

# The Prevalence Of Non Compliance (Missing Doses) Of Treatment Among Hypertension Patients In Urban Area Of Bangalore-Community Based Study

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## Abstract

**Background:** The effect of missing treatment in hypertensive subjects results in higher rates of complications. The prevalence of missing doses or non-compliance in regularity of treatment is few in communities.

**Objective:** To estimate the prevalence of missing doses of treatment among hypertensive patients in urban area of Bangalore

**Methods:** Community based, descriptive, cross sectional and quantitative study was carried out in urban area of Bangalore during July to August 2015. Subjects were randomly selected from the ward number 32 from the houses and the information regarding missing doses of medicines among hypertensive subjects was collected at their doorsteps. Data was analysed using SPSS version 20.

**Results:** the prevalence of non-compliance (missing dose) of treatment regularity among 350 subjects was 16.9% (20% in men and 14% in women). The proportion of missing doses was high in the age group of 41-70 years, combination therapy (17%), free supply medicines (19%), duration of hypertension of 3 to 9 years (20%) and Diabetic mellitus patients (13%). There are differences in systolic and diastolic blood pressures among missed and non-missed drugs and the differences in Systolic BP was statistically significant in both male and females

**Conclusion:** In this community based study, the prevalence of missed treatment for hypertension since last 48 hours was 16.9%. Twenty percent of male patients missed the doses and the Systolic Blood Pressure was at higher level among non-compliance patient.

**Key words:** Missing, Compliance, Hypertension, Blood pressure, Diabetics

## Introduction:

Compliance of treatment is very essential in controlling the level of blood pressure among the hypertensive patients. The uncontrolled hypertension with poor compliance in regularity of treatment results in higher rate of complications or mortality. The causes for low level of compliance are different among men and women, age group,

social class, availability of medicine, associated co morbid conditions etc.<sup>1,2,3</sup>

The hypertension remains the underlying conditions for many non communicable chronic diseases or conditions. The adherence to the treatment regimens or combinations by the patient is decided by the physician which plays a crucial in preventing many such conditions or problems. An

estimation of 70 – 80 % of hypertensive patients adhere to treatment regulatory by not missing the doses as reported from hospital based studies.<sup>1,3,4</sup> The data availability from the community on adherence to treatment in India is few.<sup>3,4</sup> It is important for public health program to know the impact of such non compliance of treatment on society in terms of cost of care and future projections. This study was carried out with an objective to estimate the prevalence of missing doses (poor compliance) of treatment among hypertensive patients in urban area of Bangalore.

## Methods

This is a community based, descriptive and observational study done during the period of August and September 2015 in a sample population of urban area in Northern part of Bangalore. The ward number 32 was selected for the study. The inclusion criteria for the subject for study was individual must be above 30 years and already diagnosed as hypertension irrespective of duration and who is currently on treatment for the same. The consent was taken from each individual subject after explaining the importance and impact of this study. Data was collected at the door step of the subjects at their residence. Houses were randomly selected from the streets enquiring about individuals who are on treatment for hypertension. The supportive document such as patient prescription slip, health record or file, tablet strips being used for confirmation of medicine use and other details necessary for the study. Their blood pressure was recorded using the sphygmomanometer in sitting posture after the data collection as part of the study protocol.

Data included the demographic details, history of hypertension, medicine prescribed, dosage and pattern of consumption of the medication, missing of taking medicines for 48 hours, associated co morbid conditions etc. the data was analysed using SPSS version 20. The analysis was done on demographic profile of subjects, types of drugs, duration of hypertension, missing doses by the subjects, differences in Blood pressure level among subjects who missed the doses of medicines and co morbid conditions.

## Results

This study subjects were 350, male and female were 153 and 197 respectively as shown in Table 1. The number of people who missed dose of treatment for the last 48 hours was 59 accounting to 16.9% . The proportion of missing dose among men and women was 20 and 14 percent respectively. The proportion of missing the dose was high in the age group of 51-70 years especially among men. Twenty percent of the men who were on combined treatment missed the dose compared to 13 percent of women. Similarly the men were in higher proportion in missing the dose if they are purchasing medicines in comparison with free availability through government hospitals. Compliance in regularity of

medicines in relation to the duration of hypertension shows, the proportion of missing doses were high among people who were diagnosed as hypertension since last 3 to 9 years compared to other group. The higher rate of missing of doses of medicines was observed among Diabetic patients in men, and other than Diabetes Mellitus in women (17%). The difference in compliance rate was equal among men or women for the mode of therapy either as mono or combined.

Table 2 shows the mean systolic blood pressure and diastolic blood pressure was high among the people who missed the dose compared to those who are in compliance with regularity of medications. The differences in mean blood pressure between these two groups were found to be statistically significant for systolic blood pressure ( $p < 0.0001$ ). There are variations in the observed mean blood pressure differences between different age groups for Systolic Blood pressure (SBP) and Diastolic Blood pressure (DBP). The difference in SBP among females aged less than 41 years were statistically significant ( $p < 0.0001$ ).

## Discussion

The importance missing doses of treatment is felt by the Hypertension patients who is symptomatic than non-symptomatic. The regular treatment compliance prevents the onset of damage to the organs and delays in complications due to hypertension. The community based studies are not available in large number compared to hospital based studies. The importance of community based study takes into account the majority of the hypertension subjects will be apparently healthy or without complications as subjects whereas in hospital based studies will be symptomatic or have complications or severity of co morbid conditions. Hence the community based gives high validity to monitor the compliance of treatment regularity.

The age of the patient plays a key role in compliance in relation to the regularity of treatment. As the age adherence resulting in senile dementia or disabilities trends to forget consuming the medications. In this study it was observed that the problem of missing doses was not high among elderly aged population which is accounting to one of five patients.

The duration of hypertension on missing doses shows the tendency of poor compliance was high if they were diagnosed recently. The habits of consuming medicines as per the schedule will determine the compliance irrespective of number of medicines or tablets. This study showed the proportions were high among males compared to females till 108 months duration of hypertension. The difference between the missing doses was statistically significant ( $P < 0.05$ ).

The duration of hypertension has observed to be influencing the missing doses of hypertension. Subjects with hypertension of less than 36 months and more than 108 months had better compliance in regularity. Similarly the proportion was high among employed in both sexes and homemakers among women.

The supply of medicines in terms of availability either as free or purchase, the mono or combination therapy are not showing high level of influence on missing the doses of treatment. However the differences are found to be statistically significant (P<.05).

The subjects affected with co morbid conditions are found to be having problems in compliance of regularity. The subjects with diabetes were found to be missing of treatment in high proportions and other co morbid conditions are accounting 5 percentages among men.

Few of the hospital based studies showed that hypertension patients have missed their doses of treatment at least one dose in the last three months in 15-48% among elderly population<sup>5,6,7</sup>.

The poor compliance was between 17.8% to 48% in different studies among hypertensive patients<sup>2,4,5,6,7</sup>. The poor compliance among diabetic was 48.5% in and the common reason was the cost of drugs<sup>4</sup>.

The change in blood pressure is evidence of intake of adequate doses medicines in correct time. The custom made medicines in single or combination is individual based rather than group and treatment may be associated with co morbid conditions. The gross differences in blood pressure are evident among subjects who had missed their doses of medicines.

The difference in SBP in male and female among the missed and non missed subjects found to be statistically significant in this study ( p<0.0001).

It is observed in this study that the difference in SBP was higher in females compared to male subjects among subjects who missed their doses. The present study shows the differences in SBP of missed and non missed doses were statically significant except in the age group of 41-50 and 61-70 years among female subjects. Similarly the influence was observed among male subjects except in 61-70 years. The numbers were small to estimate the difference in SBP in some of the age groups.

**Limitations.** The reasons for the non-compliance were not considered in this study.

**Conclusion**

The proportion of missed doses or non compliance in treatment regularity was 16.9% irrespective of reasons in this community based study. One out of five male hypertensive patients missing their doses of treatment and their differences in SBP was higher among female subjects compared to male subjects.

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**Tables:**

Table 1. Distribution of characteristics among male and female subjects and non compliance

|                                 | Male       |             | Female     |             | Row total  |             | P Value* | Chi-square P Value |
|---------------------------------|------------|-------------|------------|-------------|------------|-------------|----------|--------------------|
|                                 | Total N(%) | Missed N(%) | Total N(%) | Missed N(%) | Total N(%) | Missed N(%) |          |                    |
| Age groups in years             |            |             |            |             |            |             |          |                    |
| ≤40                             | 5(3)       | 1(20)       | 25(13)     | 4(16)       | 30(9)      | 5(17)       | 0.8226   | 0.4019             |
| 41-50                           | 38(25)     | 6(16)       | 57(29)     | 7(12)       | 95(27)     | 13(14)      | 0.6259   |                    |
| 51-60                           | 50(33)     | 12(24)      | 51(26)     | 9(18)       | 101(29)    | 21(21)      | 0.4395   |                    |
| 61-70                           | 41(27)     | 10(24)      | 40(20)     | 5(13)       | 81(23)     | 15(19)      | 0.1684   |                    |
| >70                             | 19(12)     | 2(11)       | 24(12)     | 3(13)       | 43(12)     | 5(12)       | 0.8411   |                    |
| Duration of Hypertension months |            |             |            |             |            |             |          |                    |
| ≤12                             | 23(15)     | 5(22)       | 42(21)     | 4(10)       | 65(19)     | 9(14)       | 0.1727   | 0.3087             |
| 13-36                           | 26(17)     | 5(19)       | 38(19)     | 5(13)       | 64(18)     | 10(16)      | 0.5111   |                    |
| 37-72                           | 45(29)     | 10(22)      | 63(32)     | 10(16)      | 108(31)    | 20(19)      | 0.4023   |                    |

|                          |                 |                |                 |                |                 |                |        |        |
|--------------------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|--------|--------|
| 73-108                   | 28(18)          | 8(29)          | 22(11)          | 4(18)          | 50(14)          | 12(24)         | 0.3932 |        |
| 109-144                  | 18(12)          | 1(6)           | 24(24)          | 5(21)          | 42(12)          | 6(14)          | 0.1614 |        |
| >145                     | 13(8)           | 2(15)          | 8(4)            | 0(0)           | 21(6)           | 2(10)          | 0.2485 |        |
| Procurement of Medicines |                 |                |                 |                |                 |                |        |        |
| Free                     | 50(33)          | 9(18)          | 68(35)          | 13(19)         | 118(34)         | 22(19)         | 0.8776 |        |
| Purchased                | 103(67)         | 22(21)         | 129(65)         | 15(12)         | 232(66)         | 37(16)         | 0.0443 | 0.1675 |
| Occupations              |                 |                |                 |                |                 |                |        |        |
| Employed                 | 122(80)         | 26(21)         | 32(16)          | 7(22)          | 154(44)         | 33(21)         | 0.9020 |        |
| Unemployed               | 23(15)          | 4(17)          | 0(0)            | 0(0)           | 23(7)           | 4(17)          |        |        |
| Homemaker                | 0(0)            | 0(0)           | 165(84)         | 21(21)         | 165(47)         | 21(13)         |        |        |
| Pensioners               | 8(5)            | 1(13)          | 0(0)            | 0(0)           | 8(2)            | 1(13)          |        |        |
| Comorbidity              |                 |                |                 |                |                 |                |        |        |
| Diabetes Mellitus        | 43(28)          | 9(21)          | 53(27)          | 3(6)           | 96(27)          | 12(13)         | 0.0245 |        |
| Others                   | 110(72)         | 6(5)           | 144(73)         | 25(17)         | 254(73)         | 31(12)         | 0.0041 | 0.0005 |
| Type of therapy          |                 |                |                 |                |                 |                |        |        |
| Monotherapy              | 113(74)         | 23(20)         | 166(84)         | 24(14)         | 279(80)         | 47(17)         | 0.1965 |        |
| Combination Therapy      | 40(26)          | 8(20)          | 31(16)          | 4(13)          | 71(20)          | 12(17)         | 0.4287 | 0.2722 |
| <b>Total</b>             | <b>153(100)</b> | <b>31(100)</b> | <b>197(100)</b> | <b>28(100)</b> | <b>350(100)</b> | <b>59(100)</b> |        |        |

• Differences between missed rates among male and female subjects

Table 2. Distribution of blood pressure of male and female among who have missed and not missed subjects

| Age group in years | N(%)     | Non-Missed SBP Mean ± SD | DBP Mean ± SD | N(%)    | Missed SBP Mean± SD | DBP Mean ± SD | P-Value* |
|--------------------|----------|--------------------------|---------------|---------|---------------------|---------------|----------|
| <b>Male</b>        |          |                          |               |         |                     |               |          |
| ≤40                | 4(3)     | 125 ±5.8                 | 81.5 ±8.7     | 1(3)    | 164 ± 0             | 88 ± 0        |          |
| 41-50              | 32(26)   | 135.2±11.4               | 84.2±7.1      | 6(19)   | 156 ± 32.3          | 96.3 ± 13.1   | 0.0067   |
| 51-60              | 38(31)   | 138.5±14.3               | 86.8±8.2      | 12(39)  | 148.7 ± 0.2         | 93.2 ± 9      | 0.0267   |
| 61-70              | 31(25)   | 137.4±14.6               | 86.8±8.3      | 10(32)  | 141.8 ± 9.2         | 89.3 ± 6.7    | 0.4451   |
| >70                | 17(14)   | 138.9±15.8               | 86.7±9.1      | 2(6)    | 160 ±28.3           | 95 ±7.1       |          |
| Total              | 122(100) | 137±13.8                 | 86±8.8        | 31(100) | 149.1 ± 7.5         | 92.5 ± 9      | 0.00006  |
| <b>Female</b>      |          |                          |               |         |                     |               |          |
| ≤40                | 21(12)   | 133.3±19.5               | 84 ±10.1      | 4(14)   | 142.5 ± 34          | 94.5 ± 13.2   | 0.000001 |
| 41-50              | 50(30)   | 133±9.7                  | 85.5 ± 7      | 7(25)   | 139.7±16.9          | 85.1 ± 7.9    | 0.1273   |
| 51-60              | 42(25)   | 136.3±12.4               | 86±8.1        | 9(32)   | 149.6±11.1          | 90.4 ± 8      | 0.0046   |
| 61-70              | 35(21)   | 138.6±14.6               | 86.2±8.2      | 5(18)   | 145.2 ± 4.8         | 92 ± 8.4      | 0.3268   |
| >70                | 21(12)   | 142.5±19                 | 87.6±10.4     | 3(11)   | 160 ± 17.3          | 93.3 ± 5.8    |          |
| Total              | 169(100) | 136.2±14.4               | 85.9±8.4      | 28(100) | 146.4±17.1          | 90.3 ± 8.7    | 0.0009   |

\*statistical test was done only for differences in Systolic Blood Pressure .  
Blood pressures are in mm of Hg.

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