

Medication Adherence and Blood Pressure Control among Hypertensive Patients of Pokhara Valley

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ABSTRACT

Hypertension is a chronic medical condition which remains inadequately managed everywhere. Medication adherence (MA) is a critical parameter for achieving strict blood pressure (BP) control in patients undergoing antihypertensive therapy (AHT). Good MA is also a key factor determining the success of preventive measures for cardiovascular (CV) risk reduction. So, the objective of this research was to study the medication adherence and blood pressure control among hypertensive patients of Pokhara Valley. A randomized community-based prospective study was conducted in different places of Pokhara. In the study, a structured questionnaire i.e. Brief medication questionnaire (BMQ) with a high sensitivity and specificity was used. Out of 79 respondents enrolled, most of the respondents (n=51, 64.6%) were shown to be non-adherent and only 28 (35.4%) were adherent to the prescribed AHT. The study showed that among adherers, 75% were undergoing monotherapy and 64.3% (n=18) had their BP under control. The comparison between BP control and the different occupation showed that the highest percentage of BP control was achieved in housewives. Most of the respondents were non-adherent to the prescribed AHT which requires special attention of the healthcare providers.

Key words: Hypertension, medication adherence, brief medication questionnaire, anti-hypertensive therapy

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INTRODUCTION

Blood pressure refers to the force exerted by the blood against any unit area of wall of the blood vessel.¹ The pressure wave transmitted along the arteries with each heartbeat is easily felt as the pulse, the highest (systolic) pressure is created by the contraction of the heart and the lowest (diastolic) pressure is measured as the heart fills. Both the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High BP (JNC-VI) in 1997 and the 1999 guidelines from the WHO-International Society of Hypertension (WHO/ISH) have agreed that both systolic blood pressure (SBP) and diastolic blood pressure (DBP) should be used to classify hypertension (HTN).² Systolic HTN has been associated with increased fatal and non-fatal cardiovascular (CV) events and its treatment has been shown to reduce CV morbidity and mortality. So, the current classification emphasizes both systolic as well as diastolic standards.³ Hypertension is defined conventionally as “a sustained increase in BP \geq 140/90 mmHg, a criterion that characterizes a group of patients whose risk of HTN-related CV disease is high enough to merit medical attention”.⁴

Medication Adherence (MA) can be defined as the extent to which a patient's behavior, with respect to taking medication, corresponds with agreed recommendations from healthcare providers. It determines the success of every drug therapy. Excellent adherence to drug therapy is necessary to achieve strict BP control.⁵ A high adherence to antihypertensive medication is associated with a relevant decrease in CV events in the context of the primary prevention of CV diseases.⁶

Many methods have been suggested for measuring patient's

MA.⁷ Drug assays of blood or urine, use of drug markers with target medication and direct observation of the patient receiving the medication are the direct measures of adherence. The indirect measures include various forms of self-reporting by the patient, medication measurement (pill count), use of electronic monitoring devices and review of prescription records and claims.⁸ Each method has its advantages and disadvantages but no method is regarded as the gold standard. Self-reports using questionnaires are simple, fast, inexpensive and able to detect MA barriers. Brief Medication Questionnaire (BMQ) is a high sensitivity and specificity self-report tool for screening non-adherent patients and useful in exploring adherence problems from different causes including complex regimen, patient negative belief and difficulty of recall.⁹

The aim of this study was to assess the adherence of hypertensive patients to their AHT in Pokhara valley and to determine the extent of the blood pressure control. The research contributes to find out the current scenario about understanding of the hypertensive patients regarding their disease and its therapy.

MATERIALS AND METHODS

A community-based cross-sectional survey was carried out including 79 hypertensive patients. This study was conducted in various parts of Pokhara valley, Nepal in the year of 2012. Patients who were under medication with one or more AHA were included in the study. The proforma form was prepared in both English and Nepalese languages. It contained the patient's socio-demographic details, food habit

and other lifestyle related information such as smoking and drinking habit, observed BP and patient’s present medication information. BMQ was used for measuring adherence and barriers to adherence from the patient’s perspective. Face to face interviews were carried out to gather the information about demographic details, patient’s health information and their medications. Data analysis was done by using MS-Excel 2007 and Statistical Package for Social Sciences for windows (SPSS software, version 17.0).

RESULTS

The results of the regimen screen, belief screen and recall screen are shown in the Figure 1. For regimen screen, 64.6% of the respondents were shown to be non-adherent and only 35.4% were found to be adherent. Similarly, it was found out that 27.8% and 39.2% of the study respondents had belief and recall barriers respectively. Also, the study showed that 80% were prescribed with a single AHA, 16% were taking two AHA and only 4% were on more than two AHA as shown in the Figure 2.

Table 1 presents the data for BP control in patients undergoing mono and combination therapy. The current BP status of each respondent was categorized according to JNC-VII classification of HTN. From this study, it was observed that half of the respondents under monotherapy had their BP under control. Likewise, among the respondents under combination therapy, 58.8% had their BP under control.

The mean ± SD diastolic and systolic BP of the adherers and non-adherers were calculated separately as shown in Table 2. A slightly greater BP control was achieved in adherers for both diastolic and systolic values. Among adherers, 64.3% had their BP under control whereas 45.1% of non-adherers had their BP under control.

Table 3 presents the data for blood pressure control versus various socio-demographic parameters. Highest percentage of BP control was observed in male, Brahmin, housewife and educated peoples. The Table 4 shows the details of the study of BP control versus lifestyle related factors. It was observed that within non-smokers, majority (57.1%) of them had been able to control their pressure.

Table 1: BP control versus type of AHT

BP status	Monotherapy %(n)	Combination therapy %(n)
Controlled	50% (31)	58.8% (10)
Uncontrolled	50% (31)	41.2% (7)

Table 2: Blood pressures and % of BP control in adherers and nonadherers

	Mean DBP±SD	Mean SBP±SD	BP Controlled		BP not controlled	
			Frequency	%	Frequency	%
Adherers	85.36±7.69	130.18±14.24	18	64.3	10	35.7
Non-adherers	85.59±10.8	134.22±12.30	23	45.1	28	54.9

Table 3: BP control versus various parameters

Socio-demographic parameters	BP Controlled		BP not controlled	
	Frequency	%	Frequency	%
(Gender)				
Female	17	21.5	18	22.8
Male *	24	30.4	20	25.3
(Ethnicity)				
Brahmin *	16	20.3	11	13.9
Chettri	2	2.5	2	2.5
Newar	16	20.3	8	10.1
Mongolian	3	3.8	9	11.4
Muslim	3	3.8	7	8.9
Others	1	1.3	1	1.3
(Occupation)				
Service	8	10.1	7	8.91
Business	13	16.5	15	9.0
Farmer	4	5.1	3	3.8
Housewife*	16	20.3	13	16.5
(Education)				
Educated*	28	35.4	13	16.5
Uneducated	23	29.1	15	19.0

Note: ‘*’ shows the sub-category within the socio-demographic parameter having highest % of the total population with BP under control.

Table 4: BP control versus lifestyle related factors

Lifestyle factor associated with BP control	BP Control		BP not controlled	
	Frequency	%	Frequency	%
(Dietary habit)				
Vegetarian	4	44.4	5	55.6
Non-vegetarian	37	52.9	33	47.1
(Alcohol-taking habit)				
Yes	12	60	8	40
No	29	49.2	30	50.8
(Smoking habit)				
Smoker	1	11.1	8	88.9
Non-smoker	40	57.1	30	42.9

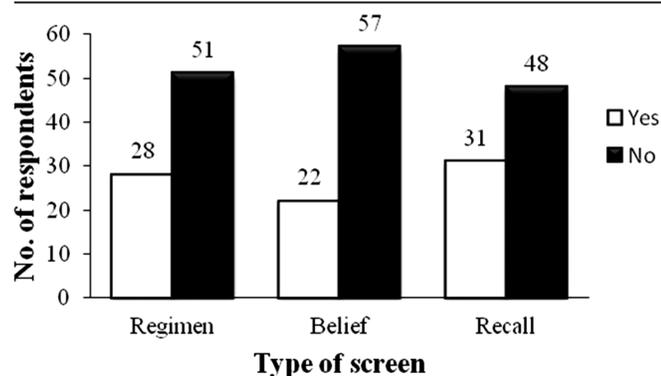


Figure 1: Results of the various screens

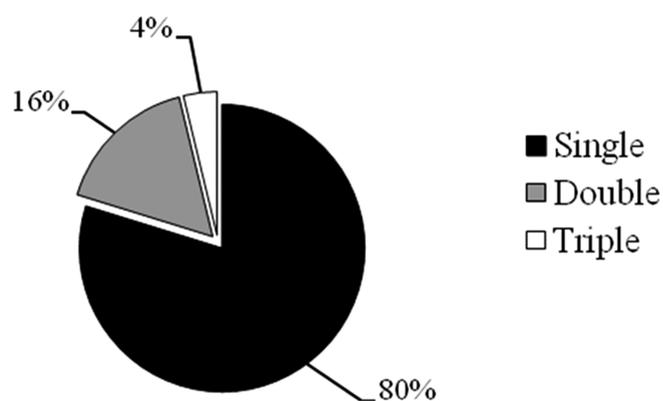


Figure 2: Type of AHT

DISCUSSION

In this study, rate of MA of respondents was found to be 35.4% which is comparatively low. Good health awareness and knowledge of high BP, as well as of the medications being taken, have been shown to be associated with good adherence to medication regimes in several studies.¹⁰ The current situation demands a strong effort from the healthcare providers to initiate effective intervention programs in order to uplift the knowledge of importance of compliance to their prescribed medication therapy.

The study showed that among adherers, 75% were undergoing monotherapy which is consistent with the result from a study conducted by Fung *et al.*¹¹ A review of studies that measured adherence using electronic monitoring (across multiple indications) confirmed the inverse relationship between

adherence and the prescribed number of doses per day.¹² In another review, the authors concluded that daily dosing regimens for antihypertensive medications were associated with higher adherence.¹³ In contrast, it was observed from the study that only half of the respondents on monotherapy had been able to control their BP whereas 58.8% of the respondents on combination therapy had their BP controlled which might have been due to the increased effectiveness with combination therapy. When the mean \pm SD BP of the adherers and non-adherers were calculated, a slightly greater BP control was achieved in adherers for both diastolic and systolic values. This supports the result of various studies that adherers have better and higher rates of BP control because of the effectiveness of drug used by adherer.¹⁰⁻¹⁴

The comparison between BP control and the different occupation showed that the highest percentage of BP control was achieved in housewives and least in the respondents involved in service. This might be because of the reason that housewives stay at home and have easy access to the medications. But those who work outdoors might forget to take their medications because of busy schedule. Similarly, it was also observed that with respect to gender a greater percentage (60.7%) of the total adherent population was male. Literacy rates for females being less than males might have contributed for this result.¹⁵

The study showed that largest proportion (35.44%) of the total population was educated as well as with BP under control. Educated patients showed greater adherence (85.7%) compared to uneducated (14.3%). This implies that education has a positive impact on adherence. When the current BP status of each respondent and the various lifestyle related risk factors of HTN were studied, it was observed that slightly greater percentage of non-smokers (57.1%) had their BP controlled. Although a direct correlation has not been established between smoking and blood pressure, the result might be because of the differences in the age of patients.

CONCLUSION

This study provides information about the status of medication adherence and blood pressure control among hypertensive patients of Pokhara Valley. Poor medication adherence and blood pressure control was observed, which could be improved by the special attention of the health care providers who can intervene with the hypertensive patients.

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