# Non-Compliance to Antihypertensive Treatment among Patients Attending Prince Zaid Military Hospital

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## Abstract

**Hypertension is considered as one of the most frequent chronic illnesses and the most important cardiovascular risk factor in developed countries. Despite the fact that many advances in the management of hypertension have been made, still noncompliance with prescribed therapeutic drugs is considered a major barrier in clinical control and management of hypertension drug therapy.**

**This study aimed to determine the most prevalent factors related to non-compliance to antihypertensive treatment.**

**Design: A questionnaire-based cross-sectional study focused on factors thought to be responsible for non-compliance with hypertensive medication, in patients referred to out-patient medical clinic at Prince Zaid Military Hospital, Jordan.**

**Participants: 471 patients attended the out-patient medical clinic during the period from June, 2011 - December, 2011.**

**Results: The study revealed that about 24% of the enrolled patients were non-compliant to the hypertensive treatment in which (80.7%) reported that lack of information regarding importance of taking drugs, drug prescription regimen for more than one dose per day accounted for (71.9%) while primary and secondary education levels (70.2%) were more than the illiterate and higher education. The number of medications among non-compliant patients accounted for (62.2) for more than one medication and unavailability of drug (59.6%), forgetfulness (55.3%) and drug side effects (50.9%) and absence of symptoms (44.7 %) was the least reported factor of non-compliance.**

**Key words: Hypertension, Compliance, non-compliance.**

## Introduction

Hypertension is one of the most common disorders in the world. For some patients with hypertension, blood pressure can't be adequately controlled despite treatment with antihypertensive drugs (1). Such patients have treatment resistant hypertension, which is according to one definition: persistent high blood pressure > 140/90 mmHg for patients aged less than or equal to 60 years, or 160/90 mmHg for those aged more than 60 years (2). Various explanations have been given for treatment resistant hypertension; these include secondary hypertension, endogenous resistance to treatment, and noncompliance to treatment (2), for which the last reason is the most prevalent ( 3). Patients' poor compliance with treatment is often suggested as the reason for lack of response to antihypertensive drugs and causes reduction of benefit provided by these drugs. Consequently, prescription of additional unnecessary drugs that might cause health care costs to be increased through unnecessary investigations, and dose adaptation for patients who aren't taking their drug adequately or potential increase of the number of hospitalizations (4).

Identifying factors associated with noncompliance will help set the strategies to enhance compliance.

**Definition of Terms**

For the purpose of this study, terms were theoretically and operationally defined:

Hypertension was theoretically defined as the persistent high arterial blood pressure reading of 140/90 mmhg for those aged below 60 years and 150/100 mmhg for those aged above 60 years (2), and hypertension was operationally defined as the presentation of high blood pressure> 140/90 mmhg for Patients aged <60years or > 160/90 mmhg for those aged > 60 years) as measured by the sphygmomanometer with the patient lying down 5 minutes at least after being in the clinic.

Compliance: The general term was defined by the World Health Organization in their 2001 meeting as, "the extent to which a patient follows medical instructions". With respect to the drug therapy, compliance is defined as the degree of correspondence of the actual dosing history with the prescribed drug regimen (5). Compliance rate was estimated as

$$\frac{\textit{No. of pills missed}}{\textit{No. of prescribed pills in the same period}} \; *100\%$$

Non-compliance: was defined as the deviation of the dosing history from the drug regimen (5), and those who reported irregularity in taking their antihypertensive treatment and compliance rate below 80% was considered to be noncompliance.

**Purpose of the study:**

The purpose of this study was to identify factors responsible for non-Compliance with the treatment of patients with Hypertension.

## Methodology

A Cross- Sectional Study Design was used for the purpose of this study; 471 hypertensive patients attended the out-patient clinic at Prince Hashim Hospital during the period from June, 2011 - December, 2011. All patients diagnosed with hypertension and willing to be enrolled in this study after obtaining informed consent from each patient, were interviewed using a structured questionnaire form. The first part of data collection form included information about gender, age, educational level and information regarding aspects of hypertension treatment, such as disease duration, number of drugs taken for hypertension (1, 2 or > 2 drugs), drug regimen (once, twice or more than twice per day). The second part of the questionnaire consisted of a list of factors thought to be responsible for non-compliance and the patient was expected to select their own reason for being non-compliant. These factors included: lacking information regarding importance of taking drugs, absence of symptoms, non-availability of drug, drug side effects and forgetfulness.

Non-compliance hypertensive patients were defined as those with raised blood pressure of more than or equal to 140/90 mmHg on two prior clinical visits. Patients who had a systolic blood pressure of less than 140 mmHg and/or Diastolic blood pressure of less than 90 mmHg were considered to have a controlled blood pressure and compliant to the treatment.

## Results

The study revealed that about 24% of the enrolled patients were non-compliant to the antihypertensive treatment and among those (80.7%) reported that they don't have enough information about their disease and lack of information regarding importance of taking drugs given to them by health care team (nurse or doctor). Drug prescription regimen was viewed as the 2nd reason behind non-compliance which attributed to drug prescription regimen as a strong factor harboring their compliance with their treatment (71.9%) while non-compliance among primary and secondary education levels (70.2%) were more than the illiterate and higher education. The number of medications among non-compliance accounted for (62.2) for more than one medication and unavailability of drug (59.6%), forgetfulness (55.3%) and drug side effects were (50.9%) and absence of symptoms (44.7 %) was the least reported factor of non-compliance.

The mean age of participants was 59 years (SD 11.18) and the age group of more than 60 years comprised 56.7% of the cases. There was no gender difference among non-compliant patients to antihypertensive medication.

**Table 1: Distribution of hypertensive patients by their compliance to Treatment**

| Compliance | Frequency | Percent |
|---|---|---|
| Compliant | 357 | 75.8% |
| Non-Compliant | 114 | 24.2% |
| Total | 471 | 100% |

**Table 2: Compliance rate in relation to Socio-demographic factors**

| Factor | Compliant | | Not Compliant | | TOTAL | | P value |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| **Gender** | | | | | | | |
| Female | 198 | 77.6 | 57 | 22.4 | 255 | 54.1 | >0.05 |
| Male | 159 | 73.6 | 57 | 26.4 | 216 | 45.9 | |
| **Age Group** | | | | | | | |
| < 40 | 24 | 88.9 | 3 | 11.1 | 27 | 5.7 | |
| 40 - 60 | 135 | 76.3 | 42 | 23.7 | 177 | 37.6 | >0.05 |
| > 60 | 198 | 74.2 | 69 | 25.8 | 267 | 56.7 | |
| **HTN Duration** | | | | | | | |
| < 5 Years | 137 | 38.4 | 34 | 29.8 | 171 | 36.3 | >0.05 |
| >5 Years | 220 | 61.6 | 80 | 70.2 | 300 | 63.7 | |
| **Education** | | | | | | | |
| Illiterate | 56 | 69.1 | 25 | 30.9 | 81 | 17.2 | |
| Primary School | 256 | 76.2 | 80 | 23.8 | 336 | 71.3 | >0.05 |
| High Education | 45 | 83.3 | 9 | 16.7 | 54 | 11.5 | |
| **Drug Regimen** | | | | | | | |
| 1 | 126 | 79.7 | 32 | 20.3 | 158 | 33.5 | |
| 2 | 154 | 70.6 | 64 | 29.4 | 218 | 46.3 | <0.05 |
| 3 | 77 | 81.1 | 18 | 18.9 | 95 | 20.2 | |
| **Knowledge** | | | | | | | |
| No | 94 | 50.5 | 92 | 49.5 | 186 | 39.5 | <0.05 |
| Yes | 263 | 92.3 | 22 | 7.7 | 285 | 60.5 | |
| **No Symptoms** | | | | | | | |
| No | 52 | 50.5 | 51 | 49.5 | 103 | 21.9 | >0.05 |
| Yes | 305 | 82.9 | 63 | 17.1 | 368 | 78.1 | |
| **Drug Availability** | | | | | | | |
| No | 97 | 58.8 | 68 | 41.2 | 165 | 35.0 | <0.05 |
| Yes | 260 | 85.0 | 46 | 15.0 | 306 | 65.0 | |
| **Drug Side Effects** | | | | | | | |
| No | 260 | 82.3 | 56 | 17.7 | 316 | 67.1 | <0.05 |
| Yes | 97 | 62.6 | 58 | 37.4 | 155 | 32.9 | |
| **Forgetfulness** | | | | | | | |
| No | 272 | 84.2 | 51 | 15.8 | 323 | 68.6 | <0.05 |
| Yes | 85 | 57.4 | 63 | 42.6 | 148 | 31.4 | |

## Discussion

Patients involved in this study were middle aged to elderly hypertensive men and women who had the disease for several years. The study was based on the self-reporting estimation, which was the only available and accessible method that could be used since the electronic method is not available and pill counting method is thought to be overestimating compliance. Finding of this study revealed a variety of results and associated factors which influence the compliance behavior among patients with hypertension. The major cause of noncompliance was lack of information and knowledge on need for regular antihypertensive treatment which was consistent with findings of a similar study in Nigeria (6) and in a qualitative study conducted on seven focus groups attending two primary health care centers of the Spanish national health services, in an attempt to identify factors of noncompliance, factors were identified that influence noncompliance. Lack of basic background knowledge about hypertension and patient fear and negative images of antihypertensive drugs, lack of basic knowledge background, was explained by the previous study and the explanation that was also thought to explain the findings, is that clinical encounter was viewed as unsatisfactory because of its length and low patient-physician interaction time that resulted from overwhelming number of patients attending the clinic (7). No relation between age and compliance rate was found (P-value not significant, 0.23) which is inconsistent with a study done in Saudi Arabia which showed a higher compliance rate among those > 55 years of age (48.5%) (9). Another study in Ghana showed a higher compliance rate in age group 40-60 years (68%) and a decreased rate in those less than 40) years and above 60 years (6%, 33% respectively) (10), and is compatible with a study done in Shiraz, Iran. (11)

There is a decrease in compliance rate in those patients with primary and secondary school education (70.2%) while no significant difference among those with higher education and non-educated patients which is inconsistent with two studies done in Ghana (9) and Saudi Arabia (8) showing that compliance rates in educated patients were 18% and 33 %respectively and consistent with two studies in Finland (11) and Nigeria (6) showing high compliance rate in educated patients (81.5%,74.2% respectively). These differences could be due to the characters of patients attending these health care centers while most of our patients were primary and secondary education and the least were highly educated.

It is well known that compliance is improved if the patient is taking a single drug rather than two or more (11). This study showed that those on single medication were more compliant (79.7%) than those on more than one drug which is compatible with a study in Sudan (12) and Saudi Arabia (8), which showed compliance rate with one drug of (80.8% and 78.9% respectively).

A higher rate of non-compliance was seen in those patients who had been hypertensive for more than 5 years and decreased rate with less than 5 years which is contradicting the findings of Mallon JM (13), who showed that 54-83% of patients were more compliant after 5 years from start of their medications. The fact that patients think that they have been cured so they were not regularly taking their medication due to the absence of symptoms only (17.1%) were non-compliant to antihypertensive treatment compared with a study in the United States (14) which showed that (46%) were non-compliant while the same study found that non - compliance due to side effects was (11%) compared to what was found in this study (37.4).

## Conclusion and Recommendations

Blood Pressure control remains an essential therapeutic approach to prevent the occurrence of coronary heart disease, heart failure, stroke and premature death. Compliance with treatment is a fundamental prerequisite for therapeutic benefit. Strategies to overcome the barriers perceived by the patient and hinder their compliance should be set as a priority. To provide sufficient information about hypertension, risks and treatment, must be considered. To plan to prescribe a drug regimen that is effective, long acting drugs that provide blood pressure control beyond the 24 hour dosing period might help to prevent the consequences of occasional drug omission. In addition, increased physician -patient interaction and awareness of health status are essential.

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