker and only one patient quit smoking (Table 1).

-Hypertension duration ranged from one year to more than five years; most patients had hypertension duration more than five years (n = 140).

-Co-morbidities included kidney diseases (n = 7), diabetes mellitus (n = 150), heart diseases (n = 35), stroke (n = 5) and vision problems (n = 59).

-Most patients received ACEIs/ARBs (n = 206) followed by calcium channel blockers (n = 158) (Table 1).

Most patients were compliant to treatment and had a well-controlled blood pressure.

6.2. Domains of the WHOQOL-BREF

After calculating the total score for each domain based on the WHO guidelines. We found that:

1-patients had **median score for physical health domain** of **12 with lowest value of 4 and highest value of 17.33** Figure 1.

2-The second domain **had median score of 14.67** with **the lowest scores of all domains of 8**.

3-The highest scores were found for the third domains with median value of 16. 4-The fourth domain had median value of 13.29 with maximum value of 18.5

6.3. Table 2 Relationship between each domain and patients' characteristics

-Compliant patients had a significant higher score than non-compliant patients with Physical health were (T=3.412, p = 0.0007) and significant positive correlation with psychological health were (T=4.263, p = 0.001) also significant positive correlation with Social relationships and environment (See Table 2,2.A,2.B,2.C)

-Non diabetic patients and patients without kidney diseases had significant higher scores for the Social relationships respectively were T=2.203 p = 0.028 and T=3.288, p=0.0015)(See Table 2.B)

- Patients without vision problems had higher significant relation for the Social relationships and Environment domains (respectively were (T=3.227 p = 0.001 and T=2.119,p0.033) (See Table 2.B,2.C)

-Surprisingly, the highest scores in physical domains were present in longer durations while in case of social domain, the highest score was achieved with the least duration of hypertension (See Table 2.)

Table 1. Characteristics of participants

level	N(%)
Gender (%)	
Female	402 (100.0)
Age	
Mean±SD	52.94 ±11.60
Marital state (%)	
Divorced	13 (3.2)
Married	284 (71.0)
Single	54 (13.5)
Widowed	49 (12.2)
Smoking (%)	
Ex-smoker	1 (0.2)
Non-smoker	389 (97.2)
Smoker	10 (2.5)
HYN duration (%)	
1 year	7 (1.8)
2 years	30 (7.5)
3 years	57 (14.2)
4 years	33 (8.2)
5-10years	140 (35.0)
≥ 10 years	133 (33.2)
Kidney disease	7 (1.8)
Heart disease	35 (8.8)
Diabetic	150 (37.5)
Vision problem	59 (14.8)
Stroke	5 (1.2)
Diuretics	44 (11.0)
CCBs	158 (39.5)
ACEIs/ARBs	206 (51.5)
BBs	92 (23.0)
Alpha-blocker	4 (1.0)
Compliance on medication	337 (84.2)
BB control	254 (63.5)

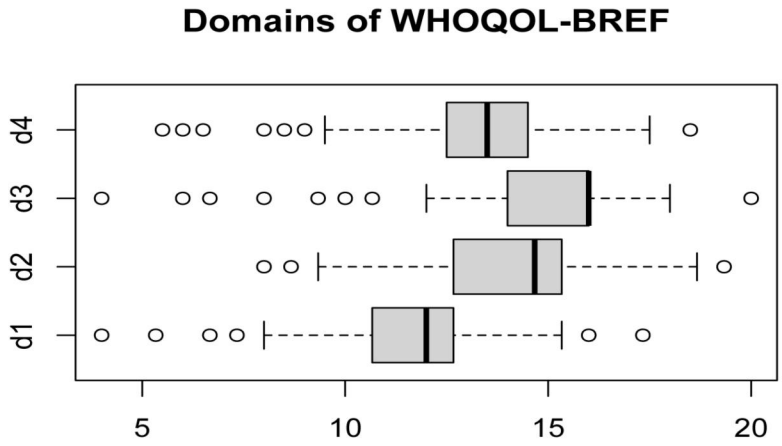

Figure 1.

Table(2) Bivariate relationship between physical health domain and patients' characteristics

Characteristics		n	Physical health	T or F	T-test or ANOVA	
					test value	P-value
Alfa-blocker	**No**	396	11.63±2.00	t	0.62	0.529
	Yes	4	11.00±0.67			
Beta-blockers	**No**	308	11.60±2.01	t	0.423	0.672
	Yes	92	11.70±1.93			
Compliance	**No**	63	10.85±1.99	t	3.412	0.0007*
	Yes	337	11.77±1.96			
CCBs	**No**	242	11.48±2.01	t	1.775	0.076
	Yes	158	11.84±1.94			
Diuretics	**No**	356	11.65±1.93	t	0.723	0.47
	Yes	44	11.42±2.43			
Heart disease	**No**	365	11.66±1.95	t	1.311	0.1907
	Yes	35	11.20±2.31			
Diabetic	**No**	250	11.95±1.86	t	4.321	<0.001*
	Yes	150	11.08±2.09			
Vision problem	**No**	341	11.54±1.99	t	2.003	0.045*
	Yes	59	12.10±1.94			
Stroke	**No**	395	11.62±1.99	t	0.123	0.902
	Yes	5	11.73±2.39			
Kidney diseases	**No**	393	11.65±1.89	t	2.323	0.021*
	Yes	7	9.90±5.05			
Smoking	**Non-smoker**	389	11.64±2.00	t	1.112	0.267
	Smoker	10	10.93±1.73			
Duration of hypertension	**1 year**	7	10.76±3.21	f	1.055	0.636
	2 years	30	11.62±1.83			
	3 years	57	11.88±2.17			
	4 years	33	11.31±1.43			
	more than 5 years	140	11.70±1.77			
	≥10 years	133	11.55±2.21			

Table(2.A) Bivariate relationship between Psychological health domain and patients' characteristics

Characteristics continue		n	Psychological health	T or F	T-test or ANOVA	
					test value	P-value
Alfa-blocker	**No**	396	14.05 ± 2.19	t	0.711	0.477
	Yes	4	14.83 ± 1.00			
Beta-blockers	**No**	308	14.13 ± 2.23	t	1.12	0.263
	Yes	92	13.84 ± 2.00			
Compliance	**No**	63	13.01 ± 2.37	t	4.263	<0.001*
	Yes	337	14.26± 2.09			
CCBs	**No**	242	14.10± 2.18	t	0.448	0.654
	Yes	158	14.00± 2.18			
Diuretics	**No**	356	14.02 ± 2.16	t	1.119	0.263
	Yes	44	14.41± 2.34			
Heart disease	**No**	365	14.14± 2.21	t	2.292	0.022*
	Yes	35	13.26±1.68			
Diabetic	**No**	250	14.19± 2.09	t	1.561	0.119
	Yes	150	13.84± 2.30			
Vision problem	**No**	341	14.01± 2.25	t	1.108	0.268
	Yes	59	14.35± 1.68			
Stroke	**No**	395	14.07± 2.19	t	0.886	0.376
	Yes	5	13.20±1.28			
Kidney diseases	**No**	393	14.08±2.13	t	1.471	0.142
	Yes	7	12.86± 4.16			
Smoking	**Non-smoker**	389	14.09± 2.17	t	1.665	0.096
	Smoker	10	12.93±2.38			
Duration of hypertension	**1 year**	7	14.19± 1.37	f	5.421	<0.001*
	2 years	30	13.91± 2.03			
	3 years	57	13.42± 2.38			
	4 years	33	12.71± 2.70			
	more than 5 years	140	14.28± 1.95			
	≥10 years	133	14.47± 2.07			

Table(2.B) Bivariate relationship between Social relationships domain and patients' characteristics

Characteristics continue		n	Social relationships	T or F	T-test or ANOVA	
					test value	P-value
Alfa-blocker	**No**	396	14.63 ± 2.66	t	0.653	0.514
	Yes	4	15.50 ± 1.00			
Beta-blockers	**No**	308	14.64± 2.72	t	0.063	0.949
	Yes	92	14.66± 2.43			
Compliance	**No**	63	13.28± 3.03	t	4.557	<0.001*
	Yes	337	14.90 ± 2.50			
CCBs	**No**	242	14.59± 2.75	t	0.479	0.632
	Yes	158	14.72± 2.50			
Diuretics	**No**	356	14.68 ± 2.58	t	0.778	0.436
	Yes	44	14.35± 3.19			
Heart disease	**No**	365	14.69± 2.62	t	1.153	0.249
	Yes	35	14.15±2.92			
Diabetic	**No**	250	14.87± 2.30	t	2.203	0.028*
	Yes	150	14.27±3.12			
Vision problem	**No**	341	14.47± 2.77	t	3.227	0.001*
	Yes	59	15.66± 1.40			
Stroke	**No**	395	14.63± 2.66	t	0.477	0.633
	Yes	5	15.20± 1.79			
Kidney diseases	**No**	393	14.70±2.59	t	3.188	0.0015*
	Yes	7	11.52± 3.94			
Smoking	**Non-smoker**	389	14.72± 2.60	t	3.402	0.0007*
	Smoker	10	11.87±3.23			
Duration of hypertension	**1 year**	7	15.43± 0.98	f	1.919	0.136
	2 years	30	14.71± 2.59			
	3 years	57	14.06± 2.72			
	4 years	33	13.80± 3.07			
	more than 5 years	140	14.90± 2.25			
	≥10 years	133	14.78± 2.92			

Table(2.C) Bivariate relationship between Environment domain and patients' characteristics

Characteristics continue		n	Environment	T or F	T-test or ANOVA	
					test value	P-value
Alfa-blocker	**No**	396	13.28±2.06	t	0.698	0.485
	Yes	4	14.00 ±1.00			
Beta-blockers	**No**	308	13.32 ±2.01	t	0.615	0.538
	Yes	92	13.17 ±2.19			
Compliance	**No**	63	12.25± 2.28	t	4.469	<0.001*
	Yes	337	13.48± 1.95			
CCBs	**No**	242	13.20 ±2.01	t	1.002	0.317
	Yes	158	13.43± 2.11			
Diuretics	**No**	356	13.28± 2.07	t	0.213	0.831
	Yes	44	13.35± 1.92			
Heart disease	**No**	365	13.32± 2.09	t	0.991	0.322
	Yes	35	12.96±1.60			
Diabetic	**No**	250	13.34± 2.12	t	0.612	0.541
	Yes	150	13.21±1.95			
Vision problem	**No**	341	13.20± 2.15	t	2.119	0.033*
	Yes	59	13.81± 1.23			
Stroke	**No**	395	13.29± 2.06	t	0.226	0.821
	Yes	5	13.50± 1.06			
Kidney diseases	**No**	393	13.31±2.04	t		0.063
	Yes	7	11.86± 2.17			
Smoking	**Non-smoker**	389	13.37± 1.97	t	4.948	<0.001*
	Smoker	10	10.20±3.03			
Duration of hypertension	**1 year**	7	14.43± 1.10	f	6.077	<0.001*
	2 years	30	13.67± 1.77			
	3 years	57	12.89± 2.56			
	4 years	33	11.47± 2.91			
	more than 5 years	140	13.55± 1.83			
	≥10 years	133	13.49± 1.59			

7. Discussion

In this study, we had 402 female patients with average age of 53 years. We found that hypertensive females had somewhat high median scores with the highest score for social relationships domain. In the bivariate analysis, we found that age had significant effect on all domains. Compliance to treatment also had a significant positive effect on each domain scores. Diabetes, heart diseases, kidney diseases and vision problems are the only diseases that had a significant effect on the scores. Multivariate regression analysis illustrated the effect of each variable on the scores. It was found that older age was associated with less scores in the physical health domain and higher scores in the social do-main. Being married or widowed was associated with higher scores in all domains. Meanwhile, being single had higher scores of the social and environmental domain. There were diseases that affected each domain scores. Generally, presence of diseases was associated with significant less scores. Compliance to treatment especially calcium channel blockers was associated with higher scores. Surprisingly, beta-blockers use was associated with fewer score in the third domain.

Our results are consistent with a study conducted in rural Vietnam in which they used the same scale 23. Their results implied that the psycho-logical domain had the worst scores while the other domains were considered as a moderate 23. In our study, all the patients had high scores ranging from 12 to 16. The least domain scores were the physical do-main while the highest was social domain. In our study, the psychological domain was considered high with the highest minimal scores among all other domains. The study also confirmed our results that compliance to treatment was associated with better quality of life 23. However, our results were inconsistent with other studies that found that it was a weak correlation. Cote et al. considered the correlation between the compliance to treatment and quality of life in hypertensive patients as negligible 24. Another study in hypertensive geriatric found the same results 25. In addition, another study found that it is a reverse relationship and that the increase in the quality of life was associated with higher compliance to treatment 16.

Another obvious influencer on the quality of life in hypertensive patients is the presence of co-morbidity. Although their influence is inconsistent across the domains in our study. Comorbidities were generally associated with lower quality of life and lower scores 7,16,26. Surprisingly, vision problems were not associated with low scores in our study. In a study that assessed the quality of life in hypertensive patients with co-morbidities of chronic kidney diseases and heart diseases 17. They found that it significantly affected the quality of life in those patients. They also found that there were other cofactors in this relationship that includes age, combination of other comorbidities and anti-hypertensive treatment 17. In contrast, another study found that diabetes did not have effect on the quality of life in hypertensive patients7. However, other studies reported that both type 1 or 2 have a deleterious effect on the quality of life in those patients 26-28. These studies implied that diabetes influenced the general domains and physical domains 26-28. However, in our study, we found that only diabetes was associated with the significant lower physical domain scores. Furthermore, the heart diseases and chronic kidney diseases were not significantly associated with lowering of the physical scores. A study found that it would takes four years to produce a significant decline on the physical health 29,30. However, another study by Aydemir et al. found that many comorbidities e.g. congestive heart failure, cerebrovascular disease, obesity and angina affected the scores of SF-36 31. Many studies assessed the quality of life in hypertensive patients with myocardial infarction, undergoing coronary artery bypass grafting (CABG) or atherosclerosis and found that they had generally less quality of life 10-12,29,32. For renal diseases, it was found that chronic kidney diseases were associated with lower scores in all domains and was more prominent in females 17,33,34. Another study suggested that the effect of anti-hypertensive on the quality of life is mediated through its effect on the renal system 14.

The effect of antihypertensive on the quality of life of hypertensive patients remains controversial. A study found that the anti-hypertensive treatment had no significant effect on the quality of life in elderly 19,35. However, another study found that the use of antihypertensive drugs de-creased the social domain scores but little or no effect on physical do-main 36. Based on literature, there is no specific treatment that was associated with better quality of life 17. These controversial results are mainly due to the difference in socio demographic characteristic of the studied group. A study also explained that the effect of drugs on the quality of life is mainly mediated through the side effects reported for each drug 13.

For baseline characteristics, it was found that hypertensive females were usually associated with lower quality of life. It was also found that quality of life in hypertensive patients was affected by the marital status. Many studies found that married hypertensive patients had higher scores than single/widowed patients 11,12,16,18,21,26,27,37-39. In our study, the duration of hypertension decreased the quality of life which was evident mainly in environmental domain. This was consistent with a Brazilian study in which

they found that the longer the duration of the hypertension, the less scores were obtained 40. Smoking did not affect any domain in our study. Other studies found that smoking did not have any influence on the domains in adults but in elderly, it had a reverse association with quality of life 13,19,35. Another study conducted in Lebanon implied that smoking was associated with increased quality of life 18.

Comparing our study results to other studies conducted in middle east, our study is similar methodologically to a study conducted in Gaza strip as they used the same questionnaire 9. In this study, they compared be-tween the hypertensive patients only and patients with both hypertension and stroke. They found that being female and with less physical exercise was associated with low scores 9. Another study was conducted in Lebanon, they used different questionnaire and they had different results from ours. In this study, they found that being female, with presence of comorbidities and older age was associated with less quality of life 18. Comparing our results to other studies conducted in Saudi Arabia, Al Ghamdi et al. used SF-36 to assess the quality of life in hypertensive patients 22. The results were considered consistent to our study as they found that old age, female, diabetes, and unmarried were associated with poor quality of life 22. Another study by Qusair et al. had shown the same results. They further assessed the education level, employment and low income and found that they were associated with poor quality of life 20. Measurement of quality of life in hypertensive patients was conducted using variable questionnaires. SF-36 and WHOQOL-BREF were the most used questionnaires in most studies 7,16,17,19,20,22,23,36,39,41. Another study found that the internal consistency of WHOQOL-BREF was considered strong 23. There are two versions of the WHOQOL, one is WHOWOL-100 and its abbreviated form WHOQOL-BREF 42,43,44,45. Many studies compared between both and found that WHOQOL-BREF had much higher reliability and internal consistency 42,46,47.

8. Conclusion:

The previous study found that hypertensive female patients attending to primary healthcare had moderate quality of life with the least scores in physical domain and highest in social domain. Prominent risk factors for high scores were compliance to treatment and marital status. Presence of co-morbidities and beta blockers were associated with lower quality of life among the studied group.

9. Limitation:

The cross-sectional design of the study did not allow the follow-up of the patients and assessment of long-term effects. There were some risk factors that could not be assessed e.g. low income and education level

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