



Non compliance of patients to antihypertensive medication: the role of socio-demographic profile, illness perception and treatment beliefs

Authors

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Abstract

Backgrounds: Hypertension is one of the leading preventable causes of premature death worldwide. Noncompliance to antihypertensive medication contributes mainly to poor control of blood pressure.

Aim: To find out the level of noncompliance to antihypertensive medications and to describe the likely causes of noncompliance from patients' socio-demographic profile and from their illness perception and treatment beliefs.

Materials and Methods: We recruited adult patients with already known hypertension from cardiology outpatient department. Detailed socio-demographic profile of each patient was collected. The patients were divided into complaint and non-compliant groups according to predefined criteria of compliance. The patients in the noncompliant group were further analyzed about whether socio-demographic profile was affecting the compliance to medication. Each patient in the noncompliant group was encouraged to provide one most appropriate self-explanation for not taking medication regularly and all the opinions were further analyzed to find out the likely health behaviors and health beliefs responsible for noncompliance.

Results: A total of 995 patients were recruited in the study. The prevalence of non-compliance to antihypertensive medication was 31.2 %. Patients of younger age group and men were more non-compliant. Residence and socioeconomic status did not have any influence on compliance. Wrong illness perception and treatment beliefs are prevalent among patients and are contributing to noncompliance.

Conclusions: This study found that misperceptions about hypertension and its treatment are the prevalent patient-related factors responsible for medication noncompliance. Interventions targeting these misperceptions will definitely reduce the level of noncompliance and its complications.

Keywords: hypertension, antihypertensive medication, noncompliance, illness perception, treatment beliefs.

Introduction

Hypertension (HTN) is a major public health issue worldwide because it is one of the most important modifiable risk factors for cardiovascular diseases (CVDs). CVDs are the number one cause of death globally and accounted for 31% of all global deaths in 2015, which suggests that prevention of CVDs is of utmost priority. ^[1] Meta-analyses of randomized placebo-controlled trials indicate that

antihypertensive therapy reduces the risk of stroke by 30%, coronary heart disease by 10% to 20%, congestive heart failure by 40% to 50%, and total mortality by 10%.^[2] But, poor compliance with antihypertensive medication is one possible reason why success in clinical trials has not been translated into everyday practice. Noncompliance to medications is one of the main reasons for uncontrolled blood pressure and subsequent

development of the hypertensive complications.^[3,4] Though the nonadherence to medication depends on multiple factors including level of education, access to medicines, the pill burden and drug side effects, the importance of patients' perceptions and beliefs about HTN treatment cannot be overemphasized. There are only a few data on noncompliance to antihypertensive medication in India. The present study aims to find out the level of noncompliance to medications in hypertensive patients and to describe the likely causes of noncompliance from patients' socio-demographic profile and from their health behaviors and health beliefs.

Materials and Methods

The study was conducted in cardiology outpatient department (OPD) of IMS and SUM hospital, Bhubaneswar between August 2016 to August 2017. IMS and SUM hospital is a major tertiary care center of eastern Odisha. It was a prospective cross sectional study. The study was approved by the Institutional Ethics Committee of the authors' institution and all procedures followed were in accordance with appropriate ethical guidelines.

Inclusion Criteria

1. Adult patients of age 20 years or more but less than 80 years.
2. Already known cases of HTN
3. Attending cardiology OPD of IMS and SUM hospital

Exclusion criteria

Newly diagnosed HTN cases A known case of HTN was defined as a patient who is fully aware of the fact that he/she had high BP recorded prior to the index visit. HTN was defined according to JNC 7 criteria. BP of each patient was recorded by the cardiologists present in the OPD after making the patient sit on a chair in relaxed position for 1 minute with arms resting at heart level. All eligible patients were taken into the study after informed consent. The following socio-demographic details of the patients were recorded:

age, gender, residence (urban/rural) and socioeconomic status. Urban areas around IMS and SUM hospital were defined as per the 1971 census of central government and the socioeconomic status (education, occupation and family income) was determined using modified Kuppuswamy's method for 2007. Compliance to antihypertensive medication was defined: those patients who are taking medication on daily basis were taken into compliant group. Occasional stoppage of medication due to forgetfulness or due to lack of access to medication was not considered noncompliance when patient claimed that he/she was taking more than 80% of the prescribed medication. But patient's repeated forgetfulness was taken as carelessness and was taken as noncompliance. Similarly, intentional and active stoppage of medication was considered as noncompliance. With the help of pre-set questionnaires patients were divided into two groups: medication compliant group and noncompliant group. Patients of noncompliant group were further analyzed and encouraged to give their opinions for not taking medication regularly. Each patient was allowed to give one opinion that was considered to be the best to his/her knowledge. All types of self-reported patient opinions were categorized and further analyzed regarding patients' illness perception and treatment beliefs.

Results

A total of 995 hypertensive patients attending Cardiology outpatient department were included in the study, out of which 685 patients were compliant to the medications prescribed and 310 patients were noncompliant. The prevalence of noncompliance to medications among hypertensive patients was found to be 31.2% in the surveyed sample.

Table 1. Age wise distribution of patients in Compliant and Noncompliant groups

Age (year)	Total patients	Compliant group	Noncompliant group	P value with χ^2 test
20-29	70	19	51 (72.85%)	0.01
30-39	169	88	81 (47.92%)	
40-49	228	142	86 (37.71%)	
50-59	199	161	38 (19.09%)	
60-69	180	162	18 (10.00%)	
70-79	149	113	36 (24.16%)	

All the 310 noncompliant patients were sub-grouped according to age and studied. The patients in non-compliant group were significantly different with respect to age group distribution at P=0.01. Among them, the age groups 20-29 years and 30-39 years were more non-compliant compared to older age groups. Approximately 72.85 % of the patients in age group 20-29 years and 47.92% in age group 30-39 years were noncompliant to medication. On the other hand, in the age group 60-69 years there were only 10% patients who were noncompliant (Table 1).

Table 2. Gender distribution of patients in Compliant and Noncompliant groups

Gender	Total patients	Compliant group	Noncompliant group	P value with χ^2 test
Men	610	372	238 (39.01%)	0.0001
women	385	313	72(18.70%)	

There were total 610 men and 385 women included in the study (M: F=1.6:1). Both male and female noncompliant patients were compared with χ^2 test to know any gender specific difference and it was revealed that predominantly men were more noncompliant with P=0.0001. Out of total 995 hypertensive patients, 39.01% of the men were noncompliant compared to only 18.70% of women who were noncompliant. (Table 2).

Table 3. Urban/rural distribution of patients in Compliant and Noncompliant groups

Residence	Total patients	Compliant group	Noncompliant group	P value with χ^2 test
Urban	442	303	139(31.44%)	0.89
Rural	553	382	171(30.92%)	

Out of total 995 patients, 442 patients were from urban area and 553 patients from rural area. Approximately 31.44% of the urban patients and

30.92% of the rural patients were noncompliant. With the help of χ^2 test both urban and rural noncompliant patients were compared and it was found that noncompliance was equally distributed in both urban and rural population with p=0.89 (Table 3).

Table 4. Socioeconomic distribution of patients in compliant and noncompliant groups

Socioeconomic	Total	Compliant	Non-compliant	P value with χ^2 test
Upper	105	72	33(31.42%)	0.80
Upper middle	211	147	64(30.33%)	
Lower middle	295	192	103(34.91%)	
Upper lower	240	171	69(28.75%)	
Lower	144	103	41(28.47%)	

All five socioeconomic strata in the non-compliant group were compared with χ^2 test and by conventional criteria, this difference is considered to be not statistically significant.

So, it is revealed that noncompliant patients were equally distributed among all 5 socioeconomic population with p=0.89 (Table 5). The patients in the noncompliant group were further studied according to their illness perception and treatment beliefs. Each of the noncompliant patients was asked to give one legible self-explanation for not taking medication regularly. All the self-reported patient opinions given towards medication noncompliance were rearranged and categorized into following types

Opinion 1. Patient stopped the medication once the BP got controlled. He/she thought that HTN got cured.

Opinion 2. Patient could not consult the physician in time after medicines got utilized. So he/she planned to restart the medicines after repeat consultation.

Opinion 3. Stopped the medicines after one lower BP recording even though he/she was not having symptoms of low BP. Patient thought that he/she does not require medicines any more.

Opinion 4. Patient stopped taking medicine after the stock of medicine with him/her got over. He/she did not know that medicines to be taken on long term basis.

Opinion 5. Patient was scared about the fact that taking medicines regularly will be habit forming, so that he/she cannot stop the medicine in future once started taking regularly.

Opinion 6. Patient does not want to take medicines as long as he/she is asymptomatic.

Opinion 7. Patient does not want to take the medicines at young age. He/she considers taking medicines regularly from early age is morally depressing.

Opinion 8. Patient wants to control BP by himself/herself with life style changes and/or with smaller doses of medicine.

Opinion 9. Patient thinks that his/her BP is being maintained naturally at higher level. He feels more comfortable at higher BP level. So he/she takes medicines at lower doses and irregularly.

Opinion 10. Patient does not want to spend much on HTN treatment. Some patients are not affording the full month's therapy.

Opinion 11. Patient stopped the medicines due to side effects, without consulting the concerned doctor.

Table 5. Categories of patient opinions and number of patients in each category.

Opinion category	No. of patients	Opinion category	No. of patients
Opinion 1	65	Opinion 7	21
Opinion 2	49	Opinion 8	12
Opinion 3	34	Opinion 9	11
Opinion 4	43	Opinion 10	19
Opinion 5	22	Opinion 11	18
Opinion 6	16		

The above mentioned self-reported patient opinions were analyzed and certain inferences were drawn (see the discussion).

Discussion

Noncompliance to antihypertensive medication consisted of 31.2 % of total study population in our study. Rates of non-adherence to medications among hypertensive patients have varied in the literature between 30% and 50%.^[5-7] The noncompliance rate in the population based study would have been higher. Ours is a hospital based study, so many noncompliant patients would not have attended cardiology outpatient department. In our study, younger patients are more

noncompliant compared to middle aged and older patients. Similar results have been found from community based studies also^[8] This study revealed that men are less likely to be compliant to antihypertensive medications than women. In the contrary, poor adherence in general appears to be associated more with women than with men as shown in many studies^[9,10] but gender specific behavioral difference may vary according to disease type^[11,12] It has also been suggested that gender could influence adherence since women and men differ in their health beliefs and health behaviors^[11,13] Neither residential status nor socioeconomic status had significant impact on adherence to medication in our study. This may be due to the fact that in our geographical area, patients' health behaviors and beliefs are more important than the residence and socioeconomic status. We analyzed patient opinions regarding reasons of medication noncompliance, and tried to find out health behaviors and health beliefs prevalent among the study population. Most of the patients with HTN initially started the treatment, but due to lack of the concept of chronicity they stopped the medication (opinions 1,3,4). Perception of chronicity improves compliance to long term medication^[14] These patients did not know that HTN is a chronic condition and it requires long term medication. Studies have shown that perception of improvement or cure is inversely associated with compliance^[15] Many of the patients thought that HTN is a transient condition which gets cured after taking medication for some duration (opinions 1 and 3) in our study. Most of the patients were unaware of the consequences of uncontrolled HTN. They did not know that high BP if left untreated can give rise to dreaded complications (opinions 2,6,7,8 and 9). Perception of consequences creates alertness in patient's mind so that patient sticks to the prescribed medication^[16]. Some of the patients correlated HTN causally with stress (psychological or physical) and thought that BP would be normalized after stress disappears. This led to the belief that they do not require

medication regularly (opinion 8). Patients with cause perception have poorer compliance and higher BP levels.^[17] Most of the patients perceived that the medication was necessary, but due to lack of concept of chronicity they stopped the medications. At the same time belief in necessity of medication was not found in patients with opinions 8 and 9. Some of them thought starting medication will cause dependence on the same so that they cannot leave the medication later (opinion 5). Some believed that there is no hurry to start antihypertensive medication even if BP was high. They thought symptom onset is a guide to initiate medication (opinion 6). Those patients who did not feel the necessity of medication attended the cardiology OPD for some other complaints or being referred by some other doctor. Some of the patients were overconfident on themselves in that they thought they could control high BP on their own without using prescribed medication. They strongly believed that BP will get normalized by life style changes only or with lower doses of medication (opinion 8). Patients with belief of personal ability to control BP were less likely to be compliant. A relationship between high self-efficacy and poor compliance has been documented in other studies.^[15,18] These patient believed that they did not require medicines to control their BP and they themselves would modify the existing life styles, which would control their BP. Though patients knew that their BP was high, their emotional thinking prevented them from taking medication. They considered daily medication is a burden in day-to-day life (opinions 5 and 7). Emotional response to illness and to its treatment was found in these patients. Studies have shown that emotional response and maladaptive coping could explain poorer compliance.^[19] Sometimes anxious or depressed patients are less compliant due to psychiatric illness.^[20] Some patients did not want to spend much money on health. This is mainly due to lack of awareness, but sometimes due to poverty also. Government can provide health schemes with free medications to people of low

socioeconomic status. Discomfort caused by side effects has been shown to be consistently associated with medication noncompliance. Stopping medication due to side effects is justified, but these patients should have consulted the concerned physician to take alternative medication. This needs proper education and counseling of every patient. We found that some patients were less receptive to medical advice at their first visits. Some patients may be lacking faith in doctor and/or treatment. Some studies have suggested improving communication between physician and patient to enhance adherence to long term medication.^[21] Some patients may present with apparent resistant hypertension due to noncompliance to medication and the clinician may inappropriately attribute the rise in blood pressure to therapeutic insufficiency and may increase the dose or add new medications. From this study we want to infer that patient's illness perception and treatment beliefs are major factors for medication noncompliance to antihypertensive therapy. Health care providers must ensure that the individual patients and their relatives should properly be educated regarding the need and benefits of long term compliance to antihypertensive medication. The government and nongovernment organizations and social media need to participate in mass hypertension awareness of the society and thereby change the health beliefs at population level. This could help in reducing the incidence of cardiovascular diseases by achieving population BP control.

Limitation of the study

Ours being a hospital-based study, we missed many patients who were noncompliant and did not come to the hospital. A general population based study would have avoided this selection bias. We have used patients' opinions to understand their illness perceptions and treatment beliefs. Other studies have used structured models and questionnaires which are definitely more accurate and precise. But our method is very simple to be used by a physician in the OPD in day-to-day

practice. Though our findings may not be generalized to the whole population in the society, our study may serve as a stimulus for larger studies to be conducted for better understanding of the barriers to medication compliance in real world.

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