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Treatment Adherence among Hypertensive Patients Attending in a Tertiary Care Hospital of Bharatpur, Chitwan

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ABSTRACT

Background

Hypertension is a major global health problem and a key risk factor for cardiovascular diseases, with poor control in low- and middle-income countries. Poor medication adherence leads to uncontrolled blood pressure and complications. This study aimed to assess status of treatment adherence among hypertensive patients in a tertiary care hospital.

Methods

An analytical cross sectional study was conducted among hypertensive patients attending the Cardiac Outpatient Department (OPD). A total of 131 patients were selected using a non-probability convenience sampling technique. Data were collected from December 25, 2025, to February 25, 2026, using a structured interview schedule. The Hill-Bone Medication Adherence Scale was used to assess treatment adherence. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 16 with descriptive and inferential statistics.

Results

Most respondents (60.3%) were older adults and 55.0% were female. A majority (42.0%) had informal education, and 55.1% had hypertension for over five years. More than half (61.1%) reported medication costs as unaffordable, and only 37.4% had participated in awareness programs. Only 48.9% were adherent to treatment in which presence of diabetes ($p = 0.044$) and number of prescribed medications per day ($p = 0.024$) showed significant association with treatment adherence.

Conclusions

More than half of hypertensive patients had imperfect adherence. Strengthening awareness programs and adherence counselling regarding hypertensive medication during each visit may improve adherence and overall disease management.

Keywords: Treatment adherence; Patient; Hypertension.

Correspondence: Ms. Sara Thapa, Department of Adult Health Nursing, Chitwan Medical College-Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: sarathapamagar@gmail.com, Phone no. 9845478850 **Article received:** 2026-02-26. **Article accepted:** 2026-04-2. **Article published:** 2026-06-30.

INTRODUCTION

Hypertension is a major risk factor for cardiovascular disease and is associated with high morbidity and mortality.¹ It is becoming more common and was estimated to rise by approximately 30% until 2025² contributing to the global cardiovascular burden. Therefore, it is important to reduce blood pressure to the normal range to prevent complications and decrease the burden of cardiovascular disease in the future.³ In Nepal, hypertension is a serious issue among males and middle aged people (40 years and above) and prehypertension is almost 40% in rural population.⁴ It is important to take antihypertensive drugs as prescribed to control hypertension and prevent complications.^{1, 5} But, lack of adherence is a major cause of uncontrolled blood pressure and treatment failure. Non-adherence is influenced by higher co-payment, side effects, poor patient-provider relationships, illiteracy, high medicine cost, no family history of hypertension, taking more than one pill per day and irregular follow-up.^{6,7} It also increases the acute cardiovascular risk, worsens prognosis and is a factor for poor control; in one study only one-third of patients had successful blood pressure control.^{8,9} Non-adherence to chronic medication regimens is common, with about 43% to 65.5% of patients who fail to adhere to prescribed regimens being hypertensive.²

In Eastern Nepal, 43.5% of patients were non-adherent, and non-adherence was higher in females, illiterate patients and unemployed patients.⁷ The prevalence of hypertension is higher in low and middle income countries than in high income countries, and regional variations may be attributed to high sodium consumption, low potassium consumption, obesity, alcohol consumption, physical inactivity and unhealthy diet.⁹ So aimed of this study was to find out the treatment adherence among hypertensive patients

METHODS

Study Design: Analytical cross-sectional

Study Setting Area : The study was conducted in cardiac out-patient department (OPD) of Chitwan Medical College Teaching Hospital (CMC-TH).

Over the past three months, approximately 620 hypertensive patients visited the cardiac OPD, with a monthly average (N) of about 200 patients (According to OPD register book of Cardiac OPD). which was purposively selected.

Population: The patients with age 18yrs above under antihypertensive medications at least for 6 months were included.

Sample Size

n_0 = initial sample size

Z = Z value (1.96 for 95% confidence)

p = prevalence 0.422

$q = 1 - p = 0.578$

d = margin of error (0.05)

$n_0 = z^2 pq / e^2 = 1.96 * 1.96 * 0.422 * 0.578 / 0.0025 = 376$

For the finite population, the adjusted sample size was calculated using the formula, $n_0 / [(n_0 - 1) / N] + 1$ resulting in a final sample size of approximately 131. Sample was estimated on the basis of the previous study, 42.2% of participants were adherent to antihypertensive medications.¹⁰ The sample was calculated by taking 42.2% prevalence with 95% CI and 5% margin error. The calculated simple size was approximately 131. Non-probability purposive sampling technique was used to select the desired sample. The data was collected from respondents by using structured interview schedule from from December 25, 2025, to February 25, 2026. Data were collected through face-to-face interviews by using the standard Hill-Bone Medication Adherence Scale (HB-MAS) in english and nepali version was used after getting permission from tool developers.^{11, 12} Cronbach's alpha coefficient was 0.75, 0.88 of the tool.^{13, 12} It is a 4-point rating scale the total score ranges ranging from 9-36 where all the time = 1, most of the time = 2, some of the time = 3, and none of the time = 4. Total scoring of HB-MAS was interpreted as score of 9 indicating perfect adherence and scores greater than 9 indicating imperfect adherence.¹⁴

Variables/Measurements:

Dependent variable: Treatment adherence

Independent variables:

Sociodemographic variable: Age, Sex, Ethnicity, Marital Status, Living Status, Educational status, Occupation

Disease related variables: Duration of hypertension diagnosis, Presence of diabetes/ dyslipidaemia/ hypothyroidism/ heart disease/ COPD/ kidney Disease, Number of medicines per day, Family history of hypertension

Treatment Related Variables: Availability of drugs, Affordability of drugs, Participation in awareness programme, Received Family Support for treatment.

Statistical analysis used: Data were checked daily for completeness and consistency. The collected data were organized, coded, entered in SPSS version 16. Data was summarized using the descriptive statistics such as frequency, percentage; median and standard deviation. Besides, inferential statistics (Chi-square test) was used to find out the association between status of treatment adherence among hypertensive patients with socio demographic variables.

Ethical consideration

Research proposal approval was taken from Research Committee of School of Nursing, Chitwan Medical College. Ethical clearance was obtained from Chitwan Medical College- Institutional Review Committee (Ref. No: CMC-IRC/082/083-073). Data collection permission was taken from the hospital administration of CMCTH. Written informed consent was taken from each respondent prior to data collection. Confidentiality was ascertained by using study in research purpose only, using code number instead of name, not disclosing the information with others and using the information for the study purpose. Privacy of the respondents was maintained throughout the study by taking interview in a separate corner in the OPD and interviewing one participant only at a time. Respondent's dignity was maintained by giving the right to reject or discontinue from the research study at any time without any penalty.

RESULTS

Regarding respondents' socio-demographic characteristics more than half of respondents were old adult (60.3%) and female (55.0%) respectively. About 39.7% of respondents were Janjati. Similarly, most (83.2%) of the respondents were married and 63.4%

were living with family members. Most (42.0%) of the respondents had general education and 52.7% of the respondents were home maker (Table 1).

Table 1. Respondents' Socio-demographic Characteristics (n =131).

Variables	Frequency (%)
Age Group	
Young adult (20-39 years)	6 (4.6)
Middle adult (40-59 years)	46 (35.1)
Old adult (60 years and above)	79 (60.3)
Median age 61 years,(Q3-Q1) (71-54), min=26years, max=91 years	
Sex	
Male	59 (45.0)
Female	72 (55.0)
Ethnicity	
Brahmin	43 (32.8)
Chhetri	15 (11.5)
Janjati	52 (39.7)
Dalit	21 (16.0)
Marital Status	
Married	109 (83.2)
Unmarried	5 (3.8)
Living Status	
With spouse	46 (35.1)
With family members	83 (63.4)
Alone	2 (1.5)
Education Status	
No education	23 (17.6)
Basic education (1-8 class)	21 (16.0)
Secondary education (9-12 class)	26 (19.8)
Higher secondary (bachelor and above)	6 (4.6)
Occupation	
Homemaker	69 (52.7)
Agriculture	21 (16.0)
Service/ Business	28 (21.4)
Others**	13 (9.9)

****Others include(retired army,no any)**

Regarding respondents' disease and treatment related information more than half (55.1%) of

respondents were suffering from hypertension for >5 years of duration and majority (67.9%) of respondent were taking more than one medicine per day. Most (80.9%) of respondents had no history of hospitalization due to hypertension in past 1 year. Similarly, 26.7% were suffering from diabetes, 13.7% Dyslipidaemia, 13% Hypothyroidism, 16.8% Heart disease, 6.9% COPD, 4.6% Kidney Disease respectively and 54.4 % had family history of hypertension (Table 2).

Table 2. Respondents' Disease and Treatment related Information (n =131).	
Response	Frequency (%)
Duration of Suffering from Hypertension	
≤5 Years	53 (44.9)
>5 Years	65 (55.1)
Median 5 years, IQR(Q3-Q1)(10-2) min= 0.6 years, max=30 years	
Number of prescribed medicines per day	
Only one	42 (32.1)
More than one	89 (67.9)
Hospitalized due to hypertension in the past 1 year	
Yes	25 (19.1)
No	106 (80.9)
Presence of Diabetes	
Yes	35 (26.7)
No	96 (73.3)
Presence of Dyslipidaemia	
Yes	18 (13.7)
No	113 (86.3)
Presence of Hypothyroidism	
Yes	17 (13.0)
No	114 (87.0)
Presence of Heart disease	
Yes	22 (16.8)
No	109 (83.2)
Presence of COPD	
Yes	9 (6.9)
No	122 (93.1)
Presence of Kidney Disease	
Yes	6 (4.6)
no	125 (95.4)

Regarding respondents' health service-related

information and family support, 84.0% of the respondents reported that drugs are available in nearby shop and 61.1% respondents reported that the cost of drugs is not affordable. Only 37.4 % of respondents participated in awareness programme regarding hypertension. All most all (90.8%) respondents had family support for the treatment (Table 3).

Table 3. Respondents' Health Service-Related Information and Family Support (n =131).	
Response	Frequency (%)
Availability of drugs in nearly shop	
Yes	110 (84.0)
No	21 (16.0)
Cost of drugs are affordable with income	
Yes	51 (38.9)
No	80 (61.1)
Participated in awareness programme regarding Hypertension	
Yes	49 (37.4)
No	82 (62.6)
Received Family Support for treatment	
Yes	119 (90.8)
No	12 (9.2)

Regarding respondents' status of treatment adherence, 48.9 % of respondents had perfect adherence whereas 51.1% of respondents had imperfect adherence to their treatment (Table 4).

Table 4. Respondents' Status of Treatment Adherence (n=131).	
Status of Treatment Adherence	Frequency (%)
Perfect Adherence (9)	64 (48.9)
Imperfect -adherence (>9)	67 (51.1)

Possible score: (9-36)

There is statistically significant association between respondent's level of treatment adherence with only presence of Diabetes and number of prescribed medicines per. But Other conditions such as dyslipidemia, hypothyroidism, heart disease, COPD, and renal disease showed no significant association with treatment adherence and therefore are not shown in the table (Table 5).

Table 5. Association between Status of Treatment Adherence and Selecte Variables (n=131).

Variables	Status of Treatment Adherence		P value
	Adherence n (%)	Non adherence n (%)	
Age group			
Young adult (20-39 years)	5 (83.3)	1 (16.7)	0.177**
Middle adult (40-59 years)	23 (50.0)	23 (50.0)	
Old adult (60 and above)	36 (45.6)	43 (54.4)	
Sex			0.321
Male	26 (44.1)	33 (55.9)	
Female	38 (52.8)	34 (47.2)	
Education Status			
No education	9 (39.1)	14 (60.9)	0.493
Informal Education	25 (45.5)	30 (54.5)	
Basic education (1-8 class)	12 (57.1)	9 (42.9)	
Secondary (9-12 class)& Higher education	18 (56.2)	14 (43.8)	
Duration of Suffering from HTN			
≤5years	35 (51.5)	33 (48.5)	0.534
>5years	29 (46.0)	34 (54.0)	
Presence of Diabetes Malitus			
Yes	12 (34.3)	23 (65.7)	0.044*
No	52 (54.2)	44 (45.8)	
Family History			
Yes	36 (51.4)	34 (48.6)	0.528
No	28 (45.9)	33 (54.1)	
No. of prescribed medicines per day			
Only one	27 (64.3)	15 (35.7)	0.015*
More than one	37 (41.6)	52 (58.4)	
Participated in awareness programme regarding HTN			
Yes	24 (49.0)	25 (51.0)	0.982
No	40 (48.8)	42 (51.2)	

*Under Pearson Chi-square test, Fisher's exact test** was used with significance in $p < 0.05$ **

DISCUSSION

This study found that only 48.9% of respondents were adherent to their antihypertensive treatment. Similar to these findings, like a study conducted in the eastern region of Nepal, where adherence was 56.5%, a meta-analysis of 25 studies from 15 different countries, which reported 54.8% adherence, and in Malaysia, where 53.4% of participants demonstrated good adherence.^{7, 2, 15} it might due to implementation of similar treatment methods, health awareness strategies, and medication regimens globally. Similarly contrast

finding found in studies like in, Pakistan only 16.2%, Ethiopia 63.4% and in Hongkong 65.1% had good adherence to antihypertensive agents.^{1, 16, 8} These differences in findings may be attributed to variations in measurement criteria, socio-demographic characteristics, study settings, sample size and the level of counselling or instructions regarding treatment regimens provided by healthcare workers in respective institutions.

The present study revealed that the majority of young adults aged 20-39 years (83.3%) and those with higher secondary education (bachelor's

degree and above) 66.7% were adherent to their treatment. Similar study conducted in a tertiary care hospital of Nepal, majority(98.60%) of young adults aged 21-40 age, 93.80 % literate were adherent to their treatment. ¹ it might be due to greater health awareness among young adults, improved counseling and follow-up services in tertiary healthcare settings, easy accessibility of health information through social media. Another study conducted in East Addis Ababa reported that treatment adherence was highest among the 49-59 years age group and among married participants, at 69.5% and 61.0%, respectively. ¹⁶ These differences in findings might be due to study setting, sample size and people might see hypertension as a serious health risk.

The findings of this study showed a statistically significant association with presence of Diabetes Mellitus ($p = 0.044$), and number of prescribed medicines per day ($p = 0.015$) in which having only one pill(64%) had adherence with treatment. It might be due to easy to remember only one pill, regular hospital visit, continuous counseling, and consistent engagement with healthcare providers. However, a study conducted in Quetta City reported a significant association between age ($p < 0.001$) and marital status ($p = 0.037$) with treatment adherence. ¹⁶ Similarly, a study conducted in Dharan, Nepal, male ($p = 0.004$), literate ($p < 0.001$), and employed ($p < 0.050$) had statistically significant associations with treatment adherence. It might be due to different demographical background, health delivery system, sample size, study design. Likewise, patients with a family history of hypertension (64.9%, $p = 0.006$) and those taking only one pill per day (72%, $p < 0.001$) also showed statistically significant associations with treatment adherence. ⁹ it might be due more aware about disease and complication and easy to remember to take one pill.

LIMITATIONS

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The study is limited to only one teaching hospital. Non-probability convenience sampling technique was used so, it might be non-representative of sample.

CONCLUSIONS

Based on the findings of the study, it is concluded that more than half of the respondents had imperfect adherence to antihypertensive treatment. Presence of Diabetes Mellitus, and number of prescribed medicines per day were significantly associated with treatment adherence. Therefore, targeted counseling and proper follow-up regarding hypertensive medication are needed to improve adherence.

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Conflicts of Interest: The authors declare that there is no any conflict of interest.

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Ethical and Publication Integrity: Ethical clearance was obtained from Chitwan Medical College-Teaching Hospital, Institutional Review Committee (Ref. N.: CMC-IRC/082/083-073).

Availability of data and materials: The data sets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Authors' Contributions

Conceptualization: Sara Thapa.

Methodology: Sara Thapa, Srijana Ghimire.

Data curation: Sara Thapa, Srijana Ghimire, Soni KC

Investigation: Sara Thapa, Srijana Ghimire.

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Writing-review and editing: Sara Thapa, Srijana Ghimire, Soni KC.

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