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Original Research Article

Assessment of adherence to antihypertensive medication and its associated factors: a cross-sectional study

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ABSTRACT

Background: Hypertension is a silent killer. India is home to approximately 220 million hypertensive individuals. Poor adherence to medication may lead to complications and add to the burden of disease. So, this study aims to assess medication adherence and its associated factors.
Methods: This hospital based cross sectional study was conducted at Urban Health Training center. Patients who attended Out Patient Department over the period of three months were enrolled in the study. Morisky Medication Adherence four-point scale (MMAS-4) was used to study compliance, while JAMOVI software was used for data analysis.
Results: Around half (45%) of the patients had high adherence to anti-hypertensive medication. Various sociodemographic factors like age, gender, education, occupation, family history, personal history and duration of hypertension were considered. A significant association was observed between age and duration with adherence.
Conclusions: There was significant association between age and poor adherence. Timely interventions are necessary to reinforce good compliance to antihypertensive drugs.

Keywords: Adherence, Compliance, Hypertension, Non-communicable disease

INTRODUCTION

Hypertension is a silent killer. An estimated 1.28 billion adults aged 30–79 years worldwide have hypertension, most (two-thirds) living in low- and middle-income countries.[1] India alone is home of approximately 220 million Hypertensive individuals.[2] It is estimated that only 12% of patients who are treated achieve good control on the blood pressure. Nearly 63% of total deaths in India are due to non-communicable diseases, of which 27% are attributed to cardiovascular disease which affects 45% people in the 40-69 age group.[3] Hypertension in one of the major risk factors of CVD. However, hypertension remains largely uncontrolled due to lack of awareness, lack of appropriate care and poor follow up. This chronic disease exerts a public health burden of Cardiovascular disorders, Stroke and Renal failure worldwide. The 2019–2020 National Family Health Survey (NFHS-5) reported a hypertension prevalence of 24% in men and 21% among women.[4] Problems regarding patient compliance occur due to lifelong treatment of hypertension. Medication adherence refers to weather the patient has been taking their medicine as prescribed by the physician and they continue taking the medicine (e.g. “twice daily”). The mounting evidence suggesting that adherence is lacking and is associated with complications is now a cause of concern among clinicians. Comprehending the intricate relationship between patient attributes, healthcare system components, and medication compliance is essential for developing effective tactics to augment medication adherence and ultimately mitigate the toll of hypertension-associated morbidity and mortality. The purpose of this study is to evaluate the level of adherence to hypertension medication while

analyzing the relationships that exist between different sociodemographic characteristics and hypertension treatment adherence.

METHODS

Study type

This was hospital based cross sectional study.

Study setting

The study was conducted in Urban Health Training Centre of a Tertiary Care Centre.

Study duration

Study was conducted from February 2024 to April 2024 for three months.

Inclusion criteria

Patients aged 30 years and above who have been taking antihypertensive medication for one year were included in the study.

Exclusion criteria

Patients who had altered sensorium, any associated illnesses or complications were excluded. Morisky medication adherence 4 scale was used to study compliance. For four items, if the patient's choice is "yes", it is counted as 0 point and 1 if the option selected is "no". Maximum score is 4. Based on the scores, we divided the patient's adherence into two levels: below 4 points were defined as low adherence, and 4 were high adherence.[5] Modified B.G. Prasad scale was used to assess socioeconomic status.[6]

Sampling technique

For the present research, convenience sampling technique was employed. Throughout the course of the study, every patient who met the eligibility criteria was included.

Data collection

The study was conducted at the Out Patient Department of the Urban Health Training Centre of a tertiary care facility located in central India. Those patients who were fitting the inclusion criteria were enrolled in the study from February 2024 to April 2024. Overall, 125 participants were registered via convenience sampling.

Statistical analysis

Data was filled in a google form and extracted in the form of excel sheet. After cleaning, data was analyzed using JAMOVI 2.4.11. Percentages and mean were calculated, chi square test was applied and $p<0.05$ was considered to be significant. All data obtained was treated with utmost confidentiality. Approval from institutional ethics committee was sought.

RESULTS

Table 1: Sociodemographic characteristics of the study participants.

	Frequency (n=125)	%
Age (years)		
30-45	13	10.4
45-60	58	46.4
61-75	51	40.8
>75	3	2.4
Gender		
Female	78	62.4
Male	47	37.6
Religion		
Hindu	67	53.6
Buddhist	36	28.8
Muslim	22	17.6
Education		
Post graduate	4	3.2
Graduate	14	11.2
High school	30	24
Middle school	43	34.4
Primary	19	15.2
Illiterate	15	12
Occupation		
Professional	8	6.4
Semi professional	8	6.4
Skilled	30	24
Unskilled	16	12.8
Unemployed	63	50.4
Socio economic class		
Class 1	9	7.2
Class 2	38	30.4
Class 3	56	44.8
Class 4	22	17.6
Family history		
Yes	43	34.4
No	82	65.6
Personal history		
Alcohol	2	1.6
Tobacco	24	19.2
Both alcohol and tobacco	14	11.2
Smoking	5	4
None	80	64
Duration of hypertension		
1 -5 years	56	44.8
5-10 years	34	27.2
>10 years	35	28

In the present study, 125 patients had participated. Majority of the sample (46.4%) was aged 45-60 years, with 40.8% in the age group 61-75 years.

Table 2: Assessment of adherence to antihypertensive drugs according to Morisky medication adherence scale (MMAS-4).

Questions	Scoring		Number (%)
Do you ever forget to take your medicines?	No	1	74 (59.2)
	Yes	0	51 (40.8)
Are you careless at times about taking your medicines?	No	1	78 (62.4)
	Yes	0	47 (37.6)
Do you sometimes stop taking your medicines when you feel better?	No	1	91 (72.8)
	Yes	0	34 (27.2)
Sometimes if you feel worse when you take medicines, do you stop taking it?	No	1	111 (88.8)
	Yes	0	14 (11.2)

Table 3: Factors associated with adherence of medication.

	High adherence	Low adherence	P value
Age	61.8±9.84	56.5±9.10	0.002
Gender			
Female	35 (62.5%)	43 (62.3%)	0.983
Male	21 (37.5%)	26 (37.7%)	
Education			
Post graduate	2 (3.6%)	2 (2.9%)	0.115
Graduate	8 (14.3%)	6 (8.7%)	
High school	16 (28.6%)	14 (20.3%)	
Middle school	14 (25%)	29 (42%)	
Primary	6 (10.7%)	13 (18.8%)	
Illiterate	10 (17.9%)	5 (7.2%)	
Occupation			
Employed	25 (44.6%)	37 (53.6%)	0.318
Unemployed	31 (55.4%)	32 (46.4%)	
Family history of hypertension			
No	37 (66.1%)	45 (65.2%)	0.920
Yes	19 (33.9%)	24 (34.8%)	
Personal history			
Alcohol	1 (1.8%)	1 (1.4%)	0.107
Tobacco	15 (26.8%)	9 (13%)	
Both alcohol and tobacco	3 (5.4%)	11 (15.9%)	
Smoking	3 (5.4%)	2 (2.9%)	
None	34 (60.7%)	46 (66.7%)	
Duration of hypertension			
1 -5 years	19 (33.9%)	37 (53.6%)	0.004
5 -10 years	13 (23.2%)	21 (30.4%)	
>10 years	24 (42.9%)	11 (15.9%)	

In the sample, women constituted 62.4% of the sample. Over half (53.6%) were Hindus, while 28.8% were Buddhists and 17.6% were Muslims. Most of the participants had middle school (34.4%) or high school (24%) education, with only 3.2% having a postgraduate degree. Half (50.4%) were unemployed. Socioeconomic status was predominantly class 3 (44.8%). A family history of hypertension was reported in 34.4%. Personal history included no substance use (64%), tobacco use (19.2%) and both alcohol and tobacco (11.2%). The duration of hypertension was 1-5 years for 44.8% patients, 5-10 years for 27.2%, and over 10 years for 28% (Table 1).

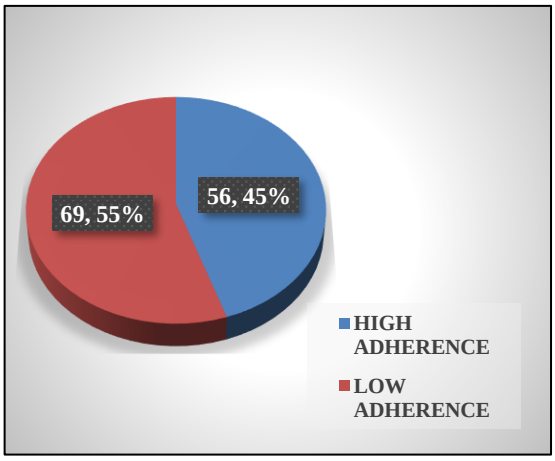

Figure 1: Adherence to antihypertensive therapy according to Morisky medication adherence scale (MMAS-4).

The data suggests that majority of participants (59.2%) do not forget to take their medications, while 62.4% are not careless about taking them. Additionally, 72.8% of respondents do not stop taking medications when they feel better, and 88.8% do not discontinue use if they feel worse after taking the medicines (Table 2).

Figure 1 illustrates that 55% of the patients have low adherence to antihypertensive therapy.

Table 3 highlights key sociodemographic factors associated with adherence levels in hypertensive patients. Older age (61.8 years) associated with higher adherence compared to younger patients (56.5 years, p=0.002). Gender distribution was similar between high and low adherence groups (p=0.983). Lower education levels, particularly middle school, showed higher rates of low adherence (42%) versus higher education (3.6% post-graduate). Employment status and family history did not significantly impact adherence (p=0.318 and p=0.920, respectively). Personal history revealed lower adherence in those using both alcohol and tobacco (15.9%) versus non-users (60.7%). Notably, patients with 1-5 years of hypertension exhibited the lowest adherence (53.6%) compared to those with >10 years (15.9, p=0.004).

DISCUSSION

The present study was conducted in Urban Health Training Centre of a tertiary health care center in Central India. Numerous studies on medication compliance have been carried out both in India and abroad. Controlling blood pressure in individuals with hypertension was thought to be a persistent problem. One of the main contributing factors to cardiovascular illnesses in a fast-changing environment is hypertension, a life long illness. However, this can be somewhat avoided by taking medication as prescribed.

In our study, 55% of the patients had low adherence to antihypertensive medication while 45% had high adherence. Supportive findings were observed in a Brazilian study.[7] Another research by Asgedom et al, showed that 61.8% of the participants were adherent.[8] Also, various international studies were conducted regarding drug compliance.[9,10] Vignesh et al, study showed a contrast finding with 25.1% adherence.[11] These discrepancies could arise from regional variations in sociodemographic factors.

Majority of the participants in the present study were more than 50 years old similar to the findings of Sharma et al and Vignesh et al.[11,12] Age showed a significant association with adherence to antihypertensive medication in the current study which was supported by the above studies.[11,12] Majority of the study participants were females but no significant association was observed between gender and adherence unlike the findings of Bhusal L et al.[13] No significant relationship was observed between education, occupation, family history of hypertension and personal history in our study which is consistent with the findings of Song et al.[10] The duration of hypertension plays an important role here with shorter duration exhibiting low adherence. But our findings are in contrast to Bhusal L et al study.[13] This might be due to the lack of awareness regarding hypertension among newly detected individuals.

Since the study is a cross-sectional survey, determining the causal relationship between the variables is challenging. Further confirmation of the research is required by upcoming multi- centric, large-sample and longitudinal studies. This hospital-based study is not generalizable. The scale used here is self-reporting which can sometimes result in response bias. Many participants were unwilling to reveal or were unaware about any relevant information about head of the family's education and income. Therefore, more accurate Kuppuswamy scale could not be used to assess socioeconomic status.

CONCLUSION

The study shows that only 45% patients had High adherence to antihypertensive drugs. There was significant association between age and poor adherence. Timely interventions are necessary to reinforce good compliance to antihypertensive drugs. Further studies ought to concentrate on formulating and assessing inventive, empirically-supported strategies to enhance sustained compliance in this group of individuals. A patient-centred, team-based strategy that addresses the various factors that contribute to non-adherence can improve the quality of life and clinical outcomes for people with hypertension. Patients, providers, and legislators must work together to tackle this important public health issue.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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