Assessment of Adherence to Anti-hypertensive Treatment among Patients Attending a Urban Health Care Facility of a Medical College, Tumkur

Cheluve Gowda GK, Savitha Rani BB, Krishna Iyengar, Venkatesh P, Vinay KS

ABSTRACT
Chronic non-communicable diseases are posing a serious threat to public health throughout the world, irrespective of whether developed and developing and thus deserve to be treated as a global health priority. Hypertension is the leading modifiable risk factor for cardiovascular diseases. Poor compliance to antihypertensive therapies has been linked to a variety of problems, including poor blood pressure control, hospitalisation and increased healthcare resource utilisation. **Methodology:** This Cross-Sectional study was carried out among all adult hypertensive patients from September to October 2018 visiting Urban Health Training Centre of Sri Siddhartha Medical College. **Results:** Out of 150 study subjects Majority of them 66 (44%) were having hypertension for 10-15 yrs and least 18 (12%) were having Hypertension for >5 yrs, 81 (54%) were Purchasing drugs from Private sectors and others from Government sector. 30 (20%) were taking 2 tablets per day, 109 (72.7%) were taking 1 tablet per day, 90 (60%) were having Low adherence, 36 (24%) were having Medium adherence and 24 (16%) High adherence for Drugs using Morisky Adherence scale. When we studied association between Adherence to drugs with other Socio-demographic characteristics, we got statistically significant results with Socio-economic status, residence and Place of Purchase of drugs (P<0.0). **Conclusion:** Adherence to drugs was found to be low in the present study. The level of adherence to treatment among the participants can be achieved by educating the Patients and creating awareness.

Key words: Hypertension, Adherence, Blood pressure, Complications.

INTRODUCTION
Hypertension is one of the major Public Health problem in both the developed and developing countries. Increased blood pressure is a leading risk factor for premature death, stroke and heart disease worldwide. Hypertension is the leading modifiable risk factor for cardiovascular diseases and was the topmost leading risk factor for global disease burden in 2010. Chronic non-communicable diseases are posing a serious threat to public health throughout the world and thus deserve to be treated as a global health priority. Hypertension accounts for 7.1 million deaths worldwide every year of which 57% is due to stroke and 43% is due to ischemic heart disease. WHO defines adherence as “the extent to which a person’s behaviour in taking medication, following a diet and/or executing lifestyle changes”. World Health Organization (WHO) describes poor adherence as the most important cause of uncontrolled blood pressure and estimates that 50% of people do not take their antihypertensive medication as prescribed.

The poorest of the people are at the highest risk of developing and dying prematurely from chronic diseases because their exposure to risk is high, whereas their access to health care services is low: “chronic diseases and poverty are interconnected in a vicious cycle”. Inability to buy drugs is a major determinant and is significantly associated with poor compliance and poor health outcomes in the developing world. Non-adherence to the medical regimens is a major concern in the management of patients with chronic illness like hypertension and is a major cause for treatment failure.

The present studies is conducted with the aim to assess adherence to drugs in a Hypertensive patients.

**METHODOLOGY**
This Cross-Sectional study will be carried out among adult hypertensive patients visiting Urban Health Training Centre (UHTC) of Sri Siddhartha Medical College during September to October 2018.

**Sample size**
All Hypertensive Patients attending Urban Health centre during September and October were taken for study.
Sampling Technique

Convenient sampling, all the consecutive diabetic subjects who attended Urban Health centre were included during that period.

Method of data collection

Medication adherence will be measured using the 8 item Morisky Medication Adherence Scale (MMAS-8) consisting of 8 items each of which measures a specific medication taking behaviour. Response categories are yes/no for 7 items and a 5 point Likert response for the last item. Socio-demographic characteristics will be recorded of all the eligible patients like age, gender, history of duration of hypertension, socioeconomic status, education level using pretested semi structured questionnaire. Questions will also be asked on number and frequency of the drugs and any side effects of drugs as experienced by patient.

Data will be collected by direct face to face interview by using semi structured questionnaire.

The degree of adherence will be determined according to the score resulting from the sum of all the correct answers: high adherence (8 points), average adherence (6 to < 8 points) and poor adherence (< 6 points). In this study, patients will be considered adherent when they have a score equal to eight in the MMAS-8.

Statistical Analysis

Data thus obtained was coded and entered into Microsoft Excel Work sheet. This was analysed using SPSS 22 version.

Analysis done by descriptive statistics like frequency distribution of the study subjects according to age, sex, marital status, educational status, employment, type of occupation and Socioeconomic status, To find out the association of Adherence of drugs with above factors, chi-square test was applied for each factor. The statistical significance was evaluated at 5% level of significance.

RESULTS

Socio-demographic Characteristics

Out of 150 study subjects majority of them 47 (31.3%) belongs to 49-58 yrs and least 17 (11.3%) belongs to 29-38 yrs, 96 (64%) were Males and 54 (36%) were females, 41 (27.3%) were Non-literate, 60 (40%) studied till High School and 49 (32.7%) studied Secondary and above, Most of them 49 (32.7%) were unemployed and 6 (4%) were in Professional job, Majority of them 59 (39.3%) were from Urban slums, 35 (23.3%) were from rural area and 56 (37.3%) were from Urban area, 56 (37.3%) belongs to Upper lower class and 16 (10.7%) were from Upper middle class (Table 1).

Disease Profile

Majority of them 66 (44%) were having hypertension for 10-15 yrs and least 12 (8%) were having Hypertension for >5 yrs (Table 2), 81 (54%) were Purchasing drugs from Private sectors and others from Government sector (Table 3), 30 (20%) were taking 2 tablets per day, 109 (72.7%) were taking 1 tablet per day, 5 (3.3%) were taking 3 tablets per day and 6 (4%) were taking 4 tablets per day (Table 4).

Adherence to drugs

90 (60%) were having Low adherence, 36 (24%) were having Medium adherence and 24 (16%) High adherence for Drugs using Morisky Adherence scale. (Table 5)

When we studied association between Adherence to drugs with other Socio-demographic characteristics, we got statistically significant results.

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| Determinants       | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Age                |           |                |
| 29-38              | 17        | 11.3           |
| 39-48              | 38        | 25.3           |
| 49-58              | 47        | 31.3           |
| 59-68              | 28        | 18.7           |
| 69 and >           | 20        | 13.3           |
| Gender             |           |                |
| Female             | 96        | 64.0           |
| Male               | 54        | 36.0           |
| Education          |           |                |
| Non-literate       | 41        | 27.3           |
| Primary and High School | 60  | 40.0           |
| Secondary School and above | 49  | 32.7           |
| Occupation         |           |                |
| Unemployed         | 49        | 32.7           |
| Unskilled          | 38        | 25.3           |
| Semi-skilled       |           |                |
| Skilled            | 14        | 9.3            |
| Clerical and shop owners | 12  | 8.0            |
| Semi-professional  | 19        | 12.7           |
| Professional       | 6         | 4.0            |
| Residence          |           |                |
| Urban              | 56        | 37.3           |
| Urban Slum         | 59        | 39.3           |
| Rural              | 35        | 23.3           |
| Socioeconomic status|          |                |
| Upper class        | 32        | 21.3           |
| Upper Middle class | 16        | 10.7           |
| Lower Middle class | 46        | 30.7           |
| Upper Lower class  | 56        | 37.3           |

| Duration of HTN    | Frequency | Percent |
|--------------------|-----------|---------|
| 1-10 yrs           | 137       | 91.3    |
| 10-20 yrs          | 11        | 7.4     |
| >20 yrs            | 2         | 1.3     |
| Total              | 150       | 100.0   |

| Medicine Purchased | Frequency | Percent |
|--------------------|-----------|---------|
| Government Pharmacy| 69        | 46.0    |
| Private Pharmacy   | 81        | 54.0    |
| Total              | 150       | 100.0   |
### Table 4: Distribution Study Subjects based on Number of Tablets taken

| Number of Tablets taken | Frequency | Percent |
|-------------------------|-----------|---------|
| 1                       | 109       | 72.7    |
| 2                       | 30        | 20.0    |
| 3                       | 5         | 3.3     |
| 4                       | 6         | 4.0     |
| **Total**               | **150**   | **100.0** |

### Table 5: Distribution Study Subjects based on Adherence Scoring.

| Adherence             | Frequency | Percent |
|-----------------------|-----------|---------|
| Low adherence         | 90        | 60.0    |
| Medium Adherence      | 36        | 24.0    |
| High Adherence        | 24        | 16.0    |
| **Total**             | **150**   | **100.0** |

### Table 6: Distribution of study subjects based on Association of Adherence with Socio-demographic Characteristics.

| Determinants                          | Low adherence | Medium adherence | High adherence | Total (%) | Chi-square value | p-value |
|---------------------------------------|---------------|------------------|----------------|-----------|------------------|---------|
| Age in yrs                            |               |                  |                |           |                  |         |
| 29-38                                 | 11            | 4                | 2              | 17(11.3)  |                  |         |
| 39-48                                 | 27            | 8                | 3              | 38(25.3)  | 5.2              | 0.7     |
| 49-58                                 | 25            | 11               | 11             | 47(31.3)  |                  |         |
| 59-68                                 | 16            | 7                | 5              | 28(18.6)  |                  |         |
| 69 and >                             | 11            | 6                | 3              | 20(13.3)  |                  |         |
| Gender                                |               |                  |                |           |                  |         |
| Male                                  | 56            | 21               | 19             | 96(64)    | 3.0              | 0.2     |
| Female                                | 34            | 15               | 5              | 54(36)    |                  |         |
| Education                             |               |                  |                |           |                  |         |
| Non-literate                          | 24            | 10               | 7              | 41(27.3)  |                  |         |
| Primary and High School               | 40            | 11               | 9              | 60(40)    | 2.6              | 0.6     |
| Secondary School and above            | 26            | 15               | 8              | 49(32.6)  |                  |         |
| Residence                             |               |                  |                |           |                  |         |
| Urban                                 | 33            | 14               | 9              | 56(37.3)  |                  |         |
| Urban slum                            | 46            | 3                | 10             | 59(39.3)  | 30.2             | 0.00    |
| Rural                                 | 11            | 19               | 5              | 35(23.3)  |                  |         |
| Socio-Economic status                 |               |                  |                |           |                  |         |
| Upper Class                           | 28            | 0                | 4              | 32(21.3)  |                  |         |
| Upper Middle Class                    | 14            | 0                | 2              | 16(10.6)  |                  |         |
| Lower Middle Class                    | 25            | 15               | 6              | 46(30.6)  | 31.4             | 0.0     |
| Upper Lower Class                     | 23            | 21               | 12             | 56(37.3)  |                  |         |
| Duration Of Hypertension              |               |                  |                |           |                  |         |
| 1-10 yrs                              | 84            | 34               | 19             | 137(37.2) | 5.2              | 0.7     |
| 10-20 yrs                             | 5             | 1                | 5              | 11(7.3)   | 8.7              | 0.06    |
| >20 yrs                               | 1             | 1                | 0              | 2(1.3)    |                  |         |
| Number of tablets taken               |               |                  |                |           |                  |         |
| 1                                     | 66            | 26               | 17             | 109(72.6) |                  |         |
| 2                                     | 15            | 9                | 6              | 30(20)    | 0.5              |         |
| 3                                     | 3             | 1                | 1              | 5(3.3)    | 2.3              |         |
| 4                                     | 6             | 0                | 0              | 6(4)      |                  |         |
| Medication Purchased                  |               |                  |                |           |                  |         |
| Government Pharmacy                   | 24            | 33               | 12             | 69(46)    | 43.9             | 0.0     |
| Private                               | 66            | 3                | 12             | 81(54)    |                  |         |
with Socio-economic status, residence and Place of Purchase of drugs (P=0.0) (Table 6).

**DISCUSSION**

Hypertension, is a chronic disease that requires lifestyle interventions and pharmacotherapy for life, adherence to the therapy and its assessment is a major challenge to be addressed. Out of 150, 90 (60%) were having Low adherence, 36 (24%) were having Medium adherence and 24 (16%) High adherence for Drugs using Morisky Adherence scale.

In a hospital based study by Hema K et al. in Andhra Pradesh (n=400), only 15.3% (n=61) of the participants were found to have high adherence to anti-hypertensive medication based on 8 point Morisky medication adherence scale. Study done by Kumarswamy RC et al. in a teaching hospital of Karnataka showed that 74% of the participants were adherent to the antihypertensive medication. In another community based study in Bangladesh by Khanam MA et al. 73.8% of the Participants were adherent to the medication. A hospital based study done by Ambaw AD et al. in Northwest Ethiopia (n=384), 64.6% of the study participants were found to be adherent to their treatment.

In Present study there was no association with Age, gender, education, Occupation, duration of disease, number of tablets taken and place of purchase of drugs with adherence to drugs. In contrast, a study by Rao BB et al. showed that adherence rate towards antihypertensive Medication was better among patient above 60 years of age (67.2%) and this was found to be statistically significant (p=0.02). But study done at Mangalore in a tertiary care hospital by Kumar N et al. found that adherence was found to be good in the age group of ≤ 60 but not statistically significant (p=0.52). In contrast to the findings of the present study, Mazzaglia G et al. showed significant association between gender and adherence (p<0.001 OR (95%CI) = 0.72 (0.65–0.81)).

In Present study Socio-economic status, residence and Place of Purchase of drugs were having influence on Adherence to drugs (P=0.0), study done by Ahmad S et al. in Moradabad showed statistical significance between SES and adherence where in participants belonging to upper middle class had better adherence compared to the lower middle class (p=0.001). In present study their was association between number of drugs taken and adherence to drugs. Similar findings were reported from a study by Nagarark AM et al. in which there was no significance found between adherence and number of drugs taken (p=0.631).

Patients who were hypertensive for a period of 5 years or more were 3 times more likely to be adherent compared with those suffering from hypertension for less than 5 years, emphasizing the fact that longer duration of the disease helps the patient to accept the diseased state as well as to adapt to the adherence behavior over time, consistent with findings from previous studies. Longer duration of hypertension helped these patients build up a habit of regularly consuming their pills.

**CONCLUSION**

The study concludes with observation of 60% of Low adherence to drugs and statistically Significant results with Socio-economic status, However hypertension being a chronic and dynamic disease, adherence to the medication needs to be maintained continuously and fully optimized.

**ACKNOWLEDGEMENT**

The authors would like to thank Department of Community Medicine and Sri Siddhartha Medical College.

**CONFLICT OF INTEREST**

The authors declare that there are no conflicts of interest.

**RECOMMENDATIONS**

Health care Provider should incorporate a system to record the adherence to treatment and blood pressure control at every.

**ABBREVIATIONS**

MMAS 8: Morisky Medication Adherence Scale.

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