EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

A STUDY TO EVALUATE MEDICATION ADHERENCE OF ANTIHYPERTENSIVE DRUGS IN A TERTIARY CARE TEACHING HOSPITAL

Nimmy N. John[*], Athira Krishnan, Midhun JV and Riya Juan

Department of Pharmacy Practice, NET Pharmacy College, Raichur-584103 Karnataka, India.

*Corresponding Author: Nimmy N. John

Department of Pharmacy Practice, NET Pharmacy College, Raichur-584103 Karnataka, India.

ABSTRACT

Background: Adherence to prescribed medication is an imperative issue which can be directly linked with the management of hypertension. Failure to adherence can affect the effectiveness of medications as well as efficiency of health care system. A prospective observational study was conducted in in-patients admitted to general medicine department diagnosed with hypertension aimed to find out the medication adherence. **Materials and Methods**: Data was collected from case sheets of patients for age, gender, socio- economic data. Informed consent was obtained from patients or bystanders before study. Direct interview was conducted with patients using standardized questionnaire known as MMAS-8. Patients adherence to medications was assessed using scores obtained from the adherence scale. **Results**: Among 110 in-patients 50 (45.5%) patients were male and 60 (54.5%) patients were female. Most of the patients had low adherence among both genders. Patients under age group of 41-60 years were more (53.6%) in which 39.1% had low adherence. When taking account of education of the patient, graduates and above were only 7 patients (6.4%) but most of them (4.5%) had moderate adherence. MMAS-8 questions were scored appropriately. Education of the patients had a significant positive correlation (i.e., p value = 0.017) between low adherence and high adherence of patients. **Conclusion**: This study showed that adherence to antihypertensive medications in hypertensive patients were very less. It needs to be continuously evaluated in order to reduce complications and improve quality of life of patients.

KEYWORDS: Medication adherence, MMAS-8, Uncontrolled BP, p value, Questionnaire.

INTRODUCTION

Hypertension is a silent killer and is a major health problem all around the globe. It is a multifactorial disease arising from the combined action of many genetic environmental and behavioral factors.[1] A century of epidemiological, clinical and physiological research in human and animals as provided remarkable insights on the relationships existing between dietary salt, renal sodium handling and BP. Probability to develop hypertension depends on the weight of individuals of the hypertension's adjunctive factor.[2]

Hypertension or high blood pressure is defined as abnormally high arterial blood pressure. According to joint national committee (JNC) 7, normal blood pressure is a systolic BP <120 mmHg and diastolic BP < 80 mmHg. Hypertension is defined as a systolic level of BP > 140 mmHg and or diastolic BP level > 90 mmHg.[1]

Adherence to prescribed medication is an imperative issue which can be directly linked with the management of chronic diseases like hypertension; failure to adherence can affect the effectiveness of medication as well as the efficiency of health care system.

Hypertension is a modifiable cardiovascular risk factor for which medications effective to regulate the raised BP as well as to hamper the complications are available. But the maximal beneficial effect of an appropriate treatment plan can be achieved only if patients strictly adhere to the recommendations.[3] The overall prevalence is around 29.6% with regional variation in rural (27.6%) and urban (33.8%) population.[4]

One major factor that influences adherence is the patient's ability to read and understand medication instructions. Patients with low literacy may have difficulty understanding instructions; this ultimately results in decreased adherence and poor medication management.[5] So the study aimed to evaluate the medication adherence among patients who are taking the antihypertensive drugs.

MATERIALS AND METHODS

The study was carried out for a period of six months. A prospective observational study was carried out by reviewing prescriptions of 110 patients who have been diagnosed with Hypertension. The study was started after taking consent from respective authorities.

Inclusion criteria
- All the hypertensive patients admitted in general medicine departments of hospital
- All the IP patients with hypertension of general medicine department

Exclusion criteria
- Hypertensive patients admitted in other departments
- In Patients who were not willing to participate

RESULTS
A total number of 110 case sheets of hypertensive patients diagnosed with hypertension were reviewed and analyzed.

TABLES
Table 1: Comparison based on Gender.

Sl.No.	Gender	Total n(%)	Lowadherence n(%)	Moderate/ Highaderence n(%)
1.	Male	50 (45.5%)	38 934.5%)	13 (11.8%)
2.	Female	60 (54.5%)	45 (40.9%)	14 (12.7%)

The data suggests that out of 110 patients 50 (45.5%) were male and 60 (54.5%) were female in which 38 (34.5%) of male patients had low adherence and 13 (11.8%) of male patients were having moderate/ high adherence.

Table 2: Comparison based on age of the patients.

Sl.No	Age	Total n(%)	Low Adherence n(%)	Moderate/High Adherence n(%)
1	21-40	19 (17.3%)	12 (10.9%)	7 (6.4%)
2	41-60	59 (53.6%)	43 (39.1%)	16 (14.5%)
3	61-80	32 (29.1%)	28 (25.5%)	4 (3.6%)

Table 2 illustrates that most of the patients 59 (53.6%) were under the age group of 41-60 years from which 43 (39.1%) and 16 (14.5%) were having poor and moderate/high adherence respectively.

Table 3: Comparison based on education of the patient.

Sl.No	Education	Total n(%)	Low Adherence n(%)	Moderate/High Adherence n(%)
1	None	22 (20%)	19 (17.3%)	3 (2.7%)
2	Primary	56 (50.9%)	44 (40%)	12 (10.9%)
3	Secondary	25 (22.7%)	18 (16.4%)	7 (6.4%)
4	Graduate & above	7 (6.4%)	2 (1.8%)	5 (4.5%)

Table 3 illustrates that patients with the qualification of graduation and above were very less (6.4%) but they had more adherence to medications (4.5%) compared to other patients and only 1.8% had low adherence to the medications.

Table 4: Comparison based on education of the patient (n=110).

Sl.no	Education	Total n(%)	Low adherence n(%)	Moderate/high Adherence n(%)	P value
1	None	22 (20%)	19 (17.3%)	3 (2.7%)	
2	Primary	56 (50.9%)	44 (40%)	12 (10.9%)	0.017
3	Secondary	25 (22.7%)	18 (16.4%)	7 (6.4%)	
4	Graduate & above	7 (6.4%)	2 (1.8%)	5 (4.5%)	

Table 4 illustrates the comparison of adherence with the education of the patient. This results shows the education of the patient shows a significance (0.017) in the medication adherence to the patient.
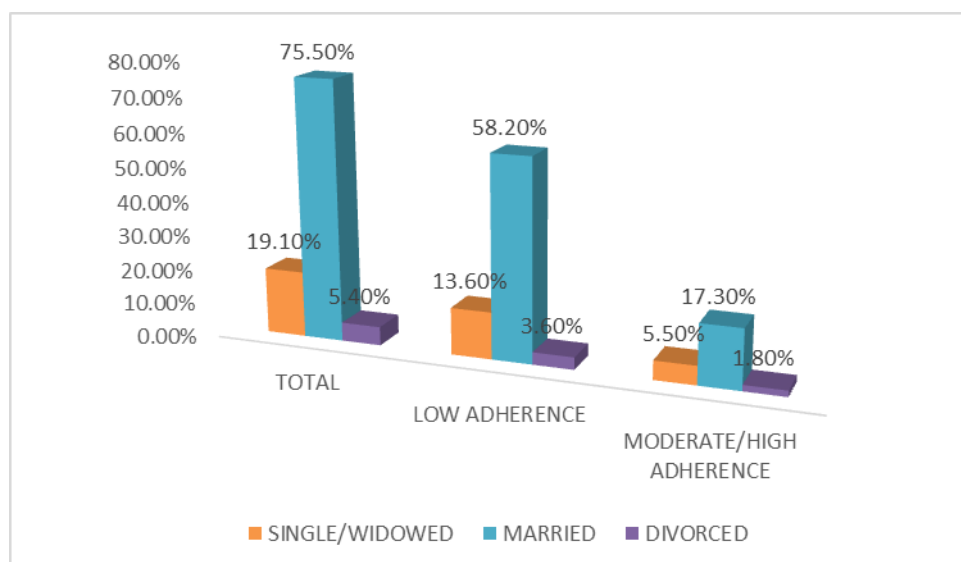
FIGURES

Fig 1: Comparison based on marital status.

Figure 1 suggest that in 75.5 % of married patients most of them had 64 (58.2%) low adherence and 19 (17.3%) had moderate/ high adherence. Among the divorced patients 4(3.6%) & 2 (1.8%) were having poor and moderate/ high adherence respectively.
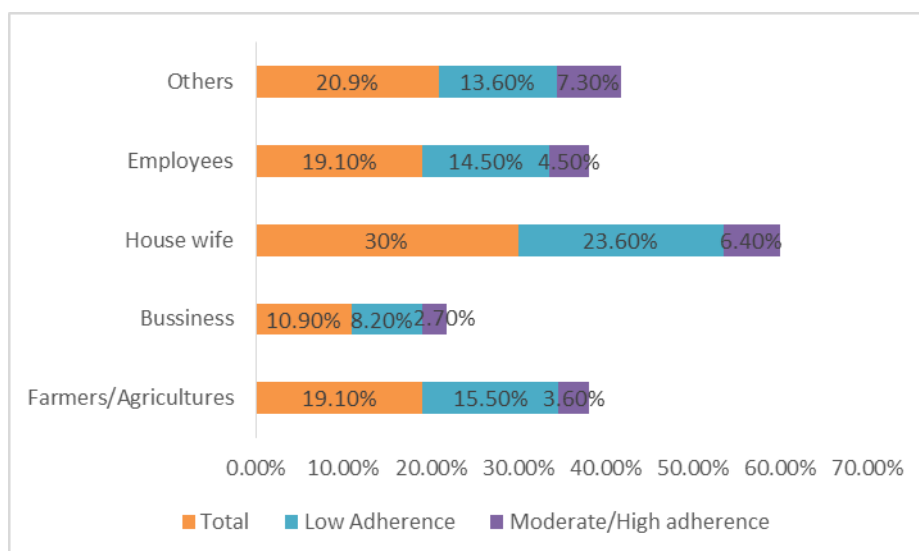

Fig 2: Comparison based on occupation of the patient.

Figure 2 suggest that most of the patients were house wives (30%) and 26 (23.6%) of them had low adherence and 7 (6.4%) were having moderate/high adherence.

DISCUSSION
Medication adherence is the patient compliance to the medications. There are more chances of patients non-adherence to the patients who are taking long term therapy. This may be due to factors such as age, gender, education, occupation and marital status of the patient. Illiteracy and lack of awareness are commonly associated with the non-adherence to the medications.

An evaluation of medication adherence was carried out by using MMAS-8 questionnaire in 110 patients who have been diagnosed with hypertension. The patients adherence to the medications was categorized in to 3 groups (poor adherence, moderate adherence and high adherence) according to the scores achieved from the MMAS-8 questionnaire. Table 1 shows the comparison of demographic characteristics between low and moderate/high adherence groups among hypertensive patients. The data suggests that out of 110 patients 50 (45.5%) were male and 60 (54.5%) were female in which 38 (34.5%) of male patients had low adherence and 13 (11.8%) of male patients were having moderate/ high adherence. In 54.5% of female patients 45 (40.9%) having low adherence and very less patients 14 (12.7%) of having moderate/high adherence. This data indicates

that both the male and female patients are having low adherence irrespective of their genders.

Table 2 illustrates the comparison based on the age of the patients. The patients were categorized according to their age that is patients lies between 21-40 years, 41-60 years and 61-80 years. A total of 19 (17.3%) patients were between age group of 21-40 years in which 12 (10.9%) patients had low adherence and 7 (6.4%) patients were having moderate/high adherence. Most of the patients 59 (53.6%) were under the age group of 41-60 years from which 43 (39.1%) and 16 (14.5%) were having poor and moderate/high adherence respectively. 28 (5.5%) and 4(3.6%) of patients were having poor adherence and moderate/high adherence respectively in a total of 32 (29.1%) of patients between 61-80 years of age. This data shows that the patients with age group of 41-60 years are prone to have hypertension than other groups, and they likely to have little more adherence than other age group patients.

Table 3 represents the education status of the patients. A total of 22 (20%) of patients were illiterate and most of the patients had low adherence (17.3%). The patients were having primary education were more that is 56 (50.9%), in which 44 (40%) of them were having low adherence and only 12 (10.9%) had moderate/high adherence. 25 (22.7%) of patients were with secondary education, from which 18 (16.4%) patients was with low adherence. The patients with the qualification of graduation and above were very less (6.4%) but they had more adherence to medications (4.5%) compared to other patients and only 1.8% had low adherence to the medications. This data indicates that education is the major for medication adherence. Awareness and sticking to the medications is the most reliable factor for medication adherence.

Table 4 illustrates the comparison of adherence with the education of the patient. This results shows the education of the patient shows a significance (0.017) in the medication adherence to the patient. Patients awareness and knowledge contributes to the improved medication adherence. The same result was also reported in Behnood A et al.[6]

The marital status of the patients were compared between low and moderate/high adherence of the patients shows in the Figure 1. The patients were categorized as single/widowed, married and divorced. As depicted, there was a higher percentage of married patients 83 (75.5%) followed by single/ widowed patients 21 (19.1%) and very least were divorced patients 6 (5.4%). 15 (13.6%) of single/ widowed patients had low adherence and very least 6 (5.5%) patients had moderate/high adherence. In 75.5 % of married patients most of them had 64 (58.2%) low adherence and 19 (17.3%) had moderate/ high adherence. Among the divorced patients 4(3.6%) & 2 (1.8%) were having poor and moderate/ high adherence respectively. The data

suggests that the divorced patients were very less and having least adherence to the medications than the other patients which may be due to their mental stress and carelessness.

Occupation of the patients was described in the Figure 2. The comparison were done between 5 groups. Most of the patients were house wives (30%) and 26 (23.6%) of them had low adherence and 7 (6.4%) were having moderate/high adherence. 23 (20.9%) of patients were categorized in the others groups which includes government employees, merchants etc.in which most of them (13.6%) were having low adherence and 7.3% of patients had moderate/high adherence. Farmers, employees (patients works in private places), and business were the another categories. 21 (19.1%) of the patients were farmers and employees and most of them had low adherence (15.5% farmers and 14.5% of employees) and 3.6% of farmers and 4.5% of employees had moderate/ high adherence. The rest of 10.9% patients were included in the business category in which 8.2% and 2.7% had low and moderate/high adherence respectively.

CONCLUSION
This study concludes that education is the main factor which contributes for high adherence. In our study there were a significant relation found between education and good adherence to medications. When the knowledge, and awareness increases which directly leads to good adherence to the patients.

ABBREVIATIONS
MMAS 8: Morisky Medication Adherence Scale 8, **n:** No.of patients, **BP:** Blood Pressure.

ACKNOWLEDGEMENTS

REFERENCES
1. Singh S, Shankar S, Prakash Singh G. Prevalence and Associated risk factors of hypertension: A Cross-sectional study in urban Varanasi. Int J of Hypertens, 2017; 2017: 1-10.
2. Bolivar JJ. Essential Hypertension an approach to its etiology and neurogenic pathophysiology. Int J Hypertens, 2013; 2013: 1-11.
3. Mekonnen HS, Gebrie MH, Eyasu KH, Gelagay AA. Drug adherence for antihypertensive medications and its determinants among adult antihypertensive patients in chronic clinics of referral hospitals in Northwest Ethiopia. Mekonnen

et al. BMC Pharmacol and toxicol, 2017; 18(27): 1-10.

4. Bhusal A, Jadhav PR, Deshmukh YA. Assessment of medication adherence among hypertensive patients: a cross-sectional study. Int J basics Clin Pharmacol, 2016; 5(4): 1606-1612.

5. Jimmy B, Jose J. Patient Medication Adherence: Measures in Daily Practice. Oman Med J, 2011; 26(3): 155-159.

6. Rod AB, Rabbanifar O, Pourzargar P, Rai A, Saadat Z, Saadat H et al. Adherence to antihypertensive medications in Iranian patients. Int J Hypertens, 2016; 2016: 17.