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ORIGINAL ARTICLE

Quality of life of patient with hypertension in Kathmandu

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ABSTRACT

Objective: The study aims to describe Quality of Life of Patients with Hypertension and its predictors.
Methods: The study was descriptive cross sectional involving 237 patients with hypertension attending outpatient department of Manmohan Cardiothoracic Vascular and Transplant Centre. Data was collected by interview technique using SF-36 questionnaire. The data was analyzed using SPSS version 16 and p values < 0.05 were considered significant. Independent t-test, ANOVA and multiple linear regression was used for statistical analysis. The quality of life was determined by Physical Component Summary (PCS) and Mental Component Summary (MCS).
Result: In multivariate analysis, increasing age (CI: −4.47 to −1.48, p < 0.001), marital status (CI: −6.18 to −2.53, p < 0.001) and educational status (CI: 1.11–2.04, p < 0.001) were strongly associated with PCS score. Whereas, marital status (CI: −15.173 to −11.782, p < 0.001) and educational status (CI: 0.27–1.07, p = 0.001) were predictor of MCS score.
Conclusion: This study identified increasing age, non formal education, being single to be associated with lower quality of life. Screening for most vulnerable group of the hypertensive patient might be done and evaluated which in turns helps to take necessary intervention for hypertension.

1. Introduction

Globally in the year 2012, of all deaths, 68% deaths were from Non-Communicable Diseases (NCDs) and majority of premature deaths (82%) due to NCD occurred in low and middle income countries. And of all NCD related deaths 46% were from cardiovascular diseases [1]. Cardiovascular disease is leading in terms of lost productive years and disability adjusted life years [2]. Among cardiovascular problems, hypertension displayed a major disease [3]. Joint National Commission-8 (2014) pointed out that hypertension is the number one reason listed for office visits and is the leading cause of death worldwide [4]. Global health report showed the prevalence of hypertension as 22% in the year 2014 [1]. American Society of Hypertension and International Society of Hypertension 2013 reported that about 1/3 rd of adults have hypertension in developed and developing countries [5]. Kearney 2005 stated that of 972 million hypertensive adults, 639 million were estimated to be in economically developing countries [6].

In Nepal and other countries of Asia there is rapid increase in the prevalence of hypertension which accounts 15–35% in urban adult and it is 2–3 times lower in rural population [7]. The prevalence of hypertension varies in Nepal ranging from 18.8% to 41.8% [8–11]. In the study conducted by Nepal Health Research Council, the hospital based prevalence of hypertension was found to be 47% among all heart diseases [12].

Quality of life (QoL) is the subjectively determined personal satisfaction with daily life, as influenced by the individual's evaluation of his/her physical, psychological, social, and spiritual well-being [13]. World Health Organization defines QoL as “an 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” [14].

In different studies conducted to assess the relation between QoL and hypertension, most of the studies reported lower scores in most dimensions as physical capacity, social functioning, mental health, psychological functioning, vitality as compared to general

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population [15,16]. Increasing age [17–19], widowed/separated/single [17,20,21], female sex [19,22], patient with greater symptom [23] had greater impact on QoL with lower scores on physical and mental domain. Wang and colleagues stated that hypertension represent a vulnerable population and impairs QoL in both physical and mental domains [24]. Carvalho and others pointed out that most of the time hypertension is clinically silent disease but still it impairs QoL [22].

2. Methods

2.1. Study design

A descriptive, cross-sectional study design was used to assess QoL in hypertensive patients.

2.2. Sample

Patient attending Out Patient Department (OPD) of Manmohan Cardiothoracic Vascular and Transplant diagnosed with hypertension by the physician and taking anti-hypertensive medicine; age above 18 years and below 80 years were included in the study. Patient who had notable difficulties in understanding Nepali language, pregnant, terminally ill, or having dementia and severe functional impairment were excluded from the study.

Sample size calculated was 237 with power of 80%, confidence interval of 95% and allowable error of 5%. Systematic random sampling was done to collect the data. Looking towards the data of Manmohan Cardiothoracic Vascular and Heart Transplant centre it was found that there used to approximately 2500–3000 cases in outpatient department. As per the source about 50% patients are with hypertension which accounts about 1250 cases. For systematic sampling researcher assumed 1000 hypertensive cases to get enough samples during the study period and kth interval was calculated. Thus, researcher took every 4th case as sample from the OPD name list. For the first sample, simple random sampling was done by lottery method.

2.3. Data collection

Structured interview technique was used for data collection. The first section consisted of socio-demographic and clinical data whereas second section consisted of questions related to assessment of QoL. SF- 36 was used to assess QoL. The scoring of the data with this software was inbuilt. The higher the score, the better is the quality of life. The SF-36 includes 36 questions in eight domains which included physical functioning, physical role limitation, emotional role limitation, social functioning, bodily pain, vitality, mental health and general health [25]. Again the eight domains provide two summary measure of health related quality of life; Physical Component Summary (PCS) and Mental Component Summary (MCS) [26].

For the calculation of the PCS and MCS software provided from Optum Insight named as Quality Metric Health Outcome Scoring Software version 4.5 was used [27].

2.4. Data analysis procedure

Collected data was entered in Quality Metric Software Scoring system version 4.5 for calculation of PCS and MCS. Data entry, cleaning, editing and analysis was done in SPSS version 16.

Demographic and clinical data were analyzed using descriptive statistics. Independent t-test, ANOVA and multiple linear regression was used to identify association and predictor of QoL. Independent t-test was used to identify the association between sex, marital status, educational status, symptom count and number of medicine used and PCS and MCS score whereas ANOVA was used to explore the association between age and duration of illness and PCS and MCS score. Multiple linear regression was used to identify the predictor of QoL. Researcher assumed p-value at <0.05 for statistical significance at 95% confidence interval.

3. Results

3.1. Sample characteristics

The socio-demographic characteristics were described in terms of age, sex, marital status, educational status, whereas duration of hypertension symptoms of hypertension, symptom count, number of medicine used, side effects of medicine were included in the clinical characteristics.

Of all participants, mean age was 55.02 (±13.375) years with more than half being males (54.9%). Majority (60.3%) reported living with partner and 55.3% had formal education. For clinical characteristics, median for duration of hypertension was 2 years. Eighty seven percent had experienced symptoms of hypertension. More than three quarters (86.9%) were managed with single drug and very few (11.0%) experienced side-effects of medicine.

3.2. QoL

The mean PCS score was 48.22 ranging from 26.33 to 62.55 (CI: 47.05–49.375) and MCS score was 38.74 ranging from 17.98 to 62.70 (CI: 37.54–39.94).

3.3. Association of QoL with socio-demographic and clinical characteristics

Table 1 summarizes association between PCS and socio-demographic characteristics. Significant association was observed with age (CI: 52.74–56.50, 48.43–51.25, 40.66–44.68, p = 0.001)

Table 1
Association of socio-demographic variables with PCS mean score.

Variables	Number (n = 237)	Mean score	Standard error	Test statistic value	p-value	95% CI
Age (in years)						
20–39	40	54.63	0.93	35.224[a]	0.000[c]	52.74 –56.50
40–59	117	49.84	0.71			48.43 –51.25
60–79	80	42.67	1.00			40.66 –44.68
Sex						
Male	130	49.85	0.77	3.13[b]	0.002[c]	1.33 –5.87
Female	107	46.2	0.86			
Marital Status						
With partner	143	51.40	0.59	7.46[b]	0.000[c]	5.76 –10.26
Without partner	94	43.99	0.97			
Education						
Non formal	106	42.4	0.83	−10.640[b]	0.000[c]	−12.47 −8.57
Formal	131	52.93	0.53			

[a] f-value (ANOVA).
[b] t-value (*t*-test).
[c] Significant at <0.05, CI = confidence interval.

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Table 2
Association of clinical variables with PCS mean score.

Variables	Number (n = 237)	Mean score	Standard error	Test statistic value	p-value	95% CI
Duration of illness						
<1	28	48.7	1.52	5.70[a]	0.001[c]	45.59–51.82
1–5	139	49.87	0.68			48.51–51.22
6–10	51	44.09	1.45			41.18–47.00
>10	19	46.59	2.22			41.92–51.26
Symptom count						
No symptom	33	50.12	8.59	1.30[b]	0.193	−1.12–5.51
≥1 symptom	204	47.92	9.03			
Medicine count						
1	206	48.57	0.62	1.528[b]	0.128	−0.76–6.04
>1	31	45.93	1.63			

[a] f-value (ANOVA).
[b] t-value (*t*-test).
[c] Significant at <0.05, CI = confidence interval.

Table 3
Association of socio-demographic variables with MCS mean score.

Variables	Number (n = 237)	Mean score	Standard error	Test statistic value	p-value	95% CI
Age						
20–39	40	38.58	1.34	11.67[a]	0.000[c]	38.85–41.31
40–59	117	41.32	0.84			39.65–42.99
60–79	80	35.03	1.00			32.02–17.98
Sex						
Male	130	39.74	0.86	1.82[b]	0.71	−0.19–4.61
Female	107	37.52	0.85			
Marital Status						
With partner	143	44.45	0.55	18.25[b]	0.000[c]	12.89–15.96
Without partner	94	30.04	0.56			
Education						
Formal	106	35.00	0.83	−5.89[b]	0.000[c]	−9.00–4.50
Non formal	131	41.76	0.78			

[a] f-value (ANOA).
[b] t-value (*t*-test).
[c] Significant at <0.05, CI: confidence interval.

and PCS. Also, statistically significant association was seen between sex (CI: 1.33–5.87, p = 0.002), marital status (CI: 5.76–10.26, p < 0.001), education (CI = −12.47 to −8.57, p < 0.001) and PCS. Table 2 portrays the association between PCS and clinical characteristics. Association between duration of illness (CI: 45.59–51.82, 48.51–51.51.22, 41.18–47.00, 41.92–51.26, p = 0.001) and PCS was found to be significant. However, test of association was not significant between PCS and symptom count (CI: −1.12–5.51, p = 0.913) and medicine count (CI: −0.76–6.04, p = 0.128). The results of Table 3 demonstrate the association between MCS and socio-demographic characteristics. Association between age (CI: 38.85–41.31, 39.65–42.99, 32.02–17.98, p = 0.001) and MCS was observed statistically significant. In the association between MCS and marital status (CI: 12.09–15.96, p = 0.001), statistically significant association was seen. Those with formal education had better MCS score than non formal education (CI: −9.00–4.50, p = 0.001), whereas, the association between sex and MCS was not found to be significant. Table 4 demonstrates no significant association between MCS and duration of illness, symptom count and number of medicine used.

Table 4
Association of clinical variables with MCS mean score.

Variables	Number (n = 237)	Mean score	Standard error	Test statistic value	p-value[c]	95% CI
Duration of illness						
<1	28	40.53	1.96	1.82[a]	0.144	36.50–44.55
1–5	139	39.22	0.76			37.72–40.70
6–10	51	36.15	1.35			33.44–38.85
>10	19	39.53	2.27			34.75–44.30
Symptom count						
No symptom	33	39.90	1.90	0.76[b]	0.442	−2.11–4.82
≥1 symptom	204	38.55	0.63			
Medicine count						
1	206	38.79	0.65	0.246[b]	0.246	−3.12–4.01
>1	31	38.35	1.70			

[a] f-value (ANOVA).
[b] t-value (*t*-test).
[c] Significant at <0.05, CI: confidence interval.

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Table 5
Multiple regression for predictor variables in relation to PCS score.

PCS	Co-efficient	Beta	p-value	95% CI
Constant	58.377		0.000	51.95–64.80
Age	−2.976	−0.229	0.000[a]	−4.47–1.48
Sex	−1.536	−0.085	0.095	−3.34–0.26
Marital status	−4.357	−0.238	0.000[a]	−6.18–2.53
Educational status	1.576	0.402	0.000[a]	1.11–2.04
Duration of hypertension	−0.366	−0.031	0.534	−1.53–0.79

[a] Significant at <0.05, CI = confidence interval.

3.4. Multivariate analysis of socio-demographic and clinical variables in relation to QoL

Table 5 shows the result of multivariate analysis of predictor variables in relation of PCS score. Age (CI: −4.47 to −1.48, $p < 0.001$), marital status (CI: −6.18 to −2.53, $p < 0.001$) and educational status (CI: 1.11–2.04, $p < 0.001$) were the predictor of PCS score. Table 6 reveals the result of multivariate analysis of predictor variables in relation of MCS score. Marital status (CI: −15.173 to −11.782, $p < 0.001$) and educational status (CI: 0.27–1.07, $p = 0.001$) were the predictor of MCS score.

4. Discussion

The mean score for PCS was 48.22 and that for MCS was 38.74 in this study. The mental domain was found to be affected more than the physical domain which might be due to diagnosis of disease, long term use of medicine and symptoms of hypertension. In the study of Korhonen and colleagues, when analyzed with SF-36 tool, mean score for PCS and MCS for those who were aware of hypertension was 44.0 and 53.2 respectively [28] where physical domain was found to be affected more than mental domain.

Results from multiple regression analysis revealed, increasing age, not cohabiting with partner, no formal education have lower QoL in physical domain whereas, not cohabiting with partner and no formal education had lower QoL in mental domain.

In the present study, age was identified as the predictor of QoL in physical domain. With increasing age, there are increasing health hazards because of physiological and functional changes. The physical aspects of the older age are compromised as well. Financial problem in the elderly might be one of the problems with elderly and they might not get proper access to treatment, medication. Besides, they might not have company to share their feelings as their upcoming generations are busy with their work and studies. Several studies revealed that increasing age is mostly associated with lower quality of life as they have lower scores in both physical and mental domains. These findings agree with the present study in which lower score was identified in PCS [17–19,29]. Whereas, the analysis was not significant in mental domain in the in multivariate analysis but the association was significant in univariate analysis.

Sex was not the predictor of QoL in both physical and mental domain in multivariate analysis though the score was higher for male in univariate analysis and the reason for higher score in univariate analysis might be that men tolerate more to chronic illness, pain to some extent when compared to women. Also, women are supposed to be physically weak and they get easily fatigued and powerless. This study contradicts with other studies [19,30,31] in terms of physical domain. Likewise, the study of Castro and Coutinho and Erickson and others contradicts this study which showed significant difference in mental domain for women [32,33].

Evidence from this study showed marital status as predictor of QoL in both physical and mental domain. Those residing with partner had better QoL than those who are living alone. This might be affected by the support that they may receive from their spouse and they lack someone with whom they want to talk and ask for help. Psychosocial health problems and feelings of loneliness are more common among those who live alone, due to lack of emotional support within the family and society. The finding is consistent with number of studies which revealed that the married patients who were cohabiting with their partner had higher scores compared to those who were not residing with their partner [17,18,21,22,30].

This study revealed education as the predictor of QoL in both PCS and MCS. The individual with higher education might influence their ability to understand the information regarding disease condition, diet modification, life-style modification that must be adopted. Also they might be well known about the complication that may arise because of non adherence. Lower education might impair access to health education, adoption of healthy behavior, social mobilization for the improvement of living condition and also adherence to treatment of chronic condition. This may be the cause that patient with higher education to have better score in both PCS and MCS. Likewise, many studies revealed consistent finding with the present study [17–19,30].

In this study, duration of hypertension was not the predictor of QoL in both physical and mental domain in multivariate analysis. In univariate analysis, significant difference was found with physical domain. Though MCS was not statistically significant the score were lower after one year of diagnosis of hypertension. The reason may be that the patient might become more compromised and more vulnerable to complication as duration of illness increases. Also, they might feel burden with the chronicity of illness and long term use of medicine. Several studies [22,30,31,33,34] showed significant finding with duration of illness.

The present study did not show significant association of PCS and MCS with symptom count. The unequal distribution of the sample with no symptom (n = 33) and >1 symptom (n = 204) might be the cause for the result. But the mean score was slightly higher for those without symptom. The result was not consistent with several studies which displayed significant difference in patient reporting greater symptom in both PCS and MCS [31,33,35].

No significant difference was observed with the number of hypertensive medicine used in both physical and mental domain. The result might be due to the variation in the number of anti-hypertensive medicine that the patient is taking. Majority of the patient (86.9%) were only on single drug treatment. Eighty nine percent did not report adverse effect of the medicines prescribed and that might be the reason the scores of PCS and MCS was not significant with number of medicines used. The finding resemble with study of Carvalho et al. and Krinjnen et al. which showed that number of anti-hypertensive drugs was not statistically significant with QoL [22,36]. The result contradicts with the studies which showed that patients taking more than one drug had significant lower scores [18,30,31].

This study is a cross sectional study which enables to explore some associations and predictors of QoL of hypertensive patients but do not allow causality which is one of the limitation of this

Table 6
Multiple regression for predictor variables in relation to MCS score.

MCS	Co-efficient	Beta	p-value	95% CI
Constant	54.078		0.000	49.56–58.60
Age	0.537	0.040	0.409	−0.74–1.82
Marital status	−13.477	−0.704	0.000[a]	−15.17–11.78
Educational status	0.671	0.164	0.001[a]	0.27–1.07

[a] Significant at <0.05, CI = confidence interval.

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study. The predictor like economic status, type of antihypertensive medicine used was not included in the study which might be one of the important predictor of QoL. Besides that, the study has provided better information about the influence of factors that might impair QoL and can be used by future researcher in Nepal where no such study has been carried out.

5. Conclusion

From the result of this study it is revealed that QoL was poor with increasing age, non-formal education, not cohabiting with partner in physical domain. Whereas, QoL was significantly lower with not residing with partner and non-formal education in terms of mental domain. The result suggests counseling and detail information regarding treatment and sign and symptom for the hypertensive patients. Screening for the effect of different variables like increasing age, female sex, not living with spouse, non-formal education in hypertensive patient should be evaluated. Moreover, the stakeholders should be more concerned about policy regarding cardio-vascular diseases like hypertension because of its increasing morbidity and disability adjusted life years.

Author contributions

Bhandari has worked with the conception and design of work, literature review, data collection, analysis and interpretation, drafting and finalization of the article. Bhusal has carried out the literature review, data collection and had given critical input in drafting the manuscript. KC and Lawot supported with critical suggestion, analysis and finalization of the manuscript.

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No any disclosure present

Data sharing statement

No more data are available.

Competing interests

None

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