

# What Makes Hypertensive Patients Non-Compliant to Treatment? A Cross-Sectional Study from Peshawar

Causes Of Non-Compliance To Anti-Hypertensive Medications

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## ABSTRACT

**Objective:** To determine the frequency of causes of non-compliance to anti-hypertensive medications.

**Study Design:** Cross-sectional / descriptive study.

**Place and Duration of Study:** This study was conducted at the Department of Medicine; Khyber Teaching Hospital Peshawar from January 2019 to June 2019.

**Materials and Methods:** This study was conducted on 178 non-compliant hypertensive patients recruited in the study through consecutive sampling and subjected to a detailed questionnaire-based interview to determine the causes of non-compliance to treatment.

**Results:** The mean age of the patients was 55.8 + 7.22 years. We had 53.37% males & 46.6% females in. The most common causes of treatment non-compliance identified were unaffordability (60.1%) followed by multiple drugs (39.9%), lack of information by caregiver & missed appointments (33.1% each) and occurrence of side effects (27%).

**Conclusion:** The most common causes associated with non-compliance to hypertension treatment include unaffordability, using multiple medications at one time, lack of information given to the patients by health care providers, missed follow-up visits on part of the patients and troublesome side effects of drugs causing discontinuation of treatment.

**Key Words:** Hypertension, Non-compliance, Drug treatment.

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## INTRODUCTION

Hypertension is defined as persistent elevation of systolic blood pressure (SBP) of 140 mm Hg or more, or a diastolic blood pressure (DBP) of 90 mm Hg or more, or taking antihypertensive medication<sup>1</sup>. As per WHO statistics, an estimated 1.13 billion people worldwide have hypertension, most (two-thirds) living in low- and middle-income countries<sup>2</sup>. In 2015, 1 in 4 men and 1 in 5 women had hypertension<sup>2</sup>.

In view of the magnitude of the problem, it is considered as a pandemic of the 21<sup>st</sup> century.

Hypertension is a well-established major risk factor for stroke, myocardial infarction, vascular disease, and chronic kidney disease<sup>3</sup>. Being a chronic disorder, it requires life-long treatment and compliance to lifestyle modifications and treatment is a major determinant of adequate control. However; non-compliance is a major obstacle to the effective delivery of health care worldwide<sup>4</sup>. This also reflects in WHO official report which found that fewer than 1 in 5 people with hypertension have the problem under control<sup>2</sup>.

Major barriers to compliance are thought to include the complexity of modern medication regimens, poor "health literacy" and lack of comprehension of treatment benefits, the occurrence of intolerable side effects, the cost of prescription medicine, and poor communication or lack of trust between the patient and his or her health-care provider<sup>5</sup>. Besides, compliance rates may be overestimated in the medical literature as compliance is often high in the setting of a formal clinical trial but drops off in a "real-world" setting<sup>6</sup>.

The World Health Organization has set a global target to reduce the prevalence of hypertension by 25% by 2025 (baseline 2010)<sup>2</sup>. Effective achievement of this target besides other measures requires addressal of the potential challenges including the issue of non-

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compliance. This study aims at identification of the major causes of non-compliance to anti-hypertensive treatment in the population of Khyber Pakhtunkhwa.

## MATERIALS AND METHODS

This descriptive, cross sectional study was carried out in the department of Medicine, Khyber Teaching hospital Peshawar from January 2019 to June 2019. A total of 178 hypertensive patients were selected through non probability sampling after explaining the purpose and benefits of the study and a written informed consent was obtained.

For sample selection all patients who were non-compliant as per operational definition to anti-hypertensive drugs in the last 6 months and both gender were included in the study.

Patients aged below 18 years, patients with psychiatric illnesses as co-morbidity and patients who are known to be allergic to various anti-hypertensive drugs were excluded.

After approval from Head of the department of concerned medical unit, all non-compliant hypertensive patients having BP greater than 160/100 mmHg and meeting the inclusion criteria were enrolled in the study through OPD. All patients were subjected to detailed history and clinical examinations and careful scrutiny of past medical records and detailed history to detect the factors which led to non-compliance like unaffordability, lack of counseling by the caregiver, > 3 Antihypertensive drugs, missed appointments and side effects. All the demographic details and above mentioned information was recorded in a pre-designed proforma.

**Data Analysis Procedure:** Data was entered and analyzed by statistical package for social sciences (SPSS) version 17. Mean + SD was calculated for numerical variables like age. Frequencies and percentages were calculated for categorical variables like gender and factors (unaffordability, lack of counseling by the caregiver, missed appointments, side effects and > 3 Antihypertensive drugs). Factors were stratified among age, gender and educational status to see the effect modifications.

## RESULTS

Tables.1 and 2 show the age, gender and education status-wise distribution of the study sample. Of the total 178 patients, the mean age of the patients was 55.8 + 7.22 years (range: 42-69 years). 53.37% (n=95) of the participants were males and 46.6% (n=83) were females. The mean duration of hypertension was 6.87 + 4.30 years.

Non-compliant patients were more likely to be male, uneducated and in the 51-60 years age- group. Non-affordability (60.1%) was found to be the most common reported cause of non-compliance followed in descending order by use of multiple ( $\geq 3$ )

antihypertensive drugs (39.9%), lack of counseling by the caregiver & missed appointments (33.1% each) and intolerable side effects of medications (27.0%). The commonly reported side effects of medications warranting discontinuation of treatment are listed in Table.4.

Chi-square test was applied for all the factors of non-compliance to determine association. The association between lack of counseling and educational status was found statistically significant with p value of 0.03 (Table.5).

**Table No. 1: Age, Gender And Education Status Wise Distribution Of Sample (n=178)**

|            |                                | Gender         |                | Total | %tage |
|------------|--------------------------------|----------------|----------------|-------|-------|
|            |                                | Male           | Female         |       |       |
| Age groups | Less than or equal to 50 years | 32             | 20             | 52    | 29.2% |
|            | 51 to 60 years                 | 35             | 44             | 79    | 44.3% |
|            | More than 60 years             | 28             | 19             | 47    | 26.4% |
| Total      |                                | 95<br>(53.37%) | 83<br>(46.62%) | 178   | 100%  |

**Table No. 2: Educational Status Wise Distribution Of Sample (n=178)**

|           |                            | Gender |        | Total | %tage  |
|-----------|----------------------------|--------|--------|-------|--------|
|           |                            | Male   | Female |       |        |
| Education | Uneducated                 | 17     | 57     | 74    | 41.57% |
|           | Primary                    | 22     | 9      | 31    | 17.4%  |
|           | Secondary and intermediate | 28     | 11     | 39    | 21.9%  |
|           | University and above       | 28     | 6      | 34    | 19.1%  |
| Total     |                            | 95     | 83     | 178   | 100%   |

**Table No. 3: Frequencies of Common Factors Leading to Non-Compliance (n=178)**

| Factors                 | Frequency | Percent |
|-------------------------|-----------|---------|
| Unaffordability         | 107       | 60.1    |
| 3 or more drugs regimen | 71        | 39.9    |
| Lack of counseling      | 59        | 33.1    |
| Missed appointments     | 59        | 33.1    |
| Side Effects            | 48        | 27      |

**Table No. 4: Frequency Of Drug-Related Side Effects (N=48)**

| Side effects        | Frequency | Percent |
|---------------------|-----------|---------|
| Cough               | 19        | 39.6    |
| Dizziness           | 13        | 27.1    |
| Fatigue             | 10        | 20.8    |
| Excessive urination | 6         | 12.5    |
| Total               | 48        | 100     |

**Table No. 5: Education Status Wise Stratification Of Lack of Counselling (n=178)**

|           |                            | Counselling |     | Total |
|-----------|----------------------------|-------------|-----|-------|
|           |                            | No          | Yes |       |
| Education | Uneducated                 | 32          | 42  | 74    |
|           | Primary                    | 9           | 22  | 31    |
|           | Secondary and intermediate | 13          | 26  | 39    |
|           | University and above       | 5           | 29  | 34    |
| Total     |                            | 59          | 119 | 178   |

**P=0.03**

## DISCUSSION

Hypertension is currently one of the biggest single contributors to global mortality and extensive randomized trial data are consistent in showing that blood pressure reduction substantially reduces cardiovascular morbidity and mortality<sup>7</sup>.

This study aimed to probe into the common causes of non-compliance to anti-hypertensive treatment as a tool for guiding corrective measures logically. It revealed non-affordability (60.1%) to be the most common reported cause of non-compliance followed in descending order by use of multiple ( $\geq 3$ ) antihypertensive drugs (39.9%), lack of counseling by the caregiver & missed appointments (33.1% each) and intolerable side effects of medications (27.0%).

Unaffordability was reported as the leading cause of non-compliance in this study. This finding is consistent with the results of a study conducted in Zambia in which unaffordability was reported by 61% participants<sup>8</sup>. Similarly, 58.9% of the non-compliant patients belonged to low socioeconomic class in a study conducted in Iraq<sup>9</sup>. While high cost of treatment is a universal issue in under developed and developing countries, financial hardship is a significant barrier to complying with treatment in developed countries as well. A survey conducted in United States in 2002 reported association between poor compliance and lack of funds for the purchase of drugs<sup>10</sup>. In contrast to our findings, a study conducted by Kabir, M. et al. in Nigerian hypertensive population, only 32.7% of the study population reported lack of funds to purchase drugs<sup>11</sup>. This variation may be because of better awareness, higher income or provision of health insurance in that study population.

Our study showed that use of 3 or more antihypertensive drugs is another major contributor to non-compliance. This corroborates well with the results of a Malaysian study<sup>12</sup> where non-compliance depended on number of medications taken, being 40.7% for one drug, 49.2% for two drugs, 48.6% for three and 75% for more than three drugs (27). So as the number of medication increases the patient becomes more non-compliant. Similarly, Bramley et al. found that 75% of patients on mono-therapy for hypertension were highly compliant to treatment defined as medication possession ratio of 80-100%<sup>13</sup>.

In this study, 33.1% of the participants reported lack of counseling by their health care providers about their disease and its medications. This finding is consistent with the results of a study from Zambia which reported lack of counseling by health care providers in 38% of non-compliant patients<sup>8</sup>. Likewise, a study carried out in India showed that the compliance score of patients during their follow up period was better for the counseled group as compared to usual care group<sup>14</sup>. Similarly, Makaryus et al also found that educational process at hospital discharge can impact compliance after discharge<sup>15</sup>. Supporting this observation in a prior study that discharge counseling was associated with improved compliance after hospital discharge<sup>16</sup>.

Our study found missed appointments as a factor leading to non-compliance in 33.1% of the study population. This finding is supported by a study conducted in Zambia which observed 29% of the non-compliance was due to missed appointments<sup>8</sup>. Another study conducted in Bangladesh on medication non-adherence revealed that one third of patients missed their visit when called for follow up<sup>17</sup>. It is common for patients to improve their medication adherence shortly after and before an appointment with a health care provider, which has been termed "white coat compliance"<sup>18</sup>. In contrast, a study conducted in Nigeria<sup>19</sup> reported a lower toll of missed appointments (15.8%). This variation may be partly explained by higher educational and high socioeconomic status of the study participants.

In our study, 27% of the patients attributed their non-compliance to treatment to intolerable side effects of anti-hypertensive drugs. This finding is comparable with results of a study conducted by Al-Mehza, Amal M., et al.<sup>20</sup> which attributed poor compliance to side effects of drugs in 33.3% of patients. Likewise, in a study by Buabeng KO, 33% of the patients cited side effects as a reason for non-compliance<sup>21</sup>. Tendency towards non-compliance due to intolerable drug-related side effects has been endorsed by Bramley et al from Malaysia<sup>13</sup> and Hyman and Pavlik from the United States<sup>22</sup>.

## CONCLUSION

The most common causes of non-compliance to treatment of hypertension were unaffordability, use of multiple ( $\geq 3$ ) antihypertensive drugs at one time, lack of information to patients by health care providers and irregular clinic attendance and intolerable drug-related side effects.

**Recommendations:** The authors therefore, recommend a broader recognition of the problem of non-compliance and implementation of effective strategies in daily practice to improve compliance.

1. Provision of free or if not possible, cheaper anti-hypertensive drugs in government hospitals and pharmacies.
2. Minimum and effective medications should be prescribed by doctors to improve compliance.

3. Patients should be thoroughly counseled by health care providers about duration of therapy, possible side effects of medications and also complications of non-compliance.
4. Appointments/Follow-up dates should be given in written form rather than verbal.

Furthermore, studies are needed in other parts of Pakistan on factors effecting compliance in hypertension and how such findings can be used for guiding local hypertension-control efforts.

#### Author's Contribution:

Concept & Design of Study: Fazli Rabbi  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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