

Evaluation of prescription pattern and medication adherence of antihypertensive drugs in stage 1 essential hypertensive patients at rural tertiary care teaching hospital of central India

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Abstract

Objectives: To study the prescription pattern of antihypertensive drugs and analyze the medication adherence to antihypertensive drugs at rural tertiary care teaching hospital.

Materials and Methods: Prospective, observational, 12 weeks, questionnaire based study, conducted in rural tertiary care teaching hospital of central India. 214 antihypertensive prescriptions were analyzed by Morisky medication adherence scale. Statistical analysis was done by MS Excel and Graph pad prism 6.0.

Results: 28.03% patients were not aware about the medicines taken, 29.90% patients were unacquainted about dose and route of administration whereas 32.71% patients were unfamiliar about frequency of administration of medicines. 53.27% patients were unaware about precautions to be taken while consuming medicines. 58.68% & 12.67% patients consumed amlodipine & atenolol respectively. In 16.43% patients, atenolol + amlodipine combination therapy was prescribed. Amongst 214 patients 12, 58 & 144 showed high, medium & low adherence respectively. No significant difference was found on gender basis at any level of adherence.

Conclusion: In this study, physicians gave preference to amlodipine than other antihypertensive drugs. However, thiazide is a first line drug in stage 1 hypertension, recommended by JNC VII guideline. This indicates that there is need of creating awareness about current management of hypertension to clinicians by organizing various workshops. We observed only 5.60% patients showed high adherence to antihypertensive therapy. Therefore educational strategies must be carried out for physicians focusing on causes for non-adherence to antihypertensive medications. Also raising patient trust in their physicians may improve patient motivation to prescribed medication.

Keywords: Prescription pattern, medication adherence, antihypertensive drugs

1. Introduction

Hypertension is a significant and asymptomatic chronic condition with prevalence is increasing day by day. In 2002, the worldwide prevalence was 26.4% which is likely to be raised to 29.2% up to 2025.[1] The prevalence of hypertension is significantly higher in the urban peoples of India compared to the rural population.

Hypertension is associated with cardiovascular, renal and stroke morbidities and to prevent such morbidities, standardized antihypertensive therapy is required.[2] Currently several categories of drugs are in existence to treat hypertension viz. angiotensin converting enzyme inhibitors, angiotensin receptors blockers, beta blockers, calcium channel blockers, diuretics, alpha receptor blockers and central sympatholytics. These drugs are being used as a monotherapy as well as in combination therapy.

The studies of prescribing pattern can provide useful information for the improvement of appropriate and effective use of drugs in hospital. This will produce an enormous impact on patients quality of life and contribute substantially to the financial cost of patient care.[3] Earlier studies of prescription pattern in hypertensive patients reported the commonly prescribed drugs in monotherapy as well as in combination therapy.[1,2,4-7]

Adherence has been defined as the extent to which individuals follow the instructions they are given for prescribed treatments. Adherence to the medication schedule is so important in successful management of chronic diseases.[8] According to World Health Organization, only 50% people with chronic diseases are adherent to medication.[9] Previous study reported by various authors revealed that the incidence of adherence to antihypertensive therapy is

84%.[10]

Most of these studies were conducted in urban hospital where there is better health infrastructure, more skillful manpower and improved literacy and good socioeconomic condition of patients. However, there is scarcity of studies about adherence and prescription patterns of antihypertensive drugs in rural tertiary care hospital of central India. Also knowledge of existing prescription patterns in the treatment of hypertension can provide useful information for improving clinical practice in this field. Hence the study was designed with the following objectives.

1. To study the prescription pattern of antihypertensive drugs in rural tertiary care teaching hospital.
2. To analyze the medication adherence to antihypertensive drugs at rural tertiary care teaching hospital.

2. Materials and methods

This was prospective, observational, questionnaire based study conducted in medicine department (outpatient basis) of rural tertiary care teaching hospital of central India. The study was conducted in accordance with the principles of good clinical practice and Declaration of Helsinki. 214 antihypertensive prescriptions were analyzed with following

2.1 Inclusion criteria

1. Age 30 years and above who attended outdoor patient department (OPD).
2. Patient who were on antihypertensive therapy for more than 6 months.
3. Patient with stage 1 hypertension (Systolic: 140-159 mmHg, Diastolic: 90-99 mmHg)
4. Patient had given written informed consent.

2.2 Exclusion criteria

1. H/O heart failure.
2. H/O pregnant & nursing women.

The adherence to therapy was assessed by using the Morisky 8-item medication adherence questionnaire. In this, adherence was noted based on the score. High score indicate low adherence. The subject participant was interviewed by direct face to face in vernacular language.

2.3 Duration of study

12 weeks (February 2016 to April 2016)

2.4 Statistical analysis

The analysis was done by MS Excel sheet and Graph pad prism version 6.0. Chi-square test was used for analysis.

3. Result

A total 214 patients were enrolled after due consideration of inclusion criteria. Out of these, 74 (34.57%) patients were male and 140 (65.42%) patients were female. The rest of the demographic details were shown in Table 1.

Table 2 shows that 28.03% patients were not aware about the medicines taken. About 29.90% patients were unacquainted about dose and route of administration and 32.71% patients were unfamiliar about frequency of administration of medicines. 53.27% patients were unaware about precautions to be taken while consuming medicines. About 16.82% patients stopped consuming the medicines which were prescribed by the doctors.

Figure 1 shows percentage of patients which consumed antihypertensive drugs. We observed that highest number of patients (58.68%) consumed amlodipine. Atenolol was consumed by 12.67% patients. Enalapril, ramipril and losartan were consumed by 7.04%, 1.87% and 3.73% patients respectively. The Atenolol + Amlodipine were the only combination which was prescribed by physicians in 16.43% patients.

Figure 2 shows level of medication adherence according to Morisky-8 item Medication adherence. It can be seen that 12 patients showed high adherence, 58 patients had medium adherence whereas 144 patients had low adherence. Figure 3 shows assessment of level of medication adherence according to gender basis and observed no significant difference between male and female at any level of adherence.

Table 1: Demographic details of the patients

Variables	No. of Patients (n = 214)	Percentages (%)
Gender	Male	104
	Female	110
Age (Years)	30-45	33
	45-60	103
	60-75	76
	75-90	02
Educational status	Literate	70
	Illiterate	144

Table 2: Respondents awareness about medicine use (n=214)

Questions	No. of respondents (%)	
	Yes	No
Aware about medicine taken	154(71.96)	60(28.03)
Aware about dose and route of medicine	150(70.03)	64(29.90)
Aware about frequency of administration	144(67.28)	70(32.71)
Aware about precautions to be taken while taking medicines	100(46.72)	114(53.27)
Aware that not taking medicines could affect any way	147(68.69)	69(32.24)
Stopped taking medicine while prescribe by doctors	36(16.82)	178(83.17)
Stopped any medicine due to adverse effect	32(14.95)	182(85.04)

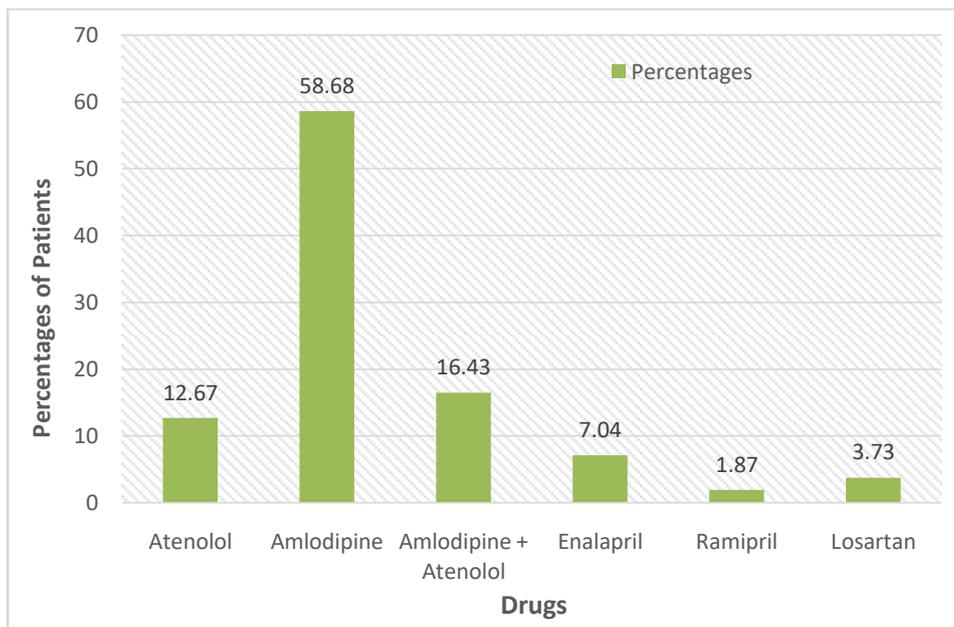


Figure 1: Percentages of patients consuming antihypertensive drugs

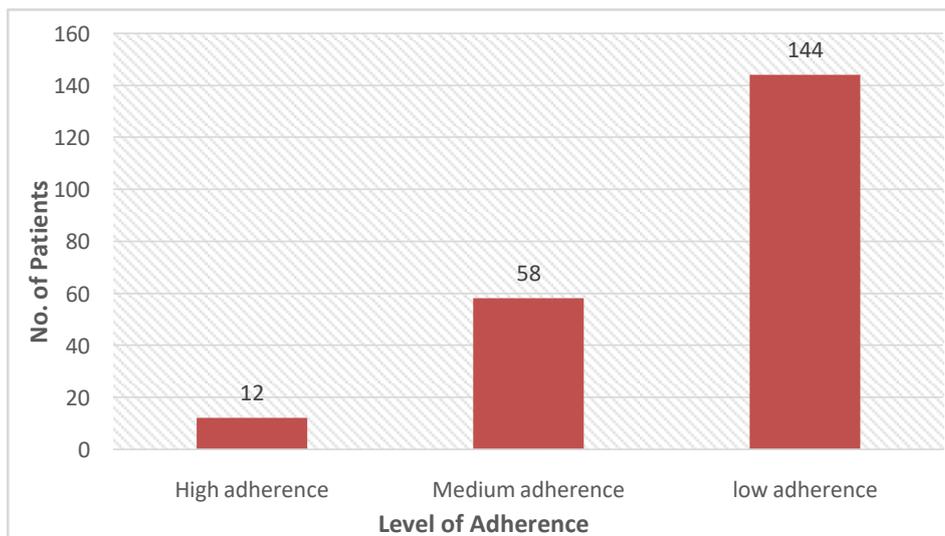


Figure 2: Level of adherence according to score on Morisky 8-Item Medication Adherence Questionnaire (n=214)

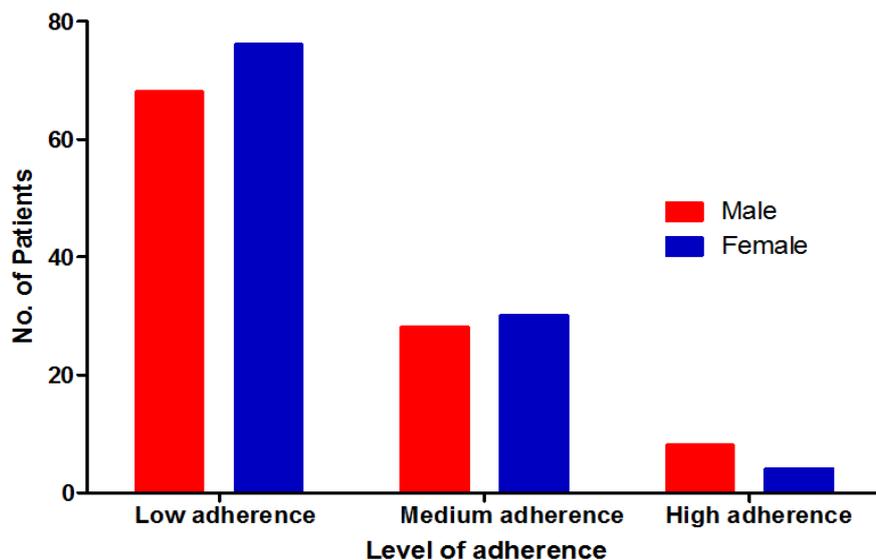


Figure 3: Assessment of level of medication adherence (MMAS-8) according to gender

$P < 0.05$ considered statistically significant. Chi-square test was applied. No significant difference is observed between male and female at any level of adherence.

4. Discussion

A prescription based study is considered to be one of the most effective methods to assess and evaluate prescription attitude of physician. The present study shows that the prescribing pattern of antihypertensive drugs in outpatient department is more common in female (51.40%) compared to male (48.58%) which is not in agreement with Mohd *et al* study.[11] In our study, nearly 83% of patients is above 45 years of age and as per published data, the incidence of high blood pressure is more in women after menopause.[12] In present study, the most commonly used drug is amlodipine (calcium channel blocker– 58.41%). This is in accordance with Mohd *et al*[11], Kale *et al*[13], Datta *et al*[14] and Almas *et al*[15] studies. Amlodipine has a potent antioxidant activity as a result of biophysical interactions with membrane lipid bilayer.[16] Also it provides cardioprotection by reducing oxidative stress induced in experimental myocardial infarctions through prevention of free radical mediated injury of catecholamines.[17] All these reasons may justify the use of amlodipine in our study. However JNC VII guideline recommended that thiazide is first line drug for the treatment of stage 1 hypertension.[18] In our study, amlodipine + atenolol (16.43%), the only combination therapy which is used to treat hypertension. This is in line with Mohd *et al*[11] and Kale *et al*[13] studies.

Good medication adherence to patient is achieved by proper following instructions which are given for prescribed treatment. It is very important for the patient to have adequate knowledge about the medicines they are prescribed, their dose, route and frequency. In this study it was found that 28.03% patients were not aware of medicine taken, 29.90% patients were unfamiliar with dose and route of administration and 32.71% patients were unaware of frequency of administration. For better comply with the treatment, patient should also know various adverse effects of the medicine they are taking. In this study 14.95% patients stopped taking any medicine due to some adverse effects. We could not find any relevant study regarding awareness about antihypertensive drugs use. Adherence to antihypertensive drugs has been associated with improved blood pressure, decreased cardiovascular events which in turn lead to decrease hospitalizations rates and lower medical care costs. In this study, 67.28% patients showed low adherence in the Morisky medication adherence scale. Mazzaglia *et al* reported rate of adherence to antihypertensive drugs revealed that 51.4% patients showed low adherence. Adherence rate was assessed by calculating the proportion of days on which a patient had pills available during the follow-up (proportion of days covered).[19] Gascon *et al* reported that only 60% patients took medication as prescribed.[20]

One of the major reason for such variable rates of non-adherence reported in different studies is that there is no standard established definition of adherence due to which patients may report adherence according to their own personal definitions rather than conventional medical concepts of definition.[21] The rates of adherence reported in our study are significantly low compared to Mazzaglia *et al*, Gascon *et al* studies. Various reasons quoted for low adherence such as unawareness about the need of medicine, forgetfulness, unawareness about the seriousness of condition. Though high cost of medicine is one of the reasons for low adherence, this factor will not be applicable for our study because this study was carried out in government set up and only antihypertensive drugs which were dispensed by this tertiary care hospital were

included in present study.

In our study, the low adherence to antihypertensive medications was found to be non-significantly higher in female compared to male. However, higher adherence is achieved non-significantly more in male compared to female. We could not find any antihypertensive adherence study indicating comparison between genders. The factors which influence on adherence to antihypertensive is based on the answers given, 23.83% patients forget to take medicine along with them while on travelling, 35.04% patients forget to take their pills sometimes and 32.24% patients miss taking their medications for reasons other than forgetting for the past two weeks. Similar observations reported in other study.[22]

5. Conclusion

In this study, physicians had given preference to monotherapy than combination therapy and most frequently prescribed agent among monotherapy was calcium channel blocker i.e. amlodipine. We have not observed the use of thiazide in stage 1 hypertensive patients though it is recommended as a first line drug on the basis of JNC VII guideline. This indicates that there is need of creating awareness about current management of hypertension to clinicians by organizing various workshops. We observed only 5.60% patients showed high adherence to antihypertensive therapy. Therefore educational strategies must be carried out for physicians focusing on causes for nonadherence to antihypertensive medications. Also raising patient trust in their physicians may improve patient motivation to prescribed medication.

Limitation of the study

This is a single center study.

Ethics Committee approval: Not required

Conflict of interest- None declared

Source of funding- Not applicable.

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