

**ADHERENCE TO ANTIHYPERTENSIVE MEDICATIONS: A COMMUNITY BASED SURVEY IN RURAL MANDYA.**

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**Abstract**

**Introduction:** Hypertension is the third most important risk factor for attributable burden of disease in South Asia. Adherence to medication is an important determinant of optimal blood pressure levels in hypertensive patient along with physical exercise and low salt intake. **Objectives:** This study was done to determine adherence to antihypertensive medication among hypertensives aged 18 years and above in the rural field practice area of MIMS Mandya and assess the factors determining adherence to antihypertensive medication among study subjects. **Methods:** **Study design:** Cross sectional study. **Study period:** 3 months (July to September 2017). **Study area:** Rural field practice area of MIMS Mandya. **Study Population:** Known case of hypertension residing in the study area for at least 6 months duration. **Results:** Among study subjects (n=180) 127(71%) subjects had high adherence, 45 (25%) had medium adherence and 8(4%) had low adherence. Adherence to antihypertensive medications was statistically significant with respect to sex (p < 0.05). **Conclusion:** 70.6% were adherent to antihypertensive medication. The important reasons which favour adherence to treatment were willingness to take medication and no side effects from medication. Factor which negatively influenced adherence to treatment were medication costs and using more than one pharmacy to get medication.

**Key-words:** Adherence, Medication, Hypertension and Rural.

**Introduction**

High blood pressure is third most important risk factor for attributable burden of disease in South Asia.<sup>[1]</sup> The World Health Organization (WHO) has estimated that about 62% of cerebrovascular disease and 49% of ischemic heart disease burden worldwide are attributable to suboptimal blood pressure levels. High blood pressure is estimated to cause 7.1 million deaths annually, accounting for 13% of all deaths globally.<sup>[2]</sup>

Hypertension exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India.<sup>[3]</sup>

Adherence to hypertension (HT) medication is very important for improving the quality of life and preventing complications of hypertension. Factors such as age, gender, low socio economic status and severity of disease, number of pills per day, side effects of medication, patient's inadequate understanding of the disease and importance of treatment, forgetfulness and presence of psychological problems, especially depression have been shown to affect adherence in various populations.<sup>[3]</sup>

WHO describes poor adherence as one of the most important cause for uncontrolled blood pressure and

estimates that 50 – 70% of the people do not take their anti-hypertensive medication as prescribed.<sup>[2]</sup>

WHO emphasized that “increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments”. Poor treatment adherence is a roadblock to better quality of life. Most health promotion interventions seek in some way to change health behaviour by changing health-related knowledge, attitudes, barriers and facilitators.<sup>[2]</sup> So this study was carried out to find out the causes for non-adherence to HT medication.

**Objectives** To determine adherence to antihypertensive medication among hypertensives aged 18 years and above in rural field practice area MIMS Mandya & To assess the factors determining adherence to antihypertensive medication among study subjects

**Methodology**

**Study design:** Cross sectional study

**Study period:** July 2017 to September 2017

**Sample size:** 180

Sample size was calculated using the formula

$$N=4pq/d^2,$$

Where p is (P=Prevalence of hypertension among  $\geq 18$  years, 36.1)<sup>[4]</sup>  
q' is 100-p, and d is 20% error of p

**Ethical approval:** The study was approved by Institutional Ethics Committee.

#### Method of data collection:

A community-based cross-sectional study was conducted. There are 11 villages under the Rural Health Training Centre (Keregodu) of Mandya Institute of Medical Sciences. The total population of the 11 Villages is 8318.<sup>[5]</sup>

The villages were enlisted in alphabetical order. Ankanadoddi, H.M.doddi, Kalmattidoddi, Keregodu, Keregodu R.P, Kodidoddi, K.Mole, Marilinganadoddi, Panchegoudanadoddi, Siddegoudanadoddi, Talemeledoddi. The first village to begin the study was selected from the list based on the random sampling method. All eligible participants were selected by house-to-house survey till sample size was met.

The data was collected over a period of 3 months (July-September) by interview method through house-to-house visit. In case of non-availability during the first visit, an additional visit was done. All the study participants were interviewed by a structured questionnaire in the local Kannada language after obtaining informed verbal consent.

The questionnaire was pretested and modified accordingly. The study domains included were patient's adherence; socio-demographic factors. The patient's adherence to medications was assessed using the Morisky 4-Item

Self-Report Measure of Medication-taking behaviour [MMAS-4], which included

- Do you ever forget to take your medicine?
- Are you careless about taking your medication at times?
- When you feel better sometimes do you stop taking your medication?
- Sometimes if you feel worse while taking medication do you stop taking it?

#### Inclusion criteria

- Duration of the diagnosed hypertension for more than 6 months.
- Known case of HT residing in the study area for at least 6 months duration.

#### Exclusion criteria:

Study subjects not suffering from myocardial infarction (MI), stroke, acute renal failure (ARF).

**Adherence Definition:** Any respondent with history of HT for more than 6 months, who failed to fulfil any one of the four criteria in Morisky scale is said to be non-adherent.<sup>[3]</sup>

According to Morisky scale, the scale is scored zero point for each "Yes" and 1 point for each "No". The adherence was scored as follows, if they Score 0: High adherence, 1-2: Medium adherence and 3-4: Low adherence

#### Analysis:

The data was entered in Microsoft excel software. Analysis was done using descriptive statistics like percentages and chi-square test for association done by enumeration of qualitative data. Actual frequencies as they are and not the percentage of the characteristics were used for chi-square test.

### Results

A total of 180 study subjects were interviewed from rural field practice area MIMS, Mandya. Table 1 shows the socio demographic and clinical characteristics of study subjects.

**Table 1: Distribution of study subjects according to socio-demographic profile and characteristics**

Characteristics	No.	Adherence (%)	Non adherence (%)	p value
<b>Age in years</b>				
41-50	14	5 (35.0)	9 (65.0)	
51-60	47	34 (72.3)	13 (27.7)	
61-70	66	52 (78.8)	14 (21.2)	<b>P &lt; 0.05</b>
71-80	38	30 (78.9)	8 (21.2)	
81-90	15	7 (46.7)	8 (53.3)	
<b>Sex</b>				
Male	77	63 (81.8)	14 (18.2)	<b>P &lt; 0.05</b>
Female	103	64 (62.1)	39 (37.9)	
<b>Education</b>				
No formal school	89	66 (74.9)	23 (25.8)	
Primary school	36	22 (61.6)	14 (38.4)	
Middle school	49	25 (51.0)	24 (49.0)	<b>P &gt; 0.05</b>
PUC	5	4 (80.0)	1 (20.0)	
Diploma/ Degree	11	10 (91.0)	1 (9.0)	
<b>Occupation</b>				
Government employee	6	4 (66.7)	2 (33.3)	
Non government employee	6	4 (66.7)	2 (33.3)	
Self employed	34	25 (73.5)	9 (26.5)	
Homemaker	82	50 (60.9)	32 (39.1)	<b>P &lt; 0.05</b>
Retired	29	26 (96.5)	1 (3.5)	
Not working	23	16 (69.5)	7 (30.5)	

Among the study subjects (n = 180), 127(70.6%) were found to be adherent while 53 (29.4%) were non adherent. There were a total of 77 (42.7%) males and 103 (57.2%) females. Statistically significant difference was seen regarding adherence between sexes (p<0.05). Maximum study subjects (n=52; 28.8%) were in the age group of 61-70 years. Adherence to antihypertensive medications was statistically significant between age groups (p<0.05). Adherence was more among self-employed and retired

personnel. Adherence to antihypertensive medications was not statistically significant between groups of different educational qualifications ( $p > 0.05$ ).

**Table 2: Factors contributing to adherence**

Patient factors	Adherence (%)*
Capable of handling own medications	156 (84.7)
Willing to take medications	172 (95.6)
Knows about medications and disease	167 (92.8)
<b>Medication related factors</b>	
Do not use more than one pharmacy to get medication	48 (26.7)
No side effects from medications	165 (91.7)
No unpleasant taste or smell of drug	86 (47.8)
<b>Health care system related factors</b>	
Cost of medication is not more	25 (13.9)
Satisfied with healthcare provider	121 (67.2)

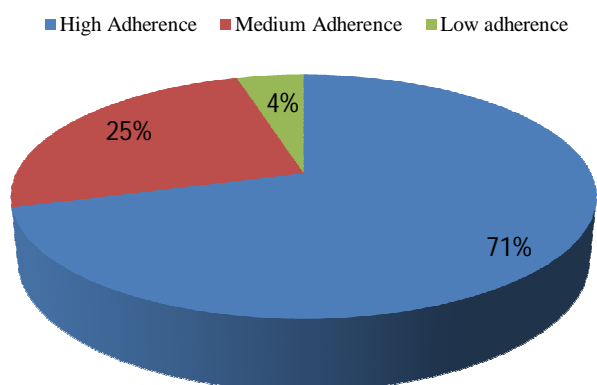
\*Multiple adherences

**Table 3: Factors contributing to non-adherence**

Patient factors	Non adherence (%)*
Not capable of handling own medications	24 (13.3)
Not willing to take medications	8 (4.4)
Do not Know about medications and disease	13 (7.2)
<b>Medication related factors</b>	
Use more than one pharmacy to get medication	132 (73.3)
Side effects from medication	15 (8.3)
Unpleasant taste or smell of Drug	94 (52.2)
<b>Health care system related factors</b>	
Cost of medication is more	155(86.1)
Dissatisfied with healthcare provider	59 (32.8)

\*Multiple adherences

**Figure 1: Distribution of study subjects based on their adherence to treatment (n=180)**



(According to MMAS-4 – Morisky Medication Adherence Scale- 4 item. Score 0: High adherence, Score 1-2:Medium adherence Score and 3-4: Low adherence)

Table 2 shows the prevalence of various personal, disease related, medication related and health care related characteristics that in the patient's views affected their drug adherence. While factors such as understanding the

need of medication (95.6%), knowing about medications and disease (92.8%) and no side effect from medication 91.7% were associated with better adherence, the most common discouraging factors were cost of medication is more (86.1%), use of more than one pharmacy to get medication (73.3%).

Figure 1 shows that extent of adherence to antihypertensive medication based on Morisky Medication Adherence Scale 4 item scale ,among study population 71% shows high adherence (Score 0), 25% shows medium adherence (Score 1-2) and 4% shows low adherence (Score 3-4). Medium adherence and low adherence constitute non adherence. 29% were non adherent and 71% were adherent.

### Discussion

Adherence to antihypertensive medication among the study population was 71.1%. This is similar to a studies conducted by Srivatsava A K et al., in rural area of Dehradun District (73%)<sup>[2]</sup> and study conducted by H S Mekonnen et al., in Northwest Ethopia (67.2%) and study conducted by Khanam M A in rural Bangladesh is (73.8%). The factors showing significant adherence were age, patients knowing about the disease and treatment and monotherapy .

Adherence was found to be high in the age group 61 to 70 years (78%) and it was more among female subjects than male subjects. This was similar to the study done by J Vekatachalam et al., in which the adherence was more in the elderly population (60 years and above) and more in females than in males.<sup>[3]</sup> The reason for better adherence in this age group could be care taken by the family members in rural area.

In our study among the different occupations, the adherence was high among self- employed and retired personnel than among other occupation. However there is no difference with respect to educational qualifications. In our study, the positive factors influencing adherence were willingness to take medicines, fewer side effects and knowledge about medications and disease (Hypertension and its complication) , whereas non availability of the prescribed branded drugs in all the pharmacies and high cost of the medicines had negative influence on adherence and this was similar to study done by Srivatsava et al., in Uttarkhand<sup>[4]</sup>

### Conclusion:

In our study most of hypertensives were adherent to antihypertensive medication. The important reasons which favour adherence to treatment were willing to take medication and no side effects from medication and factor which negatively influenced adherence to treatment were cost of medication and use more than one pharmacy to get medication.

### Recommendations:

To increase the adherence among those patients in whom cost of medications was found to be a negative factor for adherence were, suggested to buy generic drugs which

Should increase the awareness regarding the disease and its treatment and motivate them to take the advised medication with the support of Primary Health care staff members by organising awareness programmes and during routine OPD visits and home visits by health assistants and ASHA workers.

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