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Research Article

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### Medication Adherence Pattern Of Hypertensive Patients In Rural Area

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#### ABSTRACT

##### AIM & OBJECTIVES

The study investigated the level of drug adherence among hypertensive patients at a tertiary care hospital in Erode, Tamil Nadu. Specific objectives included measurement of blood pressure (BP) control achievement, estimating prevalence of drug adherence behaviour, and establishing the association between drug adherence behaviour and achievement of BP control.

##### METHODS AND MATERIALS

A question based observational study was carried out for 6 months with 102 participants.

##### FINDINGS

From the total number of subjects, majority were females (n =56; 54.9%). Out of the 102 patients, 40.2% (n = 41) of them were found to be medication adherent and 59.8% (n = 61) were non adherent. Blood pressure control was achieved in 70.7% (n = 29) among adherent patients while BP control was only 39.3% (n = 24) in non adherent patients.

##### CONCLUSION

From this study it can be concluded that medication adherence is very much important for blood pressure control. Poor drug adherence behaviour prevails among hypertensive patients and it can lead to poor achievement of blood pressure control. Thus this study shows an importance of regular patient counselling and awareness programme for improving medication adherence.

**KEYWORDS:** Blood pressure, non adherence, patient education

#### INTRODUCTION

Poor adherence to medications is one of the major problems in treatment of various diseases. Adherence to medication has been defined as the extent to which patients' behaviors coincide with health care providers' recommendations for health and medical advice.<sup>1</sup> It can be defined as the extent to which a patient's behavior, with respect to taking medication, corresponds with agreed recommendations from a healthcare provider.<sup>2</sup> Hypertension has become one of the most common

non-communicable diseases globally. Recent reports indicate that nearly 1 billion adults (roughly a quarter of the world's population) have hypertension, and this rate is predicted to increase to 1.56 billion by the year 2025.<sup>3-4</sup> Proper treatment and control of hypertension is very much important in reducing the mortality and morbidity rate among patients. Elevated blood pressure accounts for two-thirds and one-half of all cases of stroke and ischemic heart disease, respectively. Eighty percent of this burden occurred in low- and middle-income countries. Treatment reduces the risk of stroke by

30–41% and of coronary heart diseases by 22%.<sup>4</sup> Despite the availability of effective treatments, studies have shown that in many countries, less than 25% of patients treated for hypertension achieve optimum blood pressure. Poor adherence has been identified as the main cause of failure to control hypertension.<sup>5-6</sup> Poor adherence to antihypertensive treatment is a significant cardiovascular risk factor, which many a times remains unrecognized.<sup>7</sup> Poor adherence to antihypertensive therapy increases the risk of stroke among the hypertensive individuals.<sup>8</sup> The most important aims for the adequate control of hypertension are daily compliance and long-term adherence to therapy.<sup>9</sup> Some studies shows that beliefs and perceptions regarding medication may have an important effect on adherence to treatment.<sup>10</sup> These beliefs are linked to increased levels of adherence. Thus, it is very important to understand about the patient's beliefs about medications to prevent poor adherence. Thus this study aims at examining the medication adherence pattern of hypertensive subjects residing in rural areas and establishing the association between drug adherence behaviour and achievement of BP control.

## **MATERIALS AND METHODS**

### **Study Area**

The study setting was Erode Govt: Hospital, Erode, Tamil Nadu, India. The subjects who are on prescription medications for hypertension were identified. Data were collected from these hypertensive patients. The sample population consists of people having different life styles.

### **Study Design**

A question based observational study was carried out for 9 weeks.

## **INCLUSION AND EXCLUSION CRITERIA**

### **Inclusion Criteria**

Subjects who are on prescription medications for hypertension, above 18 years of age were included.

### **Exclusion Criteria**

Study subjects who are taking other forms of medications (Ayurvedic and Homeopathic) and subjects with hearing /cognitive impairment were excluded.

## **METHOD**

Measurement of BP was based on the 7th Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JCN 7) Classification. Self-reported adherence behavior was assessed via the use of a standard international adherence measure known as the Morisky Medication Adherence Scale Patients who responded “No” to three or more of the four MMAS items (MMAS score of 0 or 1) were classified as adherent. Patients responding “No” to fewer than three of the four items (MMAS score 2, 3, or 4) were classified as non-adherent.

## **RESULT**

During the 9-week period of data collection, 102 participants were recruited and interviewed using questionnaire.

### **Achievement of BP Control**

In the sample of 102 subjects on prescribed drug treatment for hypertension, BP control, based on the JCN 7 classification, was achieved in 52% of the patients (n = 53). Figure 1 illustrates the distribution of measurements obtained from the patients on the dates of presentation.

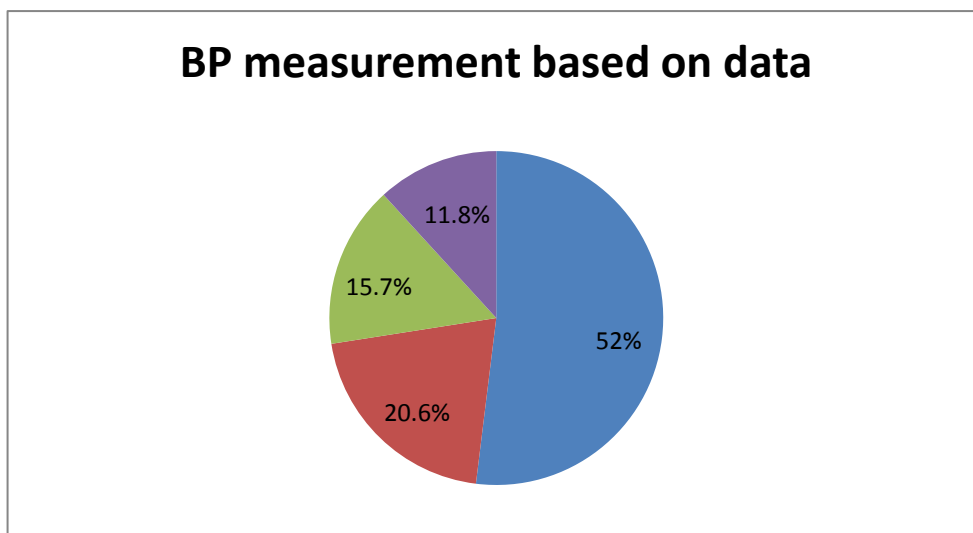


Figure 1

Participants measured systolic BP (SBP) of  $147.24 \pm 24.35$  mmHg.  
 Average diastolic BP (DBP) measurement was  $89.04 \pm 13.46$  mmHg.  
 BP control on the previous date of consultation was obtained by checking on the patients' OPD cards.  
 Achievement of BP control on the day of the previous consultation was noted to have been even lower at 43.9%.

**Table 1:** Distribution of adherent and non-adherent subjects

Total no. of subjects	No. of adherers	No. of non-adherers
102	41	61

From the study

The no. of adherers were found to be = 41

The no. of non-adherers were found to be = 61

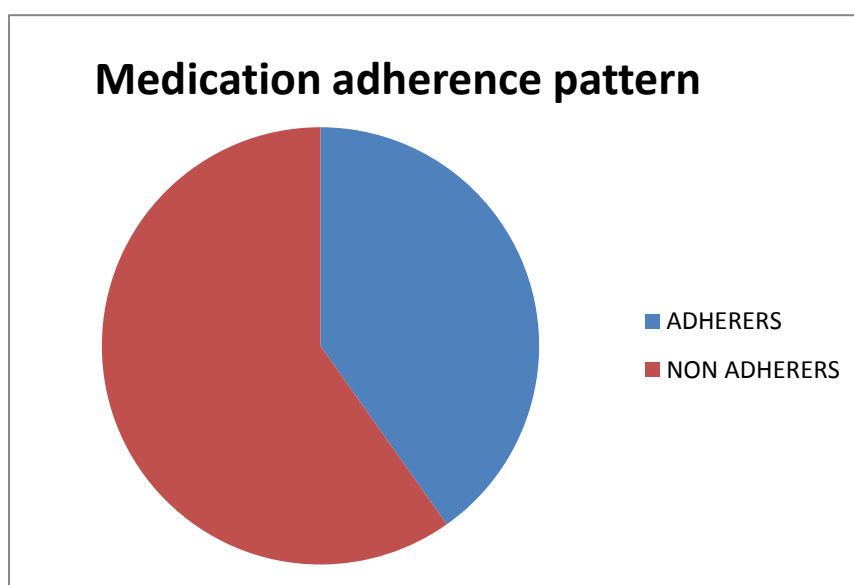


Figure 2

**Table 2:** BP control based on sex

Sex	Total no. of subjects	BP control
Males	46	17
Females	56	36

**Table 3:** BP control based on age

Age	Total no. of subjects	BP control
Above 80 years	13	10 (76.6%)
71 – 80	32	21 (65.6%)
61 – 70	34	15 (44.1%)
51 – 60	8	4 (50%)
Below 50	15	3 (20%)

**Distribution of relevant characteristics between adherent and non-adherent participants****Table 4:** BP control

BP control	No. Of adherers N=41 (40.2%)	No. of non-adherers N=61(59.8%)
Control achieved	29(70.7%)	24(39.3%)
Uncontrolled BP	12(29.3%)	37(60.7%)

Achievement of BP control is defined as systolic BP < 140mmHg; diastolic BP < 90mmHg

**Table 5:** Sex

Sex	No. of adherers N=41	No. of non-adherers N=61
Female	24(58.5%)	32(52.4%)
Male	17(41.5%)	29(47.5%)

**Table 6:** Body Mass Index

BMI	No. of adherers N=41	No. of non-adherers N=61
Overweight/Obese	13(31.7%)	31(50.8%)
Normal/Under weight	28(68.3%)	30(49.2%)

BMI ranges: Underweight < 18.5  
Normal 18.5 – 24.9  
Overweight 25 – 29.9  
Obese > 30

**Table 7: Age**

Age	No. Of adherers N=41	No. of non – adherers N=61
Less than 65	9(22%)	27(44.3%)
65 and above	32(78%)	34(55.7%)

**The Prevalence of Drug Adherence Behaviours**

Only 40.2% of the participants reported that they took their medications as prescribed at all times (n = 41). The other 59.8% (n = 61) scored 2 points on the MMAS, signaling that they were not consistently adherent.

**Association Between Adherences to Prescribed Medication Achievement of Bp Control**

Patients who reported adherence to medication measured DBP of  $83 \pm 10.83$  mmHg and non-adherent participants had DBP of  $93.01 \pm 13.60$  mmHg. For SBP, adherent participants measured  $136.17 \pm 21.74$  mmHg and non-adherent participants measured  $154.67 \pm 23.31$  mmHg. Participants with normal BP measurements were almost four times more likely to report maximal adherence to prescribed drug administration schedules than their non-adherent counterparts. Considering the impact of age (older than 65), gender, body mass index, and drug adherence on achievement of BP control yielded only drug adherence as exhibiting a statistically significant association with the desired outcome.

**DISCUSSION****Achievement of Blood Pressure Control**

Uncontrolled blood pressure is defined by the American Society of Hypertension as Systolic BP of 140 mmHg and above and/or Diastolic BP of 90 mmHg and above.<sup>13</sup> Based on this definition, BP control was achieved in 70.7% (n = 29) among adherent patients while BP control was only 39.3% (n = 24) in non adherent patients.

Achievement of BP control is essential in order to avert the occurrence of adverse outcomes such as physical complications and death.<sup>15</sup> With as much as 20.6% of patients in this study exhibiting severe levels of BP elevation, the likelihood of adverse outcomes is very high. In this regard, it is essential that causes of failure of hypertension management be identified and rectified at both the institutional as well as at the community level. Because the difference in achievement of control between the

sexes was not statistically significant, measures should be equally targeted at both male and female hypertensive patients.<sup>16-18</sup> The apparent improvement in achievement of BP control with older age may point towards the need for targeted/age-specified interventions.<sup>18</sup> There may also be a need for equitable allocation of interventions with younger patients requiring more effort than their older counterparts. Further investigation is necessary to reveal the factors that contribute to poorer adherence in younger people in this particular context. Studies on medication adherence in other contexts have also yielded similar findings with regard to the impact of age.<sup>16</sup>

**Association Between Adherences to Prescribed Schedules for Drug/Medication Administration and Achievement of Bp Control**

It shows that failure to adhere to prescribed medications would be a direct cause of failure to achieve BP control. Blood pressure control is linked to adherence pattern. Poor adherence results in poor control of blood pressure.

**CONCLUSION**

Achievement of BP control was suboptimal in the sample population at only 52%. Drug adherence within this population was also very low with less than half of participants reporting that they were adherent to their medication (40.2%). One of the main causes for low BP control was found to be poor adherence to prescribed medications. Participants with normal BP measurements were almost four times more likely to report maximal adherence to prescribed drug administration schedules than their non-adherent counterparts. Medication adherence patterns are one of the major factors causing low BP control. Future studies can focus on better understanding of the determinants of adherence, also to find out the reasons for non-adherence to medications .it can also include effective interventions to improve adherence pattern.

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