Medication adherence and blood pressure control among hypertensive patients in Salyan Hospital

Pradeep Sharma[1], Bikas Shrestha[2]
[1]Consultant General Practitioner, Salyan Hospital, Salan, Karnali Province, Nepal; [2]Consultant General Practitioner, Grande International Hospital, Kathmandu, Nepal

ABSTRACT

Introduction: Hypertension is a chronic medical condition with severe consequences and it remains inadequately managed everywhere. Medication adherence is a critical parameter for achieving strict blood pressure control in patients undergoing antihypertensive therapy. Good medication adherence is also a key factor determining the success of preventive measures for cardiovascular risk reduction. So, we aimed to study the medication adherence and blood pressure control among hypertensive patients of Salyan Hospital.

Method: A cross-sectional observational study was conducted in Salyan Hospital. Total of 110 adult hypertensive patients were enrolled in the study. A structured questionnaire i.e. Morisky medication adherence questionnaire (MMAS-8) in Nepali version was used to measure adherence. In addition, WHO validated method of measuring BP, drug type used and type of therapy were also included. Data were entered and analyzed using IBM SPSS.

Result: Out of 110 respondents enrolled, less than half of the respondents 45.45% had controlled BP. More than 4/5th were on monotherapy. BP control in monotherapy was 47.87% and in combination therapy was 45.45%. Patient with high, medium and low adherence were 40.9%, (44.54%) and 14.54% respectively. Level of adherence to antihypertensive drugs was related to BP control (p=0.0004). Most commonly used anti-hypertensive were CCBs.

Conclusion: There was high prevalence of uncontrolled BP among hypertensive patients in Salyan Hospital. Similarly, higher number of patients were on monotherapy. But BP control in monotherapy and combination therapy was similar. Higher number of patients were non-adherent. The relation between BP control and medication adherence was statistically significant. So the causes of poor BP control and poor adherence should be explored and addressed in each doctor-patient encounter.

Keywords: Blood pressure, medication adherence, Morisky medication adherence questionnaire (MMAS-8)

CORRESPONDENCE
Dr. Pradeep Sharma
Consultant General Practitioner, Salyan Hospital, Salyan, Karnali Province, Nepal
Email: pradeeps668@gmail.com

INTRODUCTION

Hypertension is an overwhelming global challenge. Estimates suggest that 31.1% of adults (1.39 billion) worldwide had hypertension in 2010.[1] The prevalence of hypertension has increased, especially in low- and middle-income countries (LMICs).[1] In South Asian region, the mean prevalence of hypertension was found to be 27% and in Nepal it was 33.8%.[2]

Control of HTN is reported in range of 19%-39.6% from different studies.[1,3] It has been well documented that uncontrolled blood pressure increases the risk of chronic heart disease, stroke, and coronary heart disease.[3] Successful control of blood pressure is of paramount importance in the reduction of morbidity and mortality associated with hypertension.

Multiple factors are identified while addressing this issue but patients' non-adherence with medication remains the dominant factor in major healthcare settings as the cause of poor control of disease.[5] Numerous investigations have found that half of hypertensive patients do not comply adequately with treatment. Adherence to anti-hypertensive treatment is found in range of 15%-74.1%.[6-8]

Various methods have been developed to measure medication adherence, objective and subjective.[9] In subjective methods, Questionnaire have been used widely.[10] One such tool, Morrisky Medication Adherence Scale (MMAS) have been used in determining adherence to anti-hypertensive medications. It is reliable and valid measure to detect patients at risk of non-adherence.[11-12] But this questionnaire is not tested in Nepali version.

METHOD

This is a cross-sectional descriptive study conducted in Salyan District Hospital (Karnali Province). All the hypertensive patients visiting the hospital out-patient department from January 2021 to May 2021 were registered for the study. Simple Random Sampling technique was used to select the required sample.

Sample Size was calculated using the formula

$n = Z^2 p (1-p) / d^2$ where

Z=value for degree of Confidence;

p=prevalence of adherence to anti-hypertensive medication

d=the maximum sampling error

Z is set to be 1.96 (for 95% confidence interval).

As p is not known so it was set at 0.5

d was set to 10%=0.1 i.e. maximum sampling error is 10%. Sample size came out to 96.

All hypertensive patients who visited in Salyan Hospital OPD were included in the study.

Controlled Blood Pressure was defined as BP < 140/90 mmHg and uncontrolled BP is defined as BP ≥140/90mmHg as per JNC7 guideline.

For data collection, Nepali version of MMAS was used. Questionnaire was translated into Nepali language and approved by two faculties of General Practice Department of Patan Academy of Health Sciences. Validation of Nepali questionnaire was done by conducting a pilot study in 10 hypertensive patients in OPD. There were seven questions with answer yes/no, yes was given 1 point and no was given 0 point. In eighth question "never" was given 0 point and other options were given 1 points. Grades of adherence were as follows: 0 : High Adherence, 1-2 : Medium Adherence, >2 : Low adherence.

For data analysis, IBM SPSS version 28 was used. Approval to conduct the study was taken form Health Service Office, Salyan.

RESULT

Among all participants in study, 74 were female and 36 were male (Table 1).

Chi square value=3.171, P=0.075. There was no significant difference in BP control among male and female gender.

Among participants in the study, 13 were in 20-40 yrs, 51 were in 41-60yr group and 46 in >60yrs group (Table 2).

Chi square value=2.590, P=0.274. There was no significant difference in BP control among different age groups.

There were 54 literate and 56 illiterate patients (Table 3).

Chi square value=0.03, P=0.862. There was no significant difference in BP control between two groups.

Monotherapy and Combination Therapy was taken by 94 and 16 patients respectively (Table 4).

Chi square value=1.524, P=0.217. There was no significant difference in BP control between two groups.

Among the types of anti-hypertensives used, CCB such as Amlodipine was used by 92 patients, ACEI/ARB such as Enalapril, Losartan, Telmisartan were used by 28 patients, thiazides such as hydrochlorothiazide was used by by 4 patients and B-blockers such as atenolol and metoprolol were used by 2 patients (Fig 1).

45 patients had high adherence, 49 patients had medium adherence while 16 patients had low adherence (Table 5).

Chi square value=28.125, P<0.0001, df=2
There was significant association between level of adherence and BP control.

Table 1. Sex wise distribution of blood pressure control

		BP Control		Total
		Yes (n)	No (n)	
Sex	Male	12	24	36
	Female	38	36	74
Total		50	60	110

Table 2. Age wise distribution for BP control

		BP Control		Total
Age group (in years)	20-40	7	6	13
	41-60	19	32	51
	>60	24	22	46
Total		50	60	110

Table 3. BP control as per education status

		BP Control		Total
		Yes (n)	No (n)	
Education	literate	25	29	54
	Illiterate	25	31	56
Total		50	60	110

Table 4. BP control status as per type of drug therapy

Type of therapy	BP Control	
	Frequency	Percent
Monotherapy	94	85.5
Combination therapy	16	14.5
Total	110	100

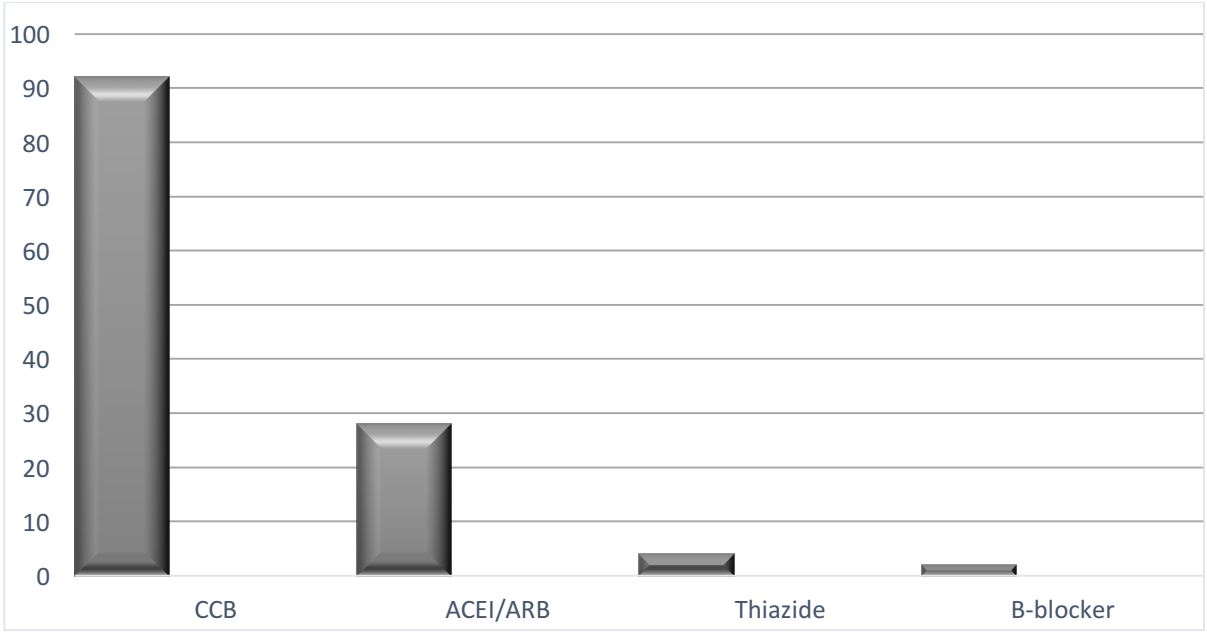

Figure 1. Drugs groups that the patients are using.

Table 5. BP control status as per adherence level to drug therapy

		BP Control		Total
		Yes (n)	No (n)	
Adherence	High	34	11	45
	Medium	13	36	49
	Low	3	13	16
Total		50	60	110

DISCUSSION

A significant factor contributing to poor blood pressure control is patient non-adherence to prescribed therapy.[5,7] Moreover, poor adherence was associated with the risk of all-cause death, stroke and AMI.[7,13] This further signifies its importance in hypertensive patients.

Morisky et al showed MMAS-8 had sensitivity of 93% and specificity of 53%, i.e. it is good at identifying patients who have low adherence and have uncontrolled BP and just average at identifying patients who have high adherence and have controlled BP.[14] In this study also most of patients with low and medium adherence have uncontrolled BP(49/95=75%).%). Therefore, the tool used in our study was easy to use and it is good at identifying patients with low adherence.

Among all participants, 45(40.9%) had high adherence, 49(44.5%) had medium adherence and 16(14.5%) had low adherence. This study has greater adherence than shown from Pokhara study which showed 35.4% adherence and 65.6% non-adherence rate.[15]

This study shows that level of adherence is associated to BP control rate i.e. patients with low adherence are more likely to have uncontrolled BP than patients with high adherence. This relation has been shown by Khan et al where adherers had 64.3% BP control whereas non adherers had 45.1% BP control(though p value was not calculated).[15]

Causes of non-adherence to anti hypertensive therapy should be sought out so that patients do not suffer from severe cardiovascular consequences from uncontrolled BP. For determining exact association of medication adherence and other factors to level of BP control, well designed analytical study should be conducted. Moreover, lifestyle modification factors for BP control and causes of non-adherence can also be studied..

CONCLUSION

There was high prevalence of uncontrolled BP among hypertensive patients in Salyan Hospital. Similarly higher number of patients were on monotherapy. But BP control in monotherapy and combination therapy was similar. Higher number of patients were non-adherent. The relation between BP control and medication adherence was statistically significant. So the causes of poor BP control and poor adherence should be explored and addressed in each doctor-patient encounter.

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