

Health Promoting Lifestyle and Health Related Quality of Life among Hypertensive Patients

Ramita Karmacharya,¹ Tara Roka,¹ Nirmala Aryal,¹ Hemant Shrestha²

¹Nepalese Army Institute of Health Sciences, College of Nursing, Sanobharyang, Kathmandu, Nepal,

²Department: Cardiology, Manmohan Cardiothoracic Vascular and Transplant Centre, TU, IOM.

ABSTRACT

Background: Health promoting lifestyle refers to the healthy practices that improves health. The objective of the study was to assess health promoting lifestyle and health related quality of life among hypertensive patients attending a tertiary level hospital.

Methods: Cross sectional study design was used among 255 hypertensive patients, selected purposively from those attending cardiology OPD. Data were collected by using Health Promoting Lifestyle Profile tool and Short Form-36 Health Survey tool through face to face interview. Data were analyzed by using descriptive, inferential statistics with SPSS version 16.

Results: Health promoting lifestyle among hypertensive patients was at intermediate level (median score=130) with the highest score in spiritual growth (29.48) and the lowest score in physical activity (12.33) subscale. Health related quality of life among hypertensive patients was good (median score=64.45) with the highest score in mental health (80.61) and the lowest score in role physical (49.90) subscale. Health promoting lifestyle and health related quality of life were found positively correlated ($r=0.757$) and statistically significant ($p < 0.001$). This study found that increasing age, longer duration of hypertension and presence of comorbidities were associated with lower HRQOL whereas being married and being literate were associated with higher HRQOL ($p < 0.005$). Hierarchical regression analysis revealed that being married, education level, presence of comorbidities and six subscales of health promoting lifestyle (spiritual growth, interpersonal relationship, nutrition, health responsibility, stress management and physical activity) were influencing factors of health related quality of life among hypertensive patients ($p < 0.005$).

Conclusions: Health promoting lifestyle is an important factor that influences health related quality of life among hypertensive patients.

Keywords: Health promoting lifestyle; health related quality of life; hypertension.

Introduction

Hypertension (HTN) is a common cardiovascular disease, affecting approximately 1.28 billion people between 30 and 79 years, of which two-thirds are living in developing countries and causing a premature death worldwide.¹ Nepal is not an exception with pooled prevalence of HTN, awareness, treatment and control from 2016 to 2020 was 32%, 50%, 27%, and 38%, respectively.²

HTN is prevalent among those people who have unhealthy lifestyle leading to life threatening complications.^{3,4} Lifestyle modifications can have beneficial effects on

management of HTN. Health Promoting Lifestyle (HPL) focuses on boosting health through lifestyle.^{5,6} Health related quality of life (HRQOL) is an another important measure to understand the full impact of HTN on health.⁷

In Nepal, few studies have been conducted regarding HPL and HRQOL among hypertensive patients.⁸ Furthermore, correlation between HPL and HRQOL, and the influencing factors of HRQOL among hypertensive patients in Nepal has not been fully explored.^{4,7} Hence, this study was conducted to assess HPL and HRQOL among hypertensive patients.

Correspondence: Ramita Karmacharya, Nepalese Army Institute of Health Sciences, College of Nursing, Sanobharyang, Kathmandu, Nepal. Email: ramitakarmacharya2024@gmail.com, Phone : +9779841856400

METHODS

A cross-sectional study was conducted at Manmohan Cardiothoracic Vascular and Transplant Center (MCVTC), Maharajgunj, Kathmandu which is a super specialty hospital. All the patients above 19 years of age with HTN diagnosed for more than six months and attending cardiology out-patient department (OPD) of MCVTC were the study population. The required sample size was calculated by using Cochran formula, that is $n = z^2pq/d^2$. The prevalence was taken from the previous study of health promoting behaviors associated with quality of life which was 21% ($p = 0.21$ and $q = 0.79$).⁹ At 95% confidence interval and 5% allowable error, the calculated sample size was 254.928 (≈ 255). Non-probability purposive sampling was used to select subjects from among patients meeting the inclusion criteria of the study.

A structured interview schedule was developed by reviewing the related literature to measure the study variables. The developed instrument was divided into three parts. The first part included questions related to socio-demographic information and illness related information. The second part included questions related to HPL and the third part included questions related to HRQOL.

HPLP-II tool was used to assess HPL among hypertensive patients. It was developed by Walker et al.¹⁰ consisting of 52 behavior items with six subscales that are scored on the basis of four point Likert-type scale with ranges of never (1), sometimes (2), frequently (3), and regularly (4). The six subscales of HPLP-II tool were health responsibility, spiritual growth, physical activity, interpersonal relationships, nutrition, and stress management. Total scores ranged from 52-208. The total score of the HPLP was calculated and measured by the mean score of the responses to all 52 HPLP items. The total HPLP score was classified as: Excellent= 169-208 points; Good= 130-168 points; Moderate= 91-129 points and Poor= 52-90 points.¹¹ Previous studies had shown that Cronbach alpha test of original English version of HPLP-II was 0.94 for the total scale of HPLP-II.¹² Cronbach's alpha of Nepali version of HPLP was 0.89.¹³

SF-36 Questionnaire was used to assess HRQOL. Ware and colleagues developed SF-36 from the medical outcomes study (MOS) consisting of 36 questions and eight subscales. The eight subscales included for HRQOL were vitality (VT), physical functioning (PF), bodily pain (BP), general health perceptions (GH), physical role functioning (RP), emotional role functioning (RE),

social role functioning (SF) and mental health (MH). The instrument had a one-item scale on health transition.¹⁴

The eight dimensions of HRQOL was broadly divided into two categories, that is, the physical component summary (PCS) and the mental component health (MCS). Calculation formula was: $PCS = (PF + RP + BP + GH)/4$, while $MCS = (RE + SF + VT + MH)/4$. Raw score was converted into transformed scale. The total scores ranged from 0-100. The total score of the SF-36 was calculated and measured by the mean score of the responses to SF-36 items. The overall score was classified as: Very Good= 80-100 points; Good= 60-79 points; Moderate= 40-59 points; Poor= 20-39 points and Very poor= 0-19 points.¹⁵ Further, the cut-off point of SF-36 score ≥ 60 was considered as 'good' and < 60 was considered as 'poor'.¹⁶ The reliability test of English version of SF-36 questionnaire showed Cronbach alpha of 0.91 to 0.86 for its eight subscales.¹⁷ Cronbach alpha of Nepali version of total SF-36 scale was 0.85 and the test-retest correlation coefficient was 0.78.¹⁸

Pre-testing was done among 26 respondents attending medicine OPD of Shree Birendra Hospital, Kathmandu by using Nepali translated tool and the instrument was finalized before using it for data collection. Prior to the data collection, research proposal was approved from the research committee of Nepalese Army Institute of Health Sciences (NAIHS), College of Nursing. Formal written permission was sought from research head of administrative department of MCVTC (Ref No.: 1684/078/79). Ethical approval was obtained from Institutional Review Committee (IRC) of Institute of Medicine [Ref No.: 526(6-11) E2 078/079] and IRC of NAIHS (Reg. No.: 630).

List of the patients was obtained from a ticket counter of MCVTC. After reviewing the OPD ticket, patients above 19 years of age with HTN diagnosed for more than six months were selected. Each respondent was clearly explained informed about the objectives of the research study and informed written consent was obtained. In person interview technique was applied to collect data from the respondents. Firstly, information regarding demographic as well as illness related information were obtained and then questions related to HPL and HRQOL were interviewed. Thirty minutes was taken on average for interview. Data were collected from 17th July to 28th August 2022.

After the data collection, collected data were coded and entered in SPSS version 16. Descriptive statistical methods such as number, percentage, mean, median,

standard deviation and quartiles were used. Inferential statistics Pearson Chi Square test and Fisher Exact test was used to analyze the association of selected variables with HRQOL. Karl Pearson's Coefficient of Correlation was used to analyze correlation between selected variables, HPL and HRQOL. Hierarchical regression analysis was used to assess the influencing factors of HRQOL. *p* value less than 0.05 was considered as statistically significant.

RESULTS

Table 1. Demographic Characteristics and Illness Related Variables of Respondents. n=255

Age In Completed Years	Number	Percent
Young adult (20-39)/Old adult (65 or older)	105	41.2
Middle adult (40-64)	150	58.8
Sex		
Male	116	45.5
Female	139	54.5
Marital status		
Married	219	85.9
Unmarried/Widow/Divorced/Separated	36	14.1
Education Level (n=211)		
Informal education/ Basic education	72	28.2
Secondary education	91	35.7
Bachelor degree or more	48	18.8
Occupation		
Agriculture	24	9.4
Other than agriculture	152	59.6
Retired	79	31
Duration of HTN		
>6 months ≤ 5 years	176	69.0
>5 years	79	31.0
No. of Antihypertensive Used (n=237)		
<2	205	80.4
≥2	32	12.6
Types of Side Effects of Antihypertensive (n=34)		
Pedal edema	27	10.6
Others*	7	2.7
Specific Comorbidities (n=87)		
Type 2 Diabetes	45	17.6
Others†	42	16.5

*Other types of side effects of antihypertensive were headache, eye swelling, tingling sensation, weakness and dizziness.

†Other specific comorbidities were hypothyroidism, dyslipidemia, COPD, asthma, hypertensive heart disease, hyperuricemia, rheumatic heart disease and telangiectasia.

Table 1 shows that the mean age of the respondents was 55.57 years (SD =±13.37). Majority (58.8%) of respondents

belonged to middle age group and 54.5% of respondents were female. Most (85.9%) of the respondents were married. Among those who can read and write (82.7%), highest proportion (35.7%) had received secondary level of education. Regarding the occupation, majority (59.6%) of respondents were engaged in occupation other than agriculture.

The median duration of HTN diagnosis was three years. Majority (69.0%) of respondents had duration of diagnosis of HTN of ≤ 5 years. Most (80.4%) of the respondents were on single antihypertensive medicine. Pedal edema was the most common side effect of antihypertensive medicine which was perceived by 10.6% of respondents. Type 2 diabetes mellitus (17.6%) was the most common comorbid condition.

Table 2. Scores of Subscales of HPL among the Respondents. n=255

<i>Subscales of HPL</i>	No. of Questions	Score Range	Minimum	Maximum	Total Scores
Health Responsibility	9	9-36	13	24	20.07
Physical Activity	8	8-32	8	26	12.33
Nutrition	9	9-36	17	34	22.82
Spiritual Growth	9	9-36	24	36	29.48
Interpersonal Relationship	9	9-36	20	27	25.73
Stress Management	8	8-32	15	26	18.42
<i>Subscales of HRQOL</i>					
General Health	5	0-100	15	70	54.04
Physical Functioning	10	0-100	15	100	70.58
Role Physical	4	0-100	0	100	49.90
Role Emotional	3	0-100	0	100	60.13
Social Functioning	2	0-100	25	100	51.17
Bodily Pain	2	0-100	32.5	100	65.33
Vitality	4	0-100	30	70	59.96
Mental Health	5	0-100	56	84	80.61
Physical Summary	21	-	22.5	77.5	59.96
Mental Summary	14	-	37.25	86	62.96
Total Median Score	Interquartile Range	Q1	Q3	-	-
HPL=130	8	126	134	-	-
HRQOL=64.458	6.437	59.583	66.020	-	-

Table 2 shows that spiritual growth (29.48) was the highest scoring subscale whereas physical activity (12.33) was the lowest scoring subscale of HPL. Mental health was the highest (80.61) scoring subscale while the role physical was the lowest (49.90) scoring subscale of HRQOL. Mental component (62.96) was higher than the physical component (59.96). The median score of HPL of respondents was 130 suggesting the intermediate health promoting lifestyle among the respondents. The median score obtained in HRQOL of respondents was 64.458 suggesting the good health related quality of life among the respondents.

Table 3. Correlation of Age, Duration of HTN, HPL with HRQOL among the Respondents. n=255

Variables	Age	Duration of HTN	HPL	HRQOL
Age	1			
Duration of HTN	.343** (0.000)	1		
HPL	-.514** (0.000)	-0.109 (0.082)	1	
HRQOL	-.568** (0.000)	-.237** (0.000)	.757** (0.000)	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows that increasing age was negatively correlated with HRQOL. Similarly, longer duration of HTN was also negatively correlated with HRQOL ($p < 0.001$) among hypertensive respondents. HPL and HRQOL were highly and positively correlated ($r = 0.757$). Moreover, HPL and HRQOL among respondents was statistically significant ($p < 0.001$).

Table 4. Association of HRQOL with Demographic and Illness Related Variables of the Respondents.

Variables	HRQOL Category		x 2 Test Value	p-value
	Good No. (%)	Poor No. (%)		
Age				
<65yrs	166 (65.1%)	14 (5.5%)	104.569	<0.001*
≥65yrs	23 (9.0%)	52 (20.4%)		
Sex				
Male	85 (33.4%)	31 (12.1%)	0.079	0.779
Female	104 (40.8%)	35 (13.7%)		
Marital Status				
Married	176 (69.0%)	43 (16.9%)	31.364	<0.001*
Unmarried/Divorced/Widow	13 (5.1%)	23 (9.0%)		
Education Status				
Illiterate	11 (4.3%)	33 (13.0%)	66.874	<0.001*
Literate	178 (69.7%)	33 (13.0%)		
Side effects of antihypertensive medicine				
Yes	24 (9.4%)	10 (4.0%)	0.255	0.614
No	165 (64.7%)	56 (21.9%)		
Presence of comorbidities				
Yes	27 (10.2%)	60 (23.5%)	127.773	<0.001*
No	162 (64.0%)	6 (2.3%)		

*p-value is significant at <0.05;

Table 4 shows that there was a statistically significant association between variables such as age, marital status, educational status and presence of comorbidities with HRQOL ($p < 0.001$).

Table 5. Hierarchical Regression Analysis with Demographic, Illness-Related Variables and Subscales of HPL on HRQOL.

Variables	B	Std. Error	t	p
Step 1				
Age	-0.145	0.790	-0.134	0.854
Marital Status	2.960	0.806	3.670	0.000*
Education Level	0.618	0.269	2.295	0.023*
Duration of HTN	-.136	0.060	-2.265	0.024*
Presence of comorbidities	-5.466	0.748	-7.250	0.000*
Adjusted R ²	0.641	-	-	-
R ² Change	0.648	-	-	-
F	91.811	-	-	-
p	0.000*	-	-	-
Step 2				
Health Responsibility	10.588	1.560	6.789	0.000*
Physical Activity	2.652	0.894	2.965	0.003*
Nutrition	3.193	0.982	3.251	0.001*
Spiritual Growth	2.578	0.989	2.607	0.010*
Interpersonal Relationship	10.218	2.579	3.962	0.000*
Stress Management	3.799	1.655	2.296	0.023*

Table 5. Hierarchical Regression Analysis with Demographic, Illness-Related Variables and Subscales of HPL on HRQOL.

Variables	B	Std. Error	t	p
Adjusted R ²	0.749	-	-	-
R ² Change	0.114	-	-	-
F	70.476	-	-	-
P	0.000*	-	-	-

[HRQOL=Health Related Quality of Life, Coding: Age (<65 years=1 and ≥65 years=0); Education Level (illiterate=1, informal education=2, basic=3, secondary education=4 and bachelor/more=5); Marital status (married=1, other than married=0); Presence of comorbidities (yes=1, no=0)] Duration of HTN (in years)

*p-value is significant at <0.05

Table 5 shows that 64.41% of the variation in HRQOL is explained by the set of independent variables. The coefficient of marital status, educational level, duration of HTN, and presence of comorbidities were statistically significant. The coefficient for marital status is 2.960 indicating that the HRQOL score for married respondents is 2.960 points higher compared to unmarried respondents. Similarly, the coefficient for the presence of comorbidities is -5.466 suggesting that HRQOL would decrease by 5.466 points in respondents with comorbidities compared to those without comorbidities.

In the second step, the subscales of HPL were included as independent variables. HRQOL was entered as dependent variable. With the inclusion of six subscales of HPL, the R² increased to 74.9 %. All the subscales of HPL were found to be statistically significant. The coefficient of health responsibility is 10.588 which means that one-unit increase in health responsibility leads to 10.588 increase in HRQOL. Similarly, the coefficients of physical activity, nutrition, spiritual growth, interpersonal relationships and stress management are 2.652, 3.193, 2.578, 10.218 and 3.799 respectively.

DISCUSSION

The present study findings revealed that the median duration of HTN was three years among the respondents. In terms of the duration of HTN, this finding was comparable to a study conducted among adults with HTN in China which showed that the mean duration of HTN was less than five years.¹⁹ Another study done in Thailand showed that the mean duration of HTN was 7.03 years.²⁰

The findings of this study showed that type 2 diabetes mellitus was the most common comorbidity among the respondents whereas another study conducted in

Thailand has showed that the most common comorbidity was hyperlipidemia.²⁰

This study has also demonstrated that majority of respondents were taking only one type of antihypertensive medicine. This finding was somehow similar to the study done in China in which majority of the respondents received one type of antihypertensive drugs.¹⁹

The findings of present study showed that the median score obtained in HPLP-II scale of respondents was 130 which was at the moderate level suggesting the intermediate lifestyle among the respondents. This study finding is consistent with another study done in China among elderly hypertensive people with HPLP score of 125.02 ± 21.⁴ On the contrary, another study done in older adults of China revealed the HPLP score of 105.9±19.6.²¹

This study also revealed that the median score obtained in HRQOL of respondents was 64.45 suggesting the good health related quality of life among the respondents. This study finding is similar to another study conducted in China in which the average QOL score among respondents was 62.28±16.51.²¹ On the contrary, another study done in China had revealed moderate HRQOL of elderly hypertensive people which was 54.36 ± 21.18.⁴

Regarding the subscales of HPLP-II, this study showed that the spiritual growth was the highest ranking subscale with score of 29.48 while the physical activity was the lowest ranking subscale with score of 12.33. The physical activity subscale consists of components like performing 30 to 40 minutes of light to moderate physical exercise, stretching exercise, checking heart rate and setting target heart rate while exercising constituted to lower scores which might be due to the lack of knowledge regarding duration of exercise, type of exercise, target heart rate and procedure of measuring pulse rate. This finding is similar to the study done in Iran among hypertensive patients in which the lowest lifestyle subscale score belonged to physical activity subscale and on the contrary, highest lifestyle subscale score belonged to the nutrition.²²

In the present study, regarding the subscales of HRQOL,

mental health had the highest score of 80.61 while the role physical had the lowest score of 49.90. Mental component (62.96) is higher than the physical component (59.96). These findings are similar to the study findings done in China in which the mental component summary was higher (41.38±10.69) than physical component summary (31.66).²³ On the contrary, another study conducted in Nepal reported the highest physical component score (48.22) than the mental score (38.74).²⁴

Similarly, this study also showed a significant association between HRQOL and variables such as age group, marital status, educational status and presence of comorbidities in Pearson Chi-Square test ($p=0.000$). Moreover, HPL and HRQOL among respondents are positively correlated and statistically significant (Karl Pearson's Correlation Coefficient=0.757, $p<0.01$). Similar findings were revealed in another study from Iran in which statistically significant relationship existed between health-promoting behaviors and quality of life.⁹

This study had also revealed that increasing age, being unmarried/divorced/widowed, receiving lower education, longer duration of HTN and presence of other comorbidities were significantly correlated with lower HRQOL. On comparing to another study done in Iran, supporting findings were noted in which the education level and the duration of HTN were significantly correlated with the QOL of patients.²⁵ Similar finding was revealed in the study done in Bangladesh which had reported that respondents with comorbidity were found to have more likelihood of reporting poor health quality than patients with no comorbidities.²⁶

This study was conducted in a single center. Thus, the study findings might not be generalized to other settings.

CONCLUSIONS

It is concluded that HPL among hypertensive patients attending cardiology OPD of tertiary center is at moderate level while HRQOL is good. It is also concluded that HPL tends to influence the HRQOL among the hypertensive patients. Being married, education level, duration of HTN since diagnosis, presence of comorbidities and six subscales of HPL are the influencing factors of HRQOL among hypertensive patients. This study results might be useful to concerned hospital authorities to introduce lifestyle intervention such as physical activity to improve HRQOL among the hypertensive patient. This study can also be replicated in different setting.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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