

Treatment Adherence and Health-Related Quality of Life Among Patients with Hypertension at Tertiary Healthcare Facility in Lalitpur, Nepal: A Cross-Sectional Study

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Background: Measurement of medication adherence and health-related quality of life is extremely important when planning different health policies. Drug therapy and adherence to medication are critical to prevent complications of hypertension, especially in countries like Nepal, where hypertension is one of the most prevalent diseases. However, this has not been studied in Nepal. This study, hence, aimed to explore medication adherence, factors affecting medication adherence, health-related quality of life, and the correlation between medication adherence and health-related quality of life in hypertensive patients visiting tertiary care health facilities in Lalitpur district of Nepal.

Methodology: This quantitative cross-sectional study was conducted among 380 hypertensive patients at KIST Medical College and Teaching Hospital, Lalitpur, Nepal. The Nepali version of the European Quality of Life tool EQ-5D-5L and the Hill-Bone Compliance to High Blood Pressure Therapy Scale (HBCTS) were used. Intergroup differences in medication adherence, the EQ-5D index and EQ-VAS scores were assessed for statistical significance using either the Mann–Whitney or Kruskal–Wallis tests for numerical data. Spearman correlation coefficient was used to identify the relationship among medication adherence, EQ-5D-5L index values, and EQ-VAS scores.

Results: The mean treatment score was 22.43 ± 4.12 . Age, sex, and occupation were significant factors that affected treatment adherence. The EQ-5D score was 0.72 with age, sex, income, and educational status as significant factors and marital status as an insignificant factor. A slightly negative correlation was found between the total treatment adherence score and the EQ-5D index.

Conclusion: The treatment adherence of patients to antihypertensive therapy was suboptimal, which could affect the outcome of therapy. Better treatment adherence was correlated with a better health-related quality of life. Hence, both health-care providers and patients should make efforts to increase treatment adherence to attain better HRQOL.

Keywords: hypertension, treatment adherence, visual analogue scale, HRQOL

Introduction

Hypertension, which is the leading cause of premature death worldwide,^{1,2} is one of the main risk factors for cardiovascular disease. It is defined as systolic blood pressure (SBP) greater than 140 and/or diastolic blood pressure (DBP) greater than 90 mmHg³ and is related to increased and elevated BMI.^{1–3} An increase in systolic blood pressure by 20 mm Hg and diastolic blood pressure by 10 mm Hg doubled the risk of death.⁴ The 2022 Nepal Demographic Health Survey showed the prevalence of hypertension to be 18% among women and 23% among men aged 15 and older. Among individuals age 60 and older, 46% of women and 42% of men have high blood pressure or hypertension.⁵ The 2019 STEPS (STEP-wise approach to NCD risk factor surveillance) survey 2019 showed an overall prevalence of 25%.⁶ The high prevalence of hypertension and poor control of hypertension remain significant health issues in developing countries.^{7–9}

Major developments have been made in drug discovery for hypertension management. However, various studies conducted around the world have shown that approximately 50% of the patients receiving treatment fail to have

controlled blood pressure despite undergoing pharmacotherapy.^{10,11} One reason for the low efficacy of antihypertensive therapy could be attributed to “low medication adherence”.¹² Adherence to treatment is the extent to which a person’s behavior reflects significant changes in lifestyle and is directly associated with compliance with healthy lifestyle habits according to the recommendations made by the health-care provider.^{13–15} Adherence rates are particularly higher among patients with acute illnesses than among those with chronic illnesses.^{16–18} Non-compliance is particularly observed in patients with chronic disorders, particularly in asymptomatic conditions, such as hypertension.¹⁹ Poor disease outcomes, waste of health-care resources, and reduced blood pressure control result from poor medication adherence.²⁰ The World Health Organization (WHO) explains poor medication adherence is the most important cause of uncontrolled hypertension and estimate that 50–70% of patients do not take their prescribed antihypertensive medications.²¹ Moreover, various studies have concluded that medication adherence behavior in hypertensive patients is not unsatisfactory^{22,23} and varies greatly in different countries, such as 30.2% in Europe,²² 34.9% in China,²⁴ 38.6% in India, 24.9% in Ethiopia,²⁵ 27.9% in Saudi Arabia, 85% in Lebanon,²⁶ and 43.5–72% in Nepal.^{27–29}

Therefore, medication adherence must be evaluated to effectively control hypertension. This can be achieved using various techniques. Measuring the plasma levels of a drug is one of the most effective techniques.^{30,31} Physician estimates and patient self-reports can be used for practical assessment. Self-report measures of drug adherence have been developed and applied in various therapeutic contexts.³² Kim et al established the Hill Bone Compliance to High Blood Pressure Therapy Scale (HBCTS), a commonly used measure in patients with hypertension.³³

Health-Related Quality Of Life (HRQOL) is a crucial metric for assessing the effectiveness of antihypertensive medication.³⁴ A person’s quality of life is determined by evaluating all facets of their existence, such as their level of living, employment, nation, housing, friendships, family life, health, education, and community.³⁵ Among the things, one thing that influences our quality of life is our health. “A state of optimum physical, mental, and social well-being, and not merely the absence of disease or infirmity” is how the World Health Organization (WHO) defined health in its constitution.³⁶

Medication adherence can be considered the transitional outcome variable, whereas HRQOL (Health-related quality of life) represents the ultimate outcome, which helps in the complete assessment of the effectiveness of any disease management plan.³⁷ Thus, changes in HRQOL are likely to be preceded by changes in medication adherence. Generally, HRQOL increases with an increase in medication adherence. However, various other factors may also come into play and therefore cannot be ignored. Various studies have shown that medication adherence is poor along with a lower quality of life in chronically ill patients.^{38,39}

Hypertension is a chronic illness requiring lifelong management. Thus, the assessment of medication adherence and quality of life can help in the complete evaluation of the success of antihypertensive therapy.⁴⁰ A recent systematic review of 20 studies indicated that normotensive individuals had a higher QOL than hypertensive patients.⁴¹ Given the increasing prevalence of hypertension, studying HRQOL in patients with hypertension has become a necessity as a measure to determine the quality of care and to guide medical and personal health-care practices.^{28,29,42,43}

Therefore, it is necessary to study the causes of the low HRQOL and adherence to therapeutic recommendations.⁴⁴ This can help increase the effectiveness of antihypertensive therapy, which can ultimately reduce mortality and morbidity. Various studies have found that an appropriate HRQOL can result in satisfactory efficacy of antihypertensive therapy.^{45,46}

Although few studies have explored the association between medication adherence and HRQOL among hypertensive patients in an international setting, there are not any from Nepal.⁴⁶ However, there are few studies either assessing the medication adherence⁴⁷ or HRQOL among hypertensive patients.⁴⁸ Thus, this study aimed to explore treatment adherence, factors affecting treatment adherence, health-related quality of life, and the correlation between treatment adherence and health-related quality of life in hypertensive patients attending a tertiary care hospital in the Lalitpur district of Nepal.

Materials and Methods

Study Design and Population

This was a quantitative, descriptive, cross-sectional study, and data were collected between February 2023 and July 2023 using a self-administered questionnaire. Participants were selected using purposive sampling from the Department of

Medicine, KIST Medical College, and Teaching Hospital. It provides basic and advanced health facilities for people around Lalitpur District and nearby areas.

The study included patients who were Hypertensive and received anti-hypertensive treatment for at least six months, were above the age of 18 years, visited the outpatient department (OPD) of the hospital.

Study Tools and Data Collection

The study tools used were the Hill-Bone Compliance to High Blood Pressure Therapy Scale (HBCTS),^{27,33} Nepali version of the European Quality of Life tool EQ-5D-5L⁴⁹ and Visual analog scale (VAS).⁵⁰

The translated EQ-5D-5L questionnaire, self-completed on paper and obtained upon request from the EuroQuol Group, was used to evaluate health-related quality of life. The EQ visual analog scale (EQVAS) and EQ-5D-5L description system comprise EQ-5D-5L. Using the EQ-5D-5L, participants could categorize their level of health into five response levels (no problems, slight problems, moderate problems, severe problems, and extreme problems) and five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). Five levels of health state were evaluated as 1, 2, 3, 4, and 5 for each of the five dimensions to analyze the EQ index. Each EQ-5D-5L health status was combined into a single summary index, known as utility. The index value is a number between -1 and 1 (0 = death, <0 = worse than death, and 1 = full health). The other component of the EQ-5D is the visual analog scale (VAS), which consists of a 20-cm health thermometer with two unique endpoints: a score of 100 for the best possible health state and a score of 0 for the poorest possible health state. As determined by each respondent, these data can be utilized as quantitative indicators of health outcomes.^{51,52}

The 14-item HBCTS, which was created by Kim et al in 2000, is categorized into three subscales: taking medication (9 items), consuming less salt (3 items), and keeping appointments (2 items). Each tool item was rated on a four-point Likert scale: 1 = never, 2 = sometimes, 3 = most of the time, and 4 = always. The lowest possible score was 14, and the highest possible score was 56. Perfect adherence was represented by a score of 14, whereas non-perfect adherence was represented by a score >14. The reverse score was required for item 6, which asked, "How often do you make the next appointment before you leave the doctor's office?"³³

The responses from 380 participants were included in this study. The minimum sample size required was calculated using the following formula: $n = (z^2pq/d^2)$. Although 378 was the required sample size, 380 was used.

Ethical approval for the study was obtained from the Institutional Review Committee (IRC) of the KIST Medical College and Teaching Hospital, Lalitpur, Nepal. The approval number is Ref No: 2079/80/76. The study complies with the Declaration of Helsinki and all participants provided informed consent.

Statistical Analysis

Analytical statistics version 21 of the Statistical Package for Social Sciences (SPSS; SPSS Inc., Chicago, IL, USA) was used to analyze the data. Categorical data were expressed as percentages, whereas continuous data were presented as mean \pm standard deviation (SD). The Kolmogorov–Smirnov test was used to check for the variable normality. The data in this study did not follow normal distribution. When evaluating the statistical significance of intergroup variations in medication adherence, EQ-5D index, the Mann–Whitney or Kruskal–Wallis tests were used, depending on the type of numerical data. The association between the reported medication adherence scores and EQ-5D-5L index values was determined using the Spearman correlation coefficient. The significance level was set at $p < 0.05$.

Results

Sociodemographic Information

Out of 380 respondents, 246 (64.7%) were male and 137 (35.3%) were female. Most patients with hypertension were within the age group of 36–50 years (mean = 54 years). Most of the patients (84.7%) were married, 17.4% illiterate, and 65% employed. The majority of the patients as mentioned in Table 1, had a monthly family income in the range of 50000–120000 (Nepalese currency).

Table 1 Sociodemographic Information (N = 380)

Characteristics	Frequency	Percentage
Age		
18–35	37	9.7
36–50	175	46.1
51–70	128	33.7
71 and above	40	10.5
Gender		
Male	246	64.7
Female	134	35.3
Marital Status		
Married	322	84.7
Unmarried	58	15.3
Education		
Illiterate	66	17.4
Literate	105	27.6
School level	135	35.5
University level	74	19.5
Occupation		
Housewife	54	14.2
Daily wage	7	1.8
Unemployed	72	18.9
Employed	247	65.0
Monthly family income (Nepalese Rupees)		
<50,000	131	34.5
50,000–120,000	189	49.7
>120,000	60	15.8

Treatment Adherence of Study Participants

The overall treatment adherence score is 22.43 ± 4.12 with 4.79 ± 1.51 (salt taking), 4.64 ± 1.78 (appointment keeping) and 13.01 ± 5.50 (medicine taking). The treatment adherence response [Table 2](#) shows that the highest number of respondents (79.7%) always took their own HBP (high blood pressure) pill. About 48.2% of the study population never forgot to take their medication. The majority of the study population (65.3%) never decided not to take their HBP medication. Salty foods were avoided by the majority of patients (59.7%), while 70.5% of the population never add salt to their food. Only 25% of the study population always made their next appointment, while 32.6% of the study population never miss scheduled appointments. The majority of the population filled their prescriptions timely (61.1%), and all the respondents took their medication even during the period of feeling sick.

Table 2 Treatment Adherence Response Table

SN	Frequency	None of Time n (%)	Some of Time n (%)	Most of Time n(%)	All of Time n(%)
	Reduced salt intake 4.79±1.51(M±SD)				
3	How often do you eat salty food?	227 (59.7)	133 (35)	20 (5.3)	0 (0)
4	How often do you add salt to your food before you eat it?	268 (70.5)	98 (25.8)	11 (2.9)	3 (0.8)
5	How often do you eat fast food?	69 (18.2)	252 (66.3)	54 (14.2)	5 (1.3)
	Appointment keeping 4.64±1.78(M±SD)				
6	How often do you make the next appointment before you leave the doctor's office?	29 (7.6)	92 (24.2)	164 (43.2)	95 (25)
7	How often do you miss scheduled appointments?	124 (32.6)	21 (57.45)	36 (9.5)	2 (0.5)
	Medicine Taking 13.01 ±5.50(M±SD)				
1	How often do you forget to take your HBP medicine?	183 (48.2)	188 (49.5)	9 (2.4)	0. (0)
2	How often do you decide NOT to take your HBP medicine?	248 (65.)	109 (28.7)	15 (3.9)	8 (2.1)
8	How often do you forget to get prescriptions filled?	232 (61.1)	133 (35)	12 (3.2)	3 (0.8)
9	How often do you run out of HBP pills?	198 (52.1)	158 (41.6)	20 (5.3)	4 (1.1)
10	How often do you skip your HBP medicine before you go to the doctor?	238 (62.6)	81 (21.3)	35 (9.2)	26 (6.8)
11	How often do you miss taking your HBP pills when you feel better?	279 (73.4)	90 (23.7)	10 (2.6)	1 (0.3)
12	How often do you miss taking your HBP pills when you feel sick?	241 (63.4)	132 (34.7)	7 (1.8)	0 (0)
13	How often do you take someone else's HBP pills?	30 (79.7)	65 (17.1)	11 (2.9)	1 (0.3)
14	How often do you miss taking your HBP pills when you are careless?	192 (50.5)	173 (45.5)	15 (3.9)	0 (0)
	Mean medication adherence score 22.43 ± 4.12(M±SD)				

Perfect and Non-Perfect Adherence

The findings presented in [Table 3](#) demonstrated that only 17.9%, 11.1%, and 3.2% of the study participants exhibited complete adherence to taking their medications, eating salt, and keeping their appointments, respectively. Perfect overall medication adherence was not observed in this study population.

Table 3 Perfect and Non-Perfect Adherence (N = 380)

Subscales	Level of Adherence	Frequency	Percentage
Adherence to medication taking (9 items)	Perfect score=9	68	17.9
	Non-perfect score >9	312	82.1
Adherence to salt taking (3 items)	Perfect score=3	42	11.1
	Non-perfect score >3	338	88.9
Adherence to appointment taking (2 items)	Perfect score=2	15	3.9
	Non-perfect score >2	365	96.1
Overall adherence (14 items)	Perfect score=14	00	00
	Non-perfect score >14	380	100

Sociodemographic Factors and Treatment Adherence

Table 4 shows that the relationship between the overall adherence and the age, sex and the job held by the patients is significant with p value 0.027, 0.001 and 0.001, respectively. However, the relationship between overall adherence and education, marital status and the monthly income is insignificant with p value 0.143, 0.093 and 0.083, respectively.

Health Related Quality of Life of Study Participants

Most patients reported “no problems” in the five dimensions of the EQ-5D-5L. The results demonstrated in Table 5 shows that most of the population had no problems with mobility, self-care, pain, exercise, or anxiety/depression. Approximately 37.10% (n = 141) patients had full health (11111) score, whereas none of the participants had the worst health status (55555).

Table 4 Factors Affecting Medication Adherence (N = 380)

Variable	Median Overall Adherence (Interquartile Range)	p-value
Age		
18–35	23.00 (4.50)	0.027*
36–50	21.00 (6.00)	
51–70	22.00 (4.00)	
71 and above	22.50 (5.00)	
Sex		
Male	22.00 (5.00)	0.001*
Female	21.00 (6.00)	
Marital Status		
Married	22.00 (6.00)	0.093**
Unmarried	21.00 (3.00)	
Educational status		
Illiterate	23.00 (5.00)	0.143*
Has not completed School Level	23.00 (5.00)	
Completed School level	22.00 (5.00)	
Completed Bachelor or Above	21.00 (7.00)	
Occupation		
Housewife	20.00 (2.50)	0.001*
Daily wage	22.00 (2.00)	
Unemployed	24.00 (5.75)	
Employed	22.00 (5.00)	
Monthly family income		
< 50,000	22.00 (6.00)	0.083*
50,000–120,000	21.00 (5.00)	
> 120,000	22.00 (4.00)	

Notes: *Kruskal–Wallis Test. **Mann–Whitney Test. Data are represented as median (interquartile range). Significance at $p < 0.05$.

Table 5 Health-Related Quality of Life (N = 380)

SN.	Dimension of EQ-5D	Level	Level Description	Frequency	Percentage
1	Mobility	1	No Problem	235	61.8
		2	Slight Problem	76	20
		3	Moderate Problem	45	11.8
		4	Severe Problem	14	3.7
		5	Unable to do/Extreme Problem	10	2.6
2	Self-care	1	No Problem	254	66.8
		2	Slight Problem	75	19.7
		3	Moderate Problem	38	10
		4	Severe Problem	6	1.6
		5	Unable to do / Extreme Problem	7	1.8
3	Daily Activities	1	No Problem	227	59.7
		2	Slight Problem	85	22.4
		3	Moderate Problem	54	14.2
		4	Severe Problem	7	1.8
		5	Unable to do / Extreme Problem	7	1.8
4	Pain /Discomfort	1	No Problem	198	52.1
		2	Slight Problem	97	25.5
		3	Moderate Problem	52	13.7
		4	Severe Problem	33	8.7
		5	Unable to do / Extreme Problem	0	0
5	Anxiety/ Depression	1	No Problem	194	51.1
		2	Slight Problem	98	25.8
		3	Moderate Problem	48	12.6
		4	Severe Problem	13	3.4
		5	Unable to do / Extreme Problem	27	7.1

EQ-5D Index

The mean health-related quality of life index as mentioned in Table 6 was 0.72 ± 0.3124 , reflects participants good health-related quality of life. About 144 (37.89%) patients were found to be having EQ-5D index below 0.72 ± 0.3124 .

Table 6 EQ-5D Index Statistics

Minimum	-0.14
Maximum	1.00
Mean	0.72
Standard deviation	0.312

Factors Affecting Health Related Quality of Life

Table 7 showing the factors affecting quality of life shows that the relationship between health-related quality of life and sociodemographic factors such as age, sex, income, and educational status was significant, whereas marital status was found to be insignificant with regard to quality of life.

Table 7 Factors Affecting Health-Related Quality of Life (N = 380)

Variable	Median EQ-5D Index (interquartile range)	p-value
Age		
0.001*		
18–35	1 (0.44)	0.001*
36–50	0.87 (0.43)	
51–70	0.78 (0.39)	
71 and above	0.54 (0.61)	
Sex		
Male	0.79 (0.44)	0.001**
Female	0.77 (0.32)	
Marital Status		
Married	0.79 (0.44)	0.093**
Unmarried	0.78 (0.32)	
Educational status		
Illiterate	0.55 (0.59)	0.001*
Has not completed School Level	0.79 (0.32)	
Completed School level	0.87 (0.40)	
Completed Bachelor or Above	0.87 (0.29)	
Occupation		
Housewife	0.05 (0.30)	0.001*
Daily wage	1 (0.12)	
Unemployed	0.55 (0.57)	
Employed	0.87 (0.32)	
Monthly family income		
< 50,000	0.63 (0.30)	0.001*
10,000–120,000	0.87 (0.19)	
>120,000	1 (0.19)	

Notes: *Kruskal–Wallis Test. **Mann–Whitney Test. Data are represented as median (interquartile range). Significance at $p < 0.05$.

Correlation Between the EQ-5D Index Score and Overall Adherence Score

Table 8 shows a negative correlation between the EQ-5D-5L index score and overall adherence score (-0.310) which indicates that with increase in overall adherence score the EQ-5D index value decreases. Thus, the higher the treatment adherence to anti-hypertensive therapy the higher is the HRQOL.

Discussion

Medication adherence is essential to control the blood pressure in patients with hypertension.⁵³ However, patients' poor adherence has been often recognized as the barrier for the success of the therapy of hypertension which can lead to failure of the therapy.²⁰ Considering that many studies have determined the level of adherence, researchers are of the opinion that variables such as study methods, population under study, definition of adherence, and the scale used in hypertension could differ from the study results.

In this hospital-based study assessing adherence to AHM (Antihypertensive Medication), it was found that 42.62% of low adherence to AHM among hypertensive patients. This shows that further interventions can help improve the adherence of patients visiting hospitals. This finding is in consistent with a study conducted in the eastern region of Nepal, which showed that only about two-fifth (43.5%) of the participants were non-adherent to AHM.²⁸ Consistent with the results of the present study, Bhavana et al and Pokharel et al had similar prevalence of low medication adherence of 48.1% and 49%, respectively.^{54,55} However, this finding is not similar to that of Roka et al where 72% of the participants were non-adherent to AHM.²⁹ Our findings show better adherence than the finding with pooled percentage of 63% found in a systematic review and meta-analysis of studies in low-and-middle-income countries.⁵⁶ Similar to findings of this study, a systematic review and meta-analysis that included studies from 15 countries showed non-adherence to AHM among 45% of the participants in the study.⁵⁷ Studies on medication adherence in different parts of world have varying results; good adherence of 15% in Greece, 55.9% in Jordan and Lebanon, 75.1% in northwest Ethiopia, 50% in northern Ethiopia, 36.8% in Nigeria, and 40.2% in Zimbabwe.^{25,58-60} The reasons for the variation could be due to differences in sociodemographic factors, scales used to measure treatment adherence, settings of the study, and population subsets. Various reasons for low adherence in the Nepalese population studied in this study could be carelessness, educational qualifications, irregular follow-ups, lack of understanding of medication information, inadequate counselling from pharmacists and doctors, a high number of comorbidities, and polypharmacy.

In this study, correlations between various sociodemographic factors, treatment adherence, and health-related quality of life were calculated. Hypertension was most prevalent among males (64.7%) and married people (84.7%). This is in agreement with the study carried out by Hasan et.al.⁶¹ This study is also in consistent with the study conducted by Kumar et al in which found that more than 56.25% of male were hypertensive patient.⁶² We found lifestyle change not adopted by the majority of population, regular exercise done by only one hundred and seventy patients, reduction in salt intake by only 37.6% and calorie intake reduction by only 46.8% of the population. This suggests that the majority of the study population depends greatly on pharmacological treatments to control hypertension. Various studies have shown that the integration of nonpharmacological and pharmacological treatments can lead to better control of hypertension.⁶³ Thus,

Table 8 Correlation Between Overall Adherence and EQ-5D Index

			Overall Adherence	EQ-5D-5L Index
Spearman's rho	Overall Adherence	Correlation Coefficient	1.000	-0.310^{**}
		Sig. (2-tailed)	0.000	0.000
		N	380	380
	EQ-5D Index	Correlation Coefficient	-0.310^{**}	1.000
		Sig. (2-tailed)	0.000	
		N	380	380

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

there is a need to counsel patients to adopt non-pharmacological treatments, including exercise and reductions in salt and calorie intake, from the beginning of the treatment course. This study showed that the most prevalent comorbidities in hypertensive patients were diabetes, heart disease, and vision problems, which is consistent with findings from Bangladesh.⁶⁴ This may be because hypertensive patients mostly suffer from insulin resistance, which increases the risk of developing diabetes compared with normotensive individuals.⁶⁵

The study carried out by Shakya et al found that 14.7% had perfect adherence and 49.5%, 37.7% and 56.9% had perfect adherence in medication, salt restriction and appointment keeping respectively.⁴⁷ However, the perfect overall adherence was found to be nil in our study. The proportions of perfect adherence to medication, salt restriction, and appointment keeping were 17.9%, 11.1%, and 3.9%. This shows that there is a need for more intervention in the study setting through counselling, which increases the chance of achieving perfect overall adherence among the population. The highest number of non-perfect adherence in terms of appointment-taking may be due to carelessness, lack of counselling by health professionals, and even high consultation fees. The mean adherence score is 22.43 ± 4.12 , whereas similar finding was found in the study conducted by Bhusal et al with mean adherence score of 25.53 ± 3.12 which indicates that adherence in the context of Nepalese Patients is slightly better.⁴⁰

Marital status was not found to be significant in determining overall adherence. This may be due to the reasons that the adherence behavior may be affected by other factors like family support, education, age, understanding of medication information and the individual seriousness towards the health. Educational level was also found to have an insignificant effect on treatment adherence. This may be due to the reasons like illiteracy more often seen in geriatric patients who are being taken care of by their educated family members. Monthly family income was also non-significant, because the cost of healthcare does not define an individual's perception of compliance.

Ghimire et al found that forty-five percent of participants had a perfect health state, whereas none of them had the worst health state.⁴⁸ In our study, we found that about 37.10% ($n = 141$) patients had perfect health state, whereas none of the participants had the worst health status. One reason for this outcome could be the study population: OPD patients who are ambulatory and not yet in need of extreme care. The mean health-related quality of life index was 0.72 ± 0.3124 , which indicates that the participants were in a state of good quality of life. Similarly, the mean EQ-VAS score was 78.69 ± 12.661 , which suggests that the majority of the study population perceived their health to be good. However, the EQ-5D index value was calculated using the UK's general population weight as the reference value. Since the EQ-5D was originally developed in the UK, decisions to use UK weights were made. The socioeconomic factors in the UK and Nepal are significantly different, which can cause some discrepancies in the results representing the Nepalese population.

This study identified age, sex, income, and educational status as significant factors in determining health-related quality of life, whereas marital status was found to be insignificant with regard to quality of life. With the increase in the age, it has been found that the mean EQ-5D scores becomes lower, showing problems in five sub domains of EQ-5D scale, such that 75% of geriatric population has lower score. Aging is associated with physical, mental and psychosocial changes. It is accompanied by several diseases, loss of musculoskeletal strength, vision, hearing, compromised immune systems, and declining mental health.⁶⁶ Our study found that the illiterate population had a higher percentage of patients with lower quality of life score. Education enables individuals with better critical thinking skills and decision-making abilities to adopt healthy lifestyle behaviors and preventive measures, thus facilitating a better quality of life. Family income is also a determining factor in HRQOL studies as it⁶⁷ allows access to health-care needs, education, better diet, and recreational activities, allowing for better physical and mental health. Low family income causes insecurity and limited access to healthcare, education, and lifestyle. Having a proper education and income ensures the achievement of social status, self-satisfaction, and more social support, thus contributing to better health. In contrast with the results of a previous study, Ghimire et al, we found that sex was a significant factor in determining the health-related quality of life.⁴⁸ It is assumed that the females have a lower quality of life because of a patriarchal society and limited access to facilities in social and legal matters.⁴⁸ A study conducted by Eshaghi et al found out that female had better quality of life than male which is in contrast with our study.⁶⁸ Bhandari et al found that marital status was significant factor to determine the quality of life. However, our study found that marital status was not a determining factor of QoL.⁴³ The possible reasons may be the urban settings of the study, comparatively smaller number of responsibilities contributing to

less stress, culture of living with parents irrespective of marital status allowing for emotional support, and increasing trend of marrying after financial independence.

With the increase in the total adherence score, adherence to HTN medication was perceived to be worse, with 14 being the best score and 56 being the worst score for measuring medication adherence. In our study, a negative correlation was found between the total medication adherence score and EQ-5D index. This suggests that, with a decrease in the total medication adherence score, the EQ-5D index increases, and vice versa. This shows that an increase in medication adherence causes an increase in the health-related quality of life. This finding is in agreement with those of the study by Amer et al, who found a positive correlation between medication adherence and the study conducted by Maciel et al, who found a slight negative correlation between Morisky scale scores and Brazil Minichal scores, indicating that lower medication adherence is associated with a lower quality of life.⁶⁹ The finding is also similar with study carried out by Nitish et al, who found out inverse correlation between treatment adherence and quality of life which indicates greater adherence implies higher quality of life.⁷⁰ However, this finding is in contrast to that of Saleem et al, who found a negative correlation between medication adherence and QoL.⁷¹ However, our study suggests that better adherence leads to a better health-related quality of life. The weak correlation score indicates that the health-related quality of life of patients with hypertension also depends on other factors, suggesting the need for further research.

Conclusion

This study explored the status of treatment adherence towards antihypertensive medication among the Nepalese patients, along with its correlation with health-related quality of life. The study population had a mean adherence score of 22.43 ± 4.12 , which falls within the suboptimal range. Therefore, efforts should be made to establish a system for the proper counselling of patients and affordable healthcare.

Better adherence was associated with better health-related quality of life. A slight negative correlation was found between the medication adherence score and EQ-5D index and treatment adherence score. This suggests that other factors affecting the health-related quality of life should be explored. This study highlights that medication adherence in hypertensive patients is still suboptimal in the Nepalese population, and it is important to identify the factors affecting medication adherence and quality of life, as well as the importance of interventions to increase the quality of life and medication adherence. Therefore, attempts to improve health-related education and policies to provide better financial stability along with age-specific hypertension treatment should be considered to ensure the overall success of hypertension therapy.

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Disclosure

The authors report no conflicts of interest in this work.

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