

Impact of Pharmacist Counselling on Medication Adherence among Elderly Patients on Antihypertensive Therapy in a Tertiary Care Hospital of Nepal

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ABSTRACT:


Background: Poor adherence (compliance) is common with antihypertensive medications among elderly patients. As the elderly people are prone to multiple comorbidities, they are at higher risk of polypharmacy and therefore may present with a higher risk of non-adherence to medications compared to the younger population. The study was conducted to investigate the impact of pharmacist counseling on medication adherence among elderly hypertensive patients.

Methods: The elderly hypertensive patients who visited the out-patient department at Chitwan Medical College (CMC) between August to November 2018. The face-to-face interview was conducted among 332 elderly hypertensive patients, selected with the purposive sampling technique. A paired t-test was used to show the difference between pre-test and post-test medication adherence.

Results: It was found that 13.85% of patients were poor adherent and 86.14% low adherent in the intervention and the control group. The major reason for non-adherence was found to be carelessness about taking medicine (97%). The adherence score for intervention group changed from 1.60±0.83 to 3.95±0.56 (p-value < 0.001) while in the control group the average score before and after follow up was 1.48±0.77 and 1.51±0.80 (p=0.373) respectively. Blood pressure status improved in the intervention group than the control group (p<0.001). Polypharmacy was 27.71%, 15.66% of whom experienced adverse drug reactions.

Conclusion: The patient medication counseling had a good impact on hypertensive patients. All factors of the Morisky Green Levine adherence scale improved after counseling and motivation. Pharmacist-led counseling improved medication adherence among elderly hypertensive patients.

Keywords: Blood Pressure, Counseling, Elderly, Hypertension, Medication Adherence, Nepal, Pharmacist

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INTRODUCTION

Hypertension (HTN) is a worldwide disease, which is projected to cause more than 7 million deaths annually.¹ In Nepal, the prevalence of HTN displays a constantly growing inclination which has been estimated to range from around 19% to 42%.² Medication adherence is defined as “the extent to which a person’s behavior agrees with the agreed medication regimen from a health care provider”.³ As a consequence of non-adherence, there is a reduction in therapeutic value for the patient, recurrent hospitalization and hospital visits.^{4,5} Unsuitable usage of medicines is one of the public health challenges and may lead to serious adverse drug reactions (ADRs),^{6,7} which leads to hospital admissions, lengthy hospital stays, economical burden and increased morbidity and mortality.^{8,9} Polypharmacy in elderly individuals poses an important threat to well-being; however, it is hard to escape.^{7,10,11} Polypharmacy has also been documented as a major risk factor for ADRs in developed countries and developing countries both.^{8,9,12,13}

Numerous factors such as polypharmacy, cost of medication, lack of medication understanding, low health literacy, complex medication regimens, ADRs and the poor physician-patient relationship may be linked with patients’ non-adherence to their prescribed medication regimens.^{9,14} Therefore, a better understanding of the factors contributing to poor antihypertensive medication adherence would help health care professionals develop ways to effectively enhance medication adherence in older patients with HTN. The main objective of this study was to assess the impact of pharmacist counseling on medication adherence on knowledge, attitude and practice (KAP) among elderly patients on antihypertensive therapy.

MATERIALS AND METHOD

Study Design and Study Site

An educational interventional prospective study was conducted at the outpatient department (OPD) of Chitwan Medical College (CMC), Teaching Hospital, Chitwan, Nepal from August to November 2018.

Study population

Purposive sampling of 332 elderly patients taking antihypertensive medicines was undertaken in the study. All the elderly hypertensive patients (both male

and female of age above or equal to 65 years) under one or more antihypertensive medications were included in the study. Exclusion criteria were those who could not respond or participate (e.g. too sick to be interviewed), patients who refused to participate in the study and psychiatric illness or mental impairment.

Data Collection procedure

Medication adherence evaluation was carried out in the randomized intervention and control groups using Morisky’s four-item medication adherence scale.^{15,16} After the pre-test, the intervention groups were counseled about antihypertensive medications and their rational use. The information was provided in the form of leaflets and in a simple Nepalese language to the intervention group but the control group was not counseled at that time. After 2 weeks’ follow up period, medication adherence of both the intervention and the control groups was again measured using the same questionnaire. The pre- and post-test scores of adherence to the intervention and control groups were measured and compared. Eventually, the control group was also counseled. Data were collected primarily by the face-to-face interview with the open-ended structured questionnaire. The eligible patients were requested to complete the questionnaire. The questionnaire was developed in simple Nepali language and the face validation was done. The questionnaire included basic socio-demographic profiles, details about the medication, drinking/smoking habits and self-reported medication adherence. The medication adherence was measured as per the Morisky’s Green Levine Medication adherence scale.¹⁶

Patient information form was developed to obtain a socio-demographic profile, details about medications, drinking/smoking habits and self-reported medication adherence. Morisky Green Levine Medication adherence scale was used to measure the status of the pre-adherence and the post-adherence. Verbal counseling was supplemented with written counseling in the form of leaflets.

Ethics approval and consent to participate

Ethics approval was obtained from the Institutional Review Committee of Pokhara University Research Council (PURC). Permission was obtained from the CMC prior to data collection.

Statistical analysis

The collected data were reviewed, processed, verified and statistically analyzed using the Statistical Package for Social Sciences (SPSS) version 21. The descriptive statistics (i.e., frequency, percentage) and inferential statistics (i.e., paired t-test) were used to show the difference between the pretest and posttest medication adherence. The p-value < 0.05 was considered statistically significant throughout the study.

RESULTS

The socio-demographic characteristics of the respondents are shown in Table 1. Out of 332 patients, the majority of 52.1% were females. The majority of the respondents [176 (53%)] were in the age group 65-70 which is followed by [125 (37.7%)] and [31 (9.3%)] in the age group 71-80 and >80 respectively. The majority [239(72 %)] of respondents were married and the majority [171 (51.5%)] of respondents were involved in agriculture followed by business [48 (14.5%)].

Table 1: Socio-demographic characteristics of the respondents (n = 332)

Variables	Frequency (%)
Age	
65-70	176 (53)
71-80	125 (37.7)
>80	31 (9.3)
Gender	
Male	159 (47.9)
Female	173 (52.1)
Occupation	
Agriculture	171 (51.5)
Family business	48 (14.5)
Remittance	40 (12)
Private/Government Job	22 (6.6)
Labor	1 (0.3)
Pension holder	34 (10.2)
Other	16 (4.8)
Average monthly income (NRs.)	
<5000	166 (50)
5000-10000	145 (43.7)

15000-30000	18 (5.4)
35000-60000	2 (0.6)
60000-100000	1 (0.3)
Type of family	
Joint family	310 (93.4)
Nuclear family	22 (6.6)
Education level	
Illiterate	298 (89.8)
Literate (SLC and above)	34 (10.2)
Marital status	
Married	239 (72)
Divorced	2 (0.6)
Widow/Widower	91 (27.4)

The comparison in personal habits (such as BP monitoring, sleeping status, smoking dietary intake) between the intervention group and control group is shown in Table 2.

Table 2: Comparison of personal habits between the Intervention group and control group n= 332

Variable	Intervention group	Control group
	Frequency (%)	Frequency (%)
BP Monitoring		
Daily	2 (1.2)	2 (1.2)
Usually	1 (0.6)	
Occasionally	94 (56.6)	104 (62.7)
Rarely	66 (39.8)	58 (34.9)
Never	3 (1.8)	2 (1.2)
Family history of HTN		
Positive	95 (57.2)	92 (55.4)
Negative	61 (36.7)	59 (35.5)
No Record	10 (6)	15 (9)
Sleeping status		
Normal Sleep	105 (63.3)	117 (70.5)
Insomnia	61 (36.7)	49 (29.5)
Smoking		
Never	115 (69.3)	119 (71.7)
Former	42 (25.3)	37 (22.3)
Current	9 (5.4)	10 (6)
Dietary intake		
Vegetarian	43 (25.9)	38 (22.9)
Non-Vegetarian	123 (74.1)	128 (77.1)

Morisky Green Levine Medication Questionnaire

The response from the Morisky Green Levine Medication Questionnaire is shown in Table 3.

Table 3: Morisky Green Levine Medication Questionnaire (n = 332)

Characteristics	Frequency (%)
Do you ever forget to take your antihypertensive medicine?	
Yes	311 (93.7)
No	21 (6.3)
Are you careless at times about taking your medicines?	
Yes	322 (97)
No	10 (3)
When you feel better, do you sometimes stop taking your medicine?	
Yes	130 (39.2)
No	202 (60.8)
Sometimes if you feel worse when you take the medicine, do you stop taking it?	
Yes	51 (15.4)
No	281 (84.6)

The medication adherence score comparison in the intervention and the control group is shown in table 4.

Table 4: Medication Adherence score comparison in the intervention and the control group

Sample population adherence score	Mean ± SD	t value (df)	p-value
Intervention group Before and after	2.40361 ± 1.18567	-26.119 (165)	<0.001*
Control group Before and after	0.02410 ± 0.34732	-0.894 (165)	0.373

*Statistically significant at 5% level of significance, using a paired t-test

Comparisons of KAP score of the intervention and control group before and after counseling

The comparison of the KAP score of the intervention and control group before and after counseling is shown in Table 5.

Table 5: Comparisons of mean KAP score of Intervention and Control group before and after counseling

Group	Category	Baseline	Endline	P-value
		Mean ± SD	Mean ± SD	
Intervention group	Knowledge	3.3313 ± 2.22217	9.8614 ± 3.36093	<0.001*
	Attitude	9.0723 ± 3.25216	14.2892 ± 3.62660	<0.001*
	Practice	1.3976 ± 1.25471	4.3434 ± 1.43004	<0.001*
Control group	Knowledge	1.5723 ± 1.17198	1.6084 ± 1.26383	0.542
	Attitude	8.4458 ± 1.79057	8.2169 ± 0.51753	0.082
	Practice	1.0181 ± 0.94371	1.0843 ± 0.56579	0.302

*Statistically significant at 5% level of significance

The comparisons of SBP and DBP in the intervention and the control group (baseline and end-line data) are shown in Table 6. In the control group patients, there were no significant differences in the mean SBP and DBP at their first and last visits (P = 0.078, P = 0.058).

Table 6: Comparisons of Systolic Blood Pressure and Diastolic Blood Pressure

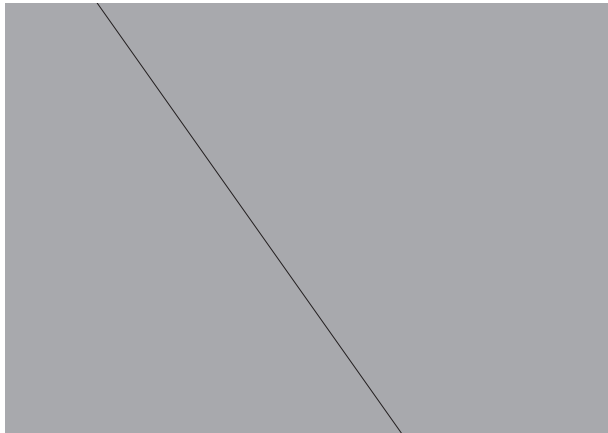
Groups	BP	Baseline	Endline	P-value
		Mean ± SD	Mean	
Intervention	SBP	131.6867 ± 20.06168	120.3675 ± 10.71690	<0.001*
	DBP	79.2651 ± 10.81871	75.2108 ± 6.40058	<0.001*
Control	SBP	129.7410 ± 18.45122	131.6867 ± 15.24104	0.078
	DBP	80.0361 ± 11.84388	84.8614 ± 9.25851	0.058

*Statistically significant at 5% level of significance

Prevalence of polypharmacy

The prevalence of polypharmacy in the intervention group was 24.7% while in the control group 30.7% which is shown in Figure 2.

Figure 1 Prevalence of polypharmacy among intervention group and control group



DISCUSSION

Medication adherence, is linked with numerous other parameters, is a significant factor in attaining BP control in hypertensive patients.¹⁷ There are numerous approaches to measure medication adherence. Out of which using self-reported questionnaires to measure adherence is a simple and economical technique, however, it may overemphasize adherence because patients incline to give socially suitable responses.¹⁸

The study on the adherence of antihypertensive treatment showed that patients' non-adherence to medication is associated with socio-demographic features, organizational, psychological and medication-associated parameters.¹⁹

In the present study, the majority of the respondents were female which were similar to different studies conducted in Nepal.¹⁹ This was also consistent with another study²⁰ which indicated that the prevalence of high BP among the Nepalese (predominantly in women) was found to be high. This study revealed that the majority of the patients were in the age group 65-70 years, followed by in the age group 71-80 years and > 80 years patients. The findings of this study showed that the risk of HTN was major in the patients of the elderly age. The studies regarding HTN showed that there was a strong association of alcohol consumption with the raised BP.²¹ The review conducted on thirty cross-sectional populations revealed a high risk of HTN among alcohol drinkers.²²

The present study showed that 72% of married and 28.01% of the divorced or widowed patients were

hypertensive. According to the study conducted by Hossain et al., the married patients were twice more likely to be adherent compared to divorced or widowed patients.²³

This study showed that the majority of respondents were illiterate. The study also revealed that the level of education and occupation affect a lot in the extent of adherence because patients below SLC generally require detailed counseling and motivation for the rational use of the drug.

In this study, there was more than 50% has a family history of HTN, which showed a similar result. But this information contrasted with the findings of studies conducted in Nepal.²¹ These studies showed that there was a negative family history of the disease in the population. The study carried out in India showed that 50% of patients were leading a sedentary lifestyle, which was found to be 41.9% in the present study; 58.13% were practicing yoga by 5.7%, morning /evening walk 50.6% and bicycling by 1.8%. The vegetarians were less likely found to have elevated BP and consequently protected from HTN.²⁴ The present study showed that 75.6% were non-vegetarians and 24.4% vegetarians. This is consistent with the study done by Khadka et al. which found that 94.21 % were non-vegetarians and 5.79% vegetarian.¹⁹ Studies conducted in different parts of India showed correlation of smoking or tobacco use with HTN.²⁵ A study conducted in Mumbai, India showed that 13.23% of patients were smokers²⁶ whereas study conducted by Linda in 2007 and showed to be 9.46%.²⁷

The present study showed that 23.8% of respondents were former smokers and 5.7% were current smokers. This showed that there was an urgent need for behavior change communication activities to decrease tobacco use.

Alcohol plays a vital role in developing HTN by different mechanisms such as stimulation of the sympathetic nervous system, exerting direct pressure effect on the blood vessel wall and the production of adrenocorticoids. In studies conducted by Linda M and Kaur K et al.^{27,28} the prevalence of alcoholics among hypertensive patients was found to be about 25%, 30%, and 6% respectively. Drinking alcohol not only has a high risk of HTN but also has the risks of missed pills and misperception of the therapy. Married farmers had

a high rate of non-adherence to the therapy due to their busy household schedule. Patients who forgot to take medicines during traveling corrected the results 100% after knowing the use and needs of medication after receiving counseling. Most female patients aged 65-70 years stopped taking medicines due to their subjective feeling of BP under a controlled level.

A comparison of adherence to the pre-counseling and post-counseling sessions of the same patients was performed with the Morisky Green Levine Medication adherence scale.^{15,16} Counseling was performed by providing leaflets and also orally.

The present study showed the mean knowledge score of the intervention group after counseling was found to be 9.86 ± 3.36 , which was significantly higher than at the first visit i.e. 3.33 ± 2.27 ($p < 0.001$). Similarly, the mean attitude score changed from 9.0723 ± 3.25 to 14.2892 ± 3.62660 after the intervention ($p < 0.001$) and the mean practice score changed from 1.39 ± 1.25 to 4.34 ± 1.43 ($p < 0.001$), which was significantly higher compared to the score at the first visit. In the control group patients, there were no significant differences in the mean KAP score at their first and last visits which were consistent with the study performed by Saleem et al.²⁹

In this study, the BP control level was associated with the patients' adherence behavior. Those with the controlled BP were adherent both the SBP and DBP were changing at the end line of the study in both the intervention and the control group. Another study performed by Ramahi (2015) also showed that the BP control level was associated with adherence behavior.³⁰

In the present study, the prevalence of polypharmacy was found to be 24.7% and 30.7% in the intervention and control group respectively. The study conducted by Ahmed et al. showed a 70% occurrence of polypharmacy.⁶ There were various reasons for non-adherence. Around 15% of patients were not taking medicine on time due to financial difficulties, limited patients due to the great distance among hospitals and pharmacies from their homes. Polypharmacy is also a significant reason for medication non-adherence and is connected with a huge medical and economic burden.⁷

Hence, the present study shows that elderly patients with regular alcoholic and non-vegetarians habits had poor adherence to antihypertensive therapy. The

education level of the patients and their occupation should be screened out before counseling to make them understand about the role of antihypertensive therapy and their rational use. Patients' knowledge level of their therapy and its rationality improved adherence to a great extent.

The role of the pharmacist is not only limited to the dispensing of medicines. In this era, the role of the pharmacist is increasing in the context of Nepal also in many areas such as counseling, management of non-communicable diseases, emergency department,⁷ oncology,⁹ disaster management,³¹ healthcare waste management,³² health policy, etc.

CONCLUSION

This study demonstrated that educational interventions regarding HTN by pharmacists increased the knowledge and improve patient's condition which emphatically altered their beliefs about medications. The present study underlined the potential role of pharmacists as the patient educator to increase awareness about the importance of both pharmacological and non-pharmacological control of HTN and also emphasized the impact of pharmacist-initiated patient counseling to improve medication adherence among elderly hypertensive patients.

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