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Quality of life among urban hypertensive patients

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ABSTRACT

Hypertension is a leading risk factor for major chronic illnesses. This study investigated the quality of life (QOL) of hypertensive patients in an urban setting and evaluate related factors. A cross-sectional study on 220 hypertensive patients was performed in Hanoi, Vietnam. Short-form 12 version 2 (SF12-v2) was used to assess QOL. Sociodemographic and clinical characteristics were also obtained. Multivariate regression was utilized to explore the related factors with patients' QOL. The mean physical health (PCS-12) and mental health (MCS-12) scores were 43.3 (SD=7.9) and 56.3 (SD=6.5), respectively, Higher age was related to a lower PCS-12. People living in low-population-density settings have a higher MCS-12 score than those living in high-density settings. Increasing comorbidity and medication reduced both component scores. Patients participating in social activity had the MCS-12 score higher than those not participating. This study found a moderate level of health-related quality of life (HRQOL) in hypertensive patients regardless of treatment progress. Regular screening and controlling comorbidities, as well as motivating active employment and social activities involvement, are the potential to enhance the HRQOL of this population.

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1. INTRODUCTION

Hypertension is well-recognized as a significant risk factor for several major non-communicable diseases (e.g., cardiovascular diseases, diabetes, renal, or nerve diseases) as well as a predictor of early premature mortality [1], [2]. In 2010, high blood pressure was attributable to approximately 7.5 million deaths, which accounted for 12.8% of all-cause mortality worldwide [3]. There was estimated that close to 1.13 billion people had been diagnosed with hypertension in 2015 [2], which is predicted to reach 1.56 billion in 2025 [4], [5]. In Vietnam, hypertension is an emerging problem in the adult population as a consequence of the rapid growth of the aging population, urbanization, and unhealthy lifestyles [6], [7]. The prevalence of hypertension in Vietnamese adults ranges from 18.4 to 21.1% [6], which is responsible for 11.1% of the disease burden in 2017 [8]. However, only 9.3% of hypertensive patients are aware of their condition, 4.7% received appropriate treatment [6], and 12.2% of patients have well-controlled hypertension [9].

As hypertension is a chronic condition that cannot be completely cured, quality of life (QOL) is an important indicator to measure the effectiveness of hypertension treatment and management [10]. Several

previous studies have affirmed that hypertension significantly reduced patients' QOL compared to those without hypertension [11], [12], especially in aspects of general health, physical functioning, vitality, and mental health [13]. Predictors for the poor QOL in hypertensive patients included socioeconomic status (e.g., female, higher age, lower education, lower income, living in the rural area) [14], [15], and clinical characteristics (e.g., polypharmacy, complications or co-morbidities, adverse effect form anti-hypertensive medications) [15]–[17]. These factors vary depending on study settings, suggesting the need for contextualized evidence for improving QOL in hypertensive patients.

Despite the importance of QOL assessment in hypertensive patients, studies on this issue in Vietnam are insufficient. To date, only two studies were performed in the mountainous hospital setting using Short-form 36v2 [18] and in a rural community setting using The World Health Organization Quality of Life Brief Version WHOQOL-BREF [19]. Both studies showed a moderate-low QOL of hypertensive patients in comparison with the general population. This study investigated the QOL of hypertensive patients in an urban setting and evaluate related factors.

2. METHOD

2.1. Study design

We obtained the cross-sectional data at an outpatient department of an urban hospital in Hanoi, Vietnam in October 2019. More than 100 hypertensive patients visited this department per day for regular examination. Patients who were aged 18 years or above, had high blood pressure which was diagnosed based on the Ministry of Health's criteria [20] at least one year and did not have any psychological or cognitive disorders were included in the study. Patients who were inpatients or disagreed to become study participants were excluded. We applied a convenient sampling method. During the data collection period, among 250 patients who were invited, 220 individuals agreed to participate in the study response rate 88%. The study and data collection tool were approved by the institution review board of the hospital. All participants were informed and signed the written informed consent form.

2.2. Data collection

The data collection process was performed by a team including undergraduate medical students. They received appropriate training regarding the interview and data extraction skills before implementing the data collection. First, after patients finished all examination procedures, physicians of the department checked the eligible criteria and introduced the study and data collection team. Then, if patients accepted the invitation, they were invited to a private counseling room for the interview. Each interview lasted 15-20 minutes. Data collection was performed by using a structured questionnaire for a face-to-face interview, and a structured form to extract data from medical records. The questionnaire had the following sections: demographic characteristics, behaviors, QOL and social activities participation. Meanwhile, the extraction form had information about age, gender, and clinical characteristics.

The office blood pressure of patients was measured twice during a medical examination by using the Japanese Alpk2 sphygmomanometer. Patients having uncontrolled hypertension had a persistent blood pressure of 140/90 mmHg, which was the average of the two measurements. Other patients were classified into the "Controlled hypertension" group [20].

The Short-form Health Survey 12 version 2 (SF-12v2) was utilized to evaluate the QOL of patients with hypertension. This is a general instrument comprising 12 items to evaluate eight domains of QOL: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). Each domain was scored from 0 "the worst health state" to 100 "the best health state" [21]. The Physical Component Score-12 (PCS-12) was derived from PF, RP, BP, and GH, while the Mental Component Score-12 (MCS-12) was computed from MH, VT, SF and RE. These scores were standardized by using the norm of the US 1998 population according to guidelines [22]. Each component had a score range from 0 to 100 [22].

Demographic information included age, gender, education, occupation, marital status, living location characteristics (low/high population density), smoking habits, and social activities participation. Clinical characteristics consisted of comorbidities, hypertensive complications, and medication used. Weight and height were measured after completing the survey to calculate body mass index.

2.3. Statistical analysis

Stata software version 14.0 was utilized for statistical analysis. Mann-Whitney test was utilized to assess the difference in SF-12v2 domain score, PCS-12, and MCS-12 scores between controlled and uncontrolled hypertensive patients. Multivariate linear regression was used to measure related factors with quality-of-life scores. A p-value <0.05 was used for identifying statistical significance.

2.4. Ethical considerations

We followed the WHO ethical and safety recommendations for medical research. The purpose of the study was explained to the patients and participation was completely voluntary. Patients are also consulted by doctors on how to control blood pressure and appropriate nutrition for patients with high blood pressure. The study was approved by the Ethical Committee of the hospital (Decision 563/QĐ-KYD dated September 25, 2019).

3. RESULTS AND DISCUSSION

Our study filled the evidence gap about the QOL of hypertensive patients in the hospital setting in Vietnam. The findings revealed a moderate level of QOL in both controlled and uncontrolled hypertensive patients regarding different aspects. Moreover, some factors associated with the impairment of QOL in this population were also explored, such as age, living location, comorbidities, medications used, body mass index, and social activity participation, suggesting further implications to improve the QOL of people living with hypertension.

The characteristics of the participants are presented in Table 1 of 220 patients, 50.9% were females. Most patients aged more than 60 years old 70%. The proportion of samples having a high school education or above was 55.4%. The majority were self-employed 44.5% and living with a spouse 81.8%.

Table 1. Sociodemographic characteristics of hypertensive patients

Characteristics	n	%
Age group		
<49 years	12	5.5
50-59 years	54	24.5
60–69 years	93	42.3
≥70	61	27.7
Gender		
Female	112	50.9
Male	108	49.1
Education		
Under secondary school	24	10.9
Secondary school	74	33.6
High school	50	22.7
Colleges	30	13.6
≥University	42	19.1
Occupation		
Self-employed	98	44.5
Retired	89	40.5
Others	33	15.0
Marital status		
Single/Divorce/Widow	40	18.2
Having a spouse/partner	180	81.8
Living area		
Low population density	188	85.5
High population density	32	14.5
Participating in social activities		
Yes	120	54.6
No	100	45.5
Ever smoking		
Yes	86	39.1
No	134	60.9
	Mean	SD
Age (years)	64.0	8.9

Clinical characteristics and health status are shown in Table 2. The majority of participants were controlled hypertensive patients 59.6%. The proportion of patients experiencing lipid disorders as a comorbidity was the highest at 40.9%, followed by bone-joint diseases 40.5%, heart diseases 27.7%, and diabetes 22.3%. The mean number of medications per person was 1.6 (SD=1.1), and the mean body mass index was 23.7 (SD=2.7kg/m2).

In controlled hypertensive patients, the mean PCS-12 score, and MCS-12 score were 43.3 (SD=7.9) and 56.3 (SD=6.5), respectively. In uncontrolled hypertensive patients, the corresponding values were 43.3 (SD=9.2) and 56.1 (SD=9.1), respectively. Results of Table 3 show that no difference was found in SF-12 domain scores and component summary scores between controlled and uncontrolled hypertensive patients ($p>0.05$).

The findings of this study indicated that the QOL of adults with hypertension had moderate scores in all SF-12 aspects, particularly general health. The physical and mental component summary scores in our sample can be comparable to the sample of Vietnamese older women in the previous study, who are among the most vulnerable population to chronic diseases [23]. Unfortunately, we could not find any literature about HRQOL measured by SF-12 or Short-form 36 in the general Vietnamese population for comparison. However, compared to studies in other countries such as South Korea [24] and China [25], which had a similar culture to Vietnam, we found that the HRQOL in our patients equaled half of the QOL of general people living in these countries. Our finding in the MCS-12 score was higher, but our PCS-12 score was lower than MCS-12 and PCS-12 in Brazilian hypertensive patients, respectively [26]. The difference could be explained by several reasons such as different socio-economic and clinical characteristics or differences of QOL perceptions across nations. However, these findings suggested the significant HRQOL impairment of hypertensive patients in comparison with the general population.

After adjusting to other covariates, we found that higher age was associated with a lower PCS-12 score (Coef. = -0.17, 95% C=-0.31; -0.02). People living in low-population density areas have a higher MCS-12 score (Coef. =3.22, 95% Ci=0.15; 6.30) than those living in high-population density areas. Increasing one comorbidity and one medication reduced 1.09 points of PCS score (Coef. =-1.09, 95%CI=-1.87; -0.31) and 1.47 points of PCS score (Coef. = -1.47, 95%Ci=-2.52; -0.43), respectively. Meanwhile, a one kg/m2 increase was related to a 0.51-point increase in the MCS score (Coef. =0.51, 95%CI=0.11; 0.91). Finally, patients participating in social activity had a 3.02 MCS-12 score higher than those not participating (Coef. =3.02; 95%CI=0.78; 5.27) as shown in Table 4.

Table 2. Clinical characteristics of hypertensive patients

Clinical characteristics	n	%
Hypertension		
Controlled	131	59.6
Uncontrolled	89	40.4
Comorbidity		
Lipid disorders	90	40.9
Bone-joint diseases	89	40.5
Heart diseases	61	27.7
Diabetes	49	22.3
Gastrointestinal diseases	36	16.4
Metabolic disorders	31	14.1
Coronary diseases	25	11.4
Liver diseases	22	10.0
Kidney diseases	17	7.7
Prostate diseases	14	6.4
Stroke	10	4.6
Others	15	6.8
	Mean	SD
Number of comorbidities	2.3	1.5
Number of medications	1.6	1.1
Body mass index (kg/m^2)	23.7	2.7

Table 3. HRQOL of controlled and uncontrolled hypertensive patients

HRQOL	Controlled hypertensive patients Mean±SD	Uncontrolled hypertensive patients Mean±SD	Overall Mean±SD	p-value
Physical functioning	47.4±10.4	45.7±11.3	46.7±10.8	0.27
Role physical	53.7±4.1	54.3±3.8	54.0±4.0	0.40
Bodily pain	46.3±13.3	47.5±13.8	46.8±13.5	0.33
General health	33.3±9.4	32.7±9.7	33.1±9.5	0.61
Vitality	56.8±15.4	54.9±14.6	56.0±15.1	0.20
Social functioning	49.0±12.0	50.5±11.6	49.6±11.9	0.25
Role emotional	53.2±4.5	53.1±4.5	53.2±4.5	0.71
Mental health	55.8±11	55.1±12.7	55.5±11.7	0.97
Physical component summary score (PCS-12)	43.3±7.9	43.3±9.2	43.3±8.4	0.98
Mental component summary score (MCS-12)	56.3±6.5	56.1±9.1	56.2±7.6	0.71

Advancing age, the higher number of comorbidities, and medications used were associated with the decrease in QOL regarding physical perspective. These results were similar to prior works in Vietnam and

other countries [18], [27], [28]. Notably, hypertensive patients participating in social activities had a higher MCS score than those who did not. Indeed, most of our sample were aged 60 or above and were legally retired. Literature underlined the fact that increasing the independence or autonomy of older people via facilitating social participation or providing job opportunities would also improve their quality of life [27], [29]. Furthermore, patients who lived in the low population-density area (such as suburban or rural places) had higher MCS scores than individuals living in the high-density area (such as the urban part of Hanoi), which aligned with previous findings in the general population that urban people were more likely to experience mental problems compared to rural ones, leading to the reduction of MCS score [27].

Finally, we did not find any association between hypertension condition and HRQOL. This finding was in line with the previous study in Vietnam [18], but different from a study in Nigeria [30] and China [14]. We supposed that these phenomena might be due to methodological and cultural differences. Studies in Nigeria used blood pressure as a continuous variable while our study used a binary variable. Moreover, we did not measure patients' medication adherence, which might be a potential confounder for this association.

Several major limitations should be acknowledged. First, the validity and reliability of SF-12v2 in the Vietnamese population in general and hypertensive patients, in particular, are unknown. Despite its pervasiveness in other Asian countries such as Korea and China [24], [25], further studies should be required to elucidate this issue. Second, data were acquired via face-to-face interviews, which might be at risk of recall bias. Third, we used the cross-sectional design which was not appropriate for drawing causal associations between QOL and its related factors. Finally, the finding should be cautious when applied to other settings because of the sampling process.

Table 4. Associated factors with HRQOL among hypertensive patients

Characteristics	PCS			MCS		
	Coef.	95%CI		Coef.	95%CI	
Hypertension						
Controlled	1			1		
Uncontrolled	0.48	-1.88	2.85	-0.75	-2.98	1.48
Age (year)	-0.17*	-0.31	-0.02	0.07	-0.07	0.21
Gender						
Male	1			1		
Female	-2.33	-6.05	1.39	-2.03	-5.53	1.48
Occupation						
Self-employed	1			1		
Retired	0.30	-2.23	2.82	-1.20	-3.58	1.17
Others	-0.42	-4.11	3.26	0.96	-2.51	4.43
Marital status						
Single/Divorce/Widow	1			1		
Having spouse/partner	-0.18	-3.38	3.03	0.00	-3.02	3.03
Living location						
High population density	1			REF		
Low population density	0.59	-2.68	3.85	3.22*	0.15	6.30
Ever smoking						
No	1			1		
Yes	-1.07	-4.77	2.62	-0.81	-4.30	2.68
Number of comorbidities	-1.09*	-1.87	-0.31	0.19	-0.55	0.92
Number of medications	-1.47*	-2.52	-0.43	0.33	-0.65	1.32
Body mass index (kg/m^2)	-0.40	-0.82	0.03	0.51*	0.11	0.91
Participating in social activities						
No	1			1		
Yes	-1.57	-3.95	0.81	3.02*	0.78	5.27

MCS= mental component summary score, PCS= physical component summary score, *p<0.05

4. CONCLUSION

This study found a moderate level of QOL in hypertensive patients regardless of treatment progress. Age, living area, comorbidities, medications used, and social participation are critical factors associated with the QOL of hypertensive patients. Regular screening and controlling comorbidities, as well as motivating active employment and social activities involvement, are the potential to enhance the QOL of this population.

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