

Adherence to Antihypertensive Medications among Nepalese Hypertensive Patients at A Tertiary Care Hospital of Nepal

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ABSTRACT

Background: Hypertension remains a significant public health concern globally, contributing to the burden of cardiovascular disease and associated morbidity and mortality. Effective management of hypertension often relies on adherence to antihypertensive medication regimens. However, non-adherence to prescribed medications presents a formidable challenge in achieving optimal blood pressure control and preventing complications. The main objective of this study was to find out the adherence to antihypertensive medication among Nepalese hypertensive patients at a tertiary care hospital.

Methods: This analytical cross-sectional study was conducted at the outpatient department of medicine of UCMS-TH. A total of 384 participants were involved in the study, where the adherence rate to anti-hypertensive medication was collected using Morisky Medication Adherence Scale (MMAS-8). SPSS version 22 was used to record and analyze the data, and the descriptive results were presented as numbers and percentages. Chi-square test was used to determine the association between adherence and other variables at 95% confidence interval.

Results: The study found a very high percentage (85.70%) of adherence to antihypertensive drugs. Forgetfulness was the major reason for the non-adherence 30(54.50%). Age group and educational status of the participants were significantly associated with adherence rate ($p < 0.05$).

Conclusion: The study revealed greater number of participants were adherent to antihypertensive medications which helps to better control blood pressure and reduce the risk of complications. Proper counseling can significantly increase the adherence rate.

Keywords: medication adherence; anti-hypertensive drugs; hypertension; morisky medication adherence scale-8.

INTRODUCTION

Hypertension is a medical condition characterized by the persistent rise in blood pressure exceeding 140/90 mm Hg.¹ It constitutes a major risk factor for cardiovascular and cerebrovascular diseases, resulting in different degrees of disability.² Globally, more than 20% of adults have hypertension, with a disproportionate 75% residing in low-middle-income countries.³ Between 2011 and 2016, the surveys carried out in Nepal revealed a rising prevalence of hypertension. Effective management of hypertension relies heavily on medication adherence.⁴ In developing countries like Nepal, maintenance of adherence to antihypertensive medications remains the most important challenge. Adherence has been shown to vary from 0 to 100% in different populations around the globe.⁵ Medication adherence was found to be only 51.9% among the Nepali hypertensive population.⁶

Poor adherence to long-term therapy leads to worse health outcomes and higher medical expenses.⁷ The present study aims to evaluate the factors affecting adherence to antihypertensive medications among Nepalese patients.

METHOD

This analytical cross-sectional study was conducted at the outpatient department of medicine of UCMS-TH. Ethical consideration was taken from Institutional Review Committee (IRC) of the hospital with IRC no. UCMS/IRC/048/23. Written and verbal consent was taken from each participant of the study. Convenience sampling was done. The sample size was calculated by the formula: $n = Z^2 \times p \times q / e^2$, where Z is taken as 1.96 at 95% CI, $p = 67.2\% = 0.672$, $q = 1 - p = 0.328$, margin of error (e) = 5% = 0.05. The calculated sample size was 339, but the final sample size was

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taken as 384. The patients with age ≥ 18 years under antihypertensive medications at least for 3 months were included. Patients with mental disorder and severe illness were excluded. Patients were interviewed to gather data, and the standard Morisky medication adherence scale-8 (MMAS-8) was used to measure adherence to antihypertensive medication.⁹ MMAS-8 consists of one liker scale question and seven closed dichotomous (yes/no) questions. Each question measures specific adherence behavior of the patients. The patients who scored 6-8 points of the MMAS-8 were considered as adherent and who scored < 6 points of MMAS-8 were considered as non-adherent.¹⁰ Data was entered in Statistical Package for social sciences (SPSS 22 Version) and analyzed by descriptive and inferential statistical methods. The socio-demographic characteristics, adherent status and prescription pattern of anti-hypertensive drugs were presented as number and percentage. The association between adherence to antihypertensive drugs and independent variables like age, sex, marital status, literacy, occupation, and monthly income of the patients was analyzed using Chi-square tests at 95% Confidence interval.

RESULTS

The majority of the participants were male (62.20%) and in the age group 41-60 (42.40%). The mean age of the participants is 54.81 ± 13.97 years (Table 1). The medication adherence rate of the patients was good (85.70%) and forgetfulness was the major reason for non-adherence (54.50%) (Table 2). Amlodipine was the major anti-hypertensive drugs taken by the patients (65.10%) followed by Hydrochlorothiazide (20.05%) (Table 3).

Age group and the education status of the patients was significantly associated with adherence rate ($p < 0.05$) as shown in (Table 4).

DISCUSSION

An adherence to antihypertensive medication is essential to control blood pressure in hypertensive patients. The study revealed that 329 out of 384 hypertensive patients (85.7%) were adherent to antihypertensive therapy, a rate higher than

Table 1. Socio-demographic characteristics of the participants. (n=384)

Variables	Frequency (%)
Age in years	
21-40	71(18.50)
41-60	163(42.40)
61-80	132(34.40)
>80	18(4.70)
Gender	
Male	239(62.20)
Female	145(37.80)
Education	
Literate	257(66.90)
Illiterate	127(33.10)
Occupation	
Agriculture	73(19.00)
Student	7(1.80)
Private office job	35(9.10)
Government office job	15(3.90)
Business	134(34.90)
House wife	120(31.30)
Monthly income in rupees	
< 30000	338(88.0)
30000-50000	27(7.0)
> 50000	19(5.0)
Marital status	
Married	363(94.50)
Unmarried	21(5.50)

Table 2. Medication adherence status of the participants. (n=384)

Variables	Frequency (%)
Adherence to antihypertensive drugs	
Adherent	329(85.70)
Non-adherent	55(14.30)
Reasons for non-adherence (n=55)	
Adverse effects	9(16.40)
Forgetfulness	30(54.50)
Being away from home	11(20.00)
Poor counseling	5(9.10)

those reported in the previous studies conducted in Nepal.^{6,7} The higher adherence rate in our study may be attributed to variations in socio-demographic characteristics, sample size, and inclusion criteria. The majority of participants was literate and lived in urban areas. Data collection at a tertiary hospital, along with extensive education

Table 3. Prescription pattern of antihypertensive drugs. (n=384)	
Variables	Frequency (%)
Calcium channel blockers	
Amlodipine	250(65.10)
Angiotensin receptor blockers	
Losartan	12(2.12)
Telmisartan	7(1.82)
Diuretics	
Hydrochlorothiazide	77(20.05)
Alpha blockers	
Prazosin	66(17.18)
Beta blockers	
Carvedilol	44(11.45)
Nevibolol	7(1.82)

Table 4. Association between adherence and other variables.				
Variables	Adherent n(%)	Non-adherent n(%)	p-value	Chi-square
Age group of the participants (years)				
21-40	70(98.60)	1(1.40)	0.002*	14.842
41-60	140(85.90)	23(14.10)		
61-80	104(78.80)	28(21.20)		
> 80	15(83.30)	3(16.70)		
Education of the participants				
Literate	241(93.80)	16(6.20)	<0.001*	41.518
Illiterate	88(69.30)	39(30.70)		
Occupation of the participants				
Agriculture	59(80.80)	14(19.20)	0.077	9.953
Student	7(100)	0(0)		
Private Job	34(97.10)	1(2.90)		
Government Job	14(93.30)	1(6.70)		
Business	118(88.10)	16(11.90)		
House wife	97(80.80)	23(19.20)		
Monthly income of the participants in rupees				
< 30000	291(86.10)	47(13.90)	0.058	5.711
30000-50000	25(92.60)	2(7.40)		
> 50000	13(68.40)	6(31.60)		
Marital status of the participants				
Married	310(85.40)	53(14.60)	0.518	0.417
Unmarried	19(90.50)	2(9.50)		

*statistically significant

and counseling, likely played a significant role in achieving these high adherence rates. Patients taking calcium channel blockers has demonstrated better compliance in our study compared to those on diuretics and ACE inhibitors. The findings were similar to the study by Sivanandy et al.¹¹ Our study found a significant association between the

age group 41-60 and treatment compliance, in line with findings by Rana Ikshaya et al.¹² Adherence levels show a positive correlation with patient age, aligning with previous research indicating a 1% absolute rise in adherence for each ten years of age growth.^{13,14} However, lower compliance was observed in patient above 80 years.¹⁵ This may be attributed to factors such as cognitive decline, depression, comorbidities, or age-related complications observed in this population.¹⁶ This signifies the need for enhanced counseling and simplified dosing regimens in the elderly to improve compliance.¹⁷ Adequate knowledge about hypertension and its treatment, coupled with positive perceptions and attitudes toward therapy, is crucial for safe medication use and adherence.^{18,19} We observed a positive association between education status and adherence to antihypertensive medications. Patient adherence to both pharmaceutical and non-pharmacological treatments for hypertension is positively correlated with higher education.¹⁴ Illiteracy has been identified as a factor contributing to poor adherence, with lower medication literacy associated with inappropriate medication-taking behavior.^{20,21} No association was found between other demographic characteristics such as gender, socioeconomic status, marital status, and medication adherence or disease control in our study. The present study found that forgetfulness was the major reason for non-adherence. Similar findings were reported in the studies conducted in India and Nepal, where forgetfulness was cited as a primary reason for non-adherence (54.50% and 56%, respectively).^{11,22} Strategies such as text or voice messages and personalized reminders are needed to address forgetfulness and improve medication adherence.³ Other factors that hindered the adherence were adverse effects of drugs (16.40%), being away from home (20%) and poor counseling (9.10%). Good communication skills in medical care enable patients to take an active role in the treatment of their diseases and are strongly associated with improved treatment adherence.²³

CONCLUSION

The study shows a high adherence to antihypertensive medications and suggests good disease knowledge and self-care among participants. However, Healthcare providers must address low medication adherence to improve blood pressure control. They should emphasize tailored adherence strategies, proactively mitigate barriers, and involve patients in improving adherence. Validated self-report measures like MMAS-8 are essential in outpatient settings to assess adherence, understand treatment effectiveness, and identify barriers to better manage blood pressure.

Limitation: The study's results might be affected by sampling bias if the sample isn't representative

of all hypertensive patients. Depending solely on self-reported medication adherence measures, such as patient surveys, could lead to response bias and overestimated adherence rates due to socially desirable responses or recall inaccuracies. Future research should involve larger samples and longer study durations to enhance study reliability. Conducting studies across multiple hospitals is essential for broader applicability of findings. Effective counseling on medication administration is vital for achieving optimal adherence rates.

Conflict of interest: None

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