

NON COMPLIANCE PATTERN OF ANTI HYPERTENSIVE TREATMENT

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Abstract:

A cross-sectional type of observational study was conducted on hypertensive patients attending at medicine department (OPD and admitted) of Z. H. Sikder Women's Medical College Hospital, Dhaka, from January to June 2014, to see the patient compliance of anti-hypertensive drugs. The sample size was 185. Patients with evidence of hypertension as per Seventh Joint National Committee Criteria' (defined as systolic blood pressure >140 mm oh Hg or diastolic blood pressure >90 mm of Hg or use any anti-hypertensive medication, regardless of blood pressure. Time from initiation of antihypertensive treatment was at least 3 months and patients between 18-70 years were included in this study. A pre-tested questionnaire was used to gather socio-demographical and relevant epidemiological data. Standard blood pressure measurement was recorded as the average of 2 measurements to detect anti-hypertension. Patients were asked for their reasons of noncompliance, knowledge regarding importance of compliance, side effects of drugs and family support. Mean age of the patients was 47.40(±5.09) years. 75.9% of the non adherent population is in the 41-50 years age group. 85% percent of the patients were found non-adherent to treatment. Out of 158 non adherent population, 54.43% were male and 45.57% were female. 38.6% of the non-adherent people have no education or a primary education, only 7.6% were graduate and above. 42.41% of the non-adherent people were poor and earning < 5000 taka/month. Majority duration of disease ranged from 1 to 15 years which was 50%, with an average of 3.99(±3.47) years. The most commonly prescribed antihypertensive medicine was beta blockers. 49.4% of the non-adherent population was advised to take relatively costly antihypertensive drug (Calcium channel blocker, ACEI, ARB). The main reason for not taking the medication was forgetfulness (48.1%) and the economic reason for non-compliance was only 7.59%. About 63% patients felt hypertension is not a curable disease, 42% Of the study subjects were not sure about the signs and symptoms of HTN and another 30.6% said that HTN had no definite sign symptom.77.4% of the respondent said that preservation of previous prescription is important to understand HTN status. The overall Knowledge on complication of uncontrolled hypertension of the adherent people was relatively higher than that of non-adherent people. 96.4% of the adherent people knew that uncontrolled hypertension can cause brain stroke, whereas only 81.65% of the non-adherent people knew that. Most of the respondent of the both adherent and non-adherent group informed that hypotension, severe weakness, anorexia, nausea and impotency were the important side effect of antihypertensive drugs. Most of the (87.5%) participant went for follow up when they felt hypertensive, 35% change medicine for expenses and 27% stop taking drug when BP is under control. 78% did not know whether only regular anti-hypertensive can prevent complication or not, 62% of the respondent did not think that to buy drug is wastage of money. One-third of the respondent said that they were never asked to take medicines or visit physician by their family members. And half of the respondents had to depend on monetary support of the family member for treatment. 99.36% of non-adherent missed their follow up.

Key words: Anti-hypertensive drugs, patient compliance.

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Introduction

Hypertension is sometimes called a silent killer because it may have no outward symptoms for years. In fact, some of the people with the condition do not know that they have it. Silently it can damage the heart, lungs, blood vessels, brain, kidney and eyes, if left untreated. Very few people feel like dizziness, headache, pain in the neck or feeling of uneasiness. It is a major risk factor for strokes and heart attack. To prevent these target organ damage we need to control the BP by medication or by other measures.

Hypertension is a chronic condition which is often described as the “silent killer” as it causes damage to the body with no symptoms or only mild symptoms¹. Hypertension can be termed as an “iceberg disease”. The submerged portion of the iceberg represents the hidden mass of the disease, while floating tip denotes the signs and symptoms². When a person is diagnosed with hypertension, the initiation of treatment is often necessary to combat its short term and long term effects on body organs³.

According to the seventh report of Joint National Committee on prevention, there are approximately 50 million hypertensive individuals in the United States and one billion in the world wide. Even though, the burden of hypertension is currently centered in economically developed countries (37.3%), the developing countries will experience a greater impact due to their larger population. It is estimated that up to three quarters of the world’s hypertension population will be in economically developing countries by the year 2025⁴.

Hypertension is an internationally common disease and important treatable public health problem^{5, 6}. It is defined as a blood pressure > 140/90 mmHg^{7, 8}. Our country, as like as other developing countries, is experiencing an epidemiological transmission from communicable to non communicable disease. Cardiovascular disease is one of the important causes of death in Bangladesh. It is a major risk factor and powerful predictor of cardiovascular morbidity and mortality⁹ with proven benefits after treatment. Improved control of

hypertension in turn has contributed to reduction in incidence rate.

The main goal of treatment of hypertension is to bring the hypertension quickly, permanently and reduce the morbidity and mortality. Hence, compliance to antihypertensive is a critical factor conditioning the success to therapy. In the past, it was thought that, compliance was only a patient problem but instead, the role of physician in determining patient compliance is very important¹⁰. They should give clear information about the risk of the disease, advantage of therapy, and how to take medicines. They should also prescribe a therapeutic scheme as simple as possible, avoiding multiple drug administration and informing the patient about possible side effects. Noncompliance is defined as the extent to which a person’s behavior doesn’t coincide with medical or health advice¹¹. It was associated with lack of knowledge about hypertension, negative family history of chronic diseases; multiple antihypertensive drugs prescribed and increased daily dose frequency¹². There are various forms of noncompliance. Among them 5 most common forms of non compliance are¹³ a) Not having the prescription filled, b) Taking incorrect dose. c) Taking medication in a wrong time. d) Forgetting to take one or more doses. e) Stopping medication too soon. A number of concerning antihypertensive drug compliance has been conducted worldwide, although a little research in this topic has been conducted in Bangladesh. The aim of the present study was to find out the reason, frequency, duration and results of non-compliance to antihypertensive treatment in patients attending in an urban hospital in Bangladesh.

Methods

The cross-sectional type of observational study was conducted on hypertensive patients attending at medicine department (OPD and admitted) of Z. H. Sikder Women’s Medical College Hospital, Dhaka, from January to June 2014. The sample was selected from every defined aged group presented with hypertension in study site until the desired sample size 185 is reached. Patients with evidence of

hypertension as per Seventh Joint National Committee Criteria' (defined as systolic blood pressure >140 mm oh Hg or diastolic blood pressure >90 mm of Hg or use any anti hypertensive medication, regardless of blood pressure. Time from initiation of antihypertensive treatment was at least 3 months and age between 18-70 years were included in this study. Patients with hypertensive emergency or unconscious patients with hypertension or patients who not giving informed consent were excluded from this study.

The patients presented with history of hypertension in the hospital was initially screened either by the outdoor medical officer in outpatient department or by indoor medical officer in medicine units. After initial screening, the study physician observed the patient. Patient fulfilling the inclusion and exclusion criteria was enrolled in the study. They were briefed about the objectives of the study, risks and benefits, freedom of participating in this study and confidentiality. Informed written consent was taken accordingly. A pre-tested questionnaire was used to gather socio-demographical and relevant epidemiological data. Standard blood pressure measurement was recorded as the average of 2 measurements to detect anti-hypertension. Patients were asked for their reasons of noncompliance, knowledge regarding importance of compliance, side effects of drugs and family support. Confidentiality was maintained in all steps. Results were expressed as mean \pm SD with Range. To compare the variability Chi-square was used. The results was shown in figure and tabulated form. Data was collected in a preformed data collection form and was analyzed in SPSS21.0 version for windows.

Results:

Mean age of the patients was 47.40(\pm 5.09) years. Minimum age was 35 and maximum age was 65 years. 75.9% of the non-adherent population is in the 41-50 years age group. Eighty five percent of the patients were found non-adherent to treatment. Out of 158 non-adherent population, 54.43% were male and 45.57% were female. Among the non adherent population 33.5% were housewife, 15.29% were farmer and day labourer, 17.1% were service

holder and 10.6% were businessman. 38.6% of the non-adherent people have no education or a primary education, only 7.6% were graduate and above. 42.41% of the non-adherent people were poor and earning < 5000 taka and only 13.92% of them earning >20000 taka per month. Majority duration of disease ranged from 1 to 15 years which was 50%, with an average of 3.99(\pm 3.47) years. The most commonly prescribed antihypertensive medicine was beta blockers. 49.4% of the non adherent population was advised to take relatively costly antihyper-tensive drug (Calcium channel blocker, ACEI, ARB). The main reason for not taking the medication was forgetfulness (48.1%) and the economic reason for noncompliance was only 7.59%. About 63% patients felt hypertension is not a curable disease, 42% of the study subjects were not sure about the signs and symptoms of HTN and another 30.6% said that HTN had no definite sign symptom. 77.4% of the respondent said that preservation of previous prescription is important to understand HTN status. The overall Knowledge on complication of uncontrolled hypertension of the adherent people was relatively higher than that of non adherent people. 96.4% of the adherent people knew that uncontrolled hypertension can cause brain stroke whereas only 81.65% of the non-adherent people knew that. Most of the respondent of the both adherent and non-adherent group informed that hypotension, severe weakness, anorexia, nausea and impotency were the important side effect of antihypertensive drugs. Most of the (87.5%) participant went for follow up when they felt hypertensive, 35% change medicine for expenses and 27% stop taking drug when BP is under control. 78% did not know whether only regular anti hypertensive can prevent complication or not, 62% of the respondent did not think that to buy drug is wastage of money. One-third of the respondent said that they were never asked to take medicines or visit physician by their family members and half of the respondents had to depend on monetary support of the family member for treatment. Out of 158 non-adherent patients, 99.36% missed their follow up. The results are shown in the following tables.

Table-I*Age group of the non adherent population*

Age group	Frequency	Percent
30-40 yrs	16	10.13
41-50 yrs	120	75.95
51-60 yrs	22	13.92
Total	158	100.00
Mean(SD)	47.40(±5.09) years	35.0-65.0 years

Table-II*Status of non adherence to anti-hypertensive medication*

Non-adherence to medication	Frequency	Percent
Non adherent	158	85.0
Adherent	27	15.0
Total	185	100.0

Table-III*Sex distribution of the non-adherent population*

Sex	Non-adherent n=158	Percent
Male	86	54.43
Female	72	45.57
Total	158	100.0

Table-IV*Distribution of occupation among the non-adherent population*

Occupational status	Non-adherent n=158	Percent
Government job	10	6.47
Private job	17	10.59
Farmer	24	15.29
Business	17	10.59
Day labor	22	14.12
House wife	53	33.53
Unemployed	04	02.35
Garments worker	11	07.06
Total	158	100.00

Table-V*Distribution of educational status among the non adherent population*

Educational status	Non-adherent n=158	Percentage
Illiterate	20	12.66
Primary	41	25.95
Secondary	65	41.14
Higher secondary	20	12.66
Graduate and above	12	7.59
Total	158	100.0

Table-VI*Socio-economic status of the non-adherent population*

Socio-economic status	Non-adherent N=158	Percent
Low income (<5000 tk.)	67	42.41
Upper middle income (>20000 tk.)	69	43.67
Middle income (5000-20000 tk.)	22	13.92
Total	158	100.0
Mean (±SD) monthly income tk.	10947.5(±4575.82)	3000-25000 tk.

1. <875 USD per annum ; (Taka < 5,000 per month)
2. 876 -3,455 USD per annum (Tk. 5000-20000 per month)
3. 3,466-10,725 USD per month(20,000-60,000per month)
4. >10,725 USD per annum(>60,000 per month)

(As per State of the children of the world 2007, UNICEF.)¹³

Table-VII*Duration of diagnosis of hypertension*

Duration of diagnosis of hypertension	Non-adherent N=158	Percent
1-5 year	79	50.00
6-10 yrs	73	46.20
>10 yrs	06	03.80
Total	158	100.0
Mean(\pm SD)	3.99(\pm 3.47) 1-15 years	

Table-VIII*Types of drugs taken by the study population*

Type of drugs	Adherentn (%)	Non-adherentn (%)	Total
Beta blocker	07(25)	69(43.67)	76
ACEI	01(3.6)	08(5.06)	9
Diuretic	01(3.6)	11(6.96)	12
Calciumchannel blocker	13(46.4)	58(36.71)	71
ARB	06(21.4)	12(7.59)	18
Total	28(100)	158(100)	186

Table-IX*Reasons of non-adherence to medication (n=158)*

Cause	Number	Percentage
Forget fullness	76	48.10
Busy schedule	25	15.82
Side effect	16	10.13
Travelling	12	7.59
Unable to buy	11	6.96
Boring	10	6.33
Intentionally	08	5.06

Table-X*Knowledge on complication of uncontrolled hypertension*

Complication	Adherent N =28(%)	Non-adherent N=158(%)	Total	P value
Brain stroke	27(96.4)	129(81.65)	156	0.01
Kidney failure	09(32.14)	07(4.43)	16	<0.001
Heart disease	25(89.29)	77(48.73)	102	<0.001
Retinopathy	05(19.86)	11(6.96)	16	0.02
Diseases of peripheral vessels	00	01(0.63)	01	1.0

Table-XI*Knowledge on side effect of the antihypertensive drugs*

Side effect of the drug	Adherent n(%)	Non-adherentn (%)	Total	P value
Anorexia, nausea	10(35.71)	27(17.09)	37	0.006
Hypotension	27(96.43)	128(81.01)	155	0.03
Leg swelling	03(10.71)	09(5.70)	12	0.9
Dry cough	00	05(3.16)	05	0.29
Severe weakness	11(39.29)	59(37.34)	70	0.43
Impotency	07(25.0)	28(17.72)	35	0.21

Table-XII*Knowledge on compliance to treatment*

Knowledge on compliance to treatment	Correct answers Number	Percentage
Necessity to take all medicine according to prescription	27	14.52
When BP is under control stop taking drug	51	27.42
Only when you feel hypertensive go for follow up	171	91.94
Change medicine for expenses	57	30.65

Table-XIII*Perception on each item of 186 hypertensive patients*

	Agree		Not sure		Disagree	
	Number	%	Number	%	Number	%
Hypertension is a curable disease	03	1.6	66	35.4	117	63
The disease has no definite signs and symptoms	51	27.4	78	42	57	30.6
If not treated with drugs according to the physician, BP will be uncontrolled	136	73.12	47	25.27	03	1.6
Only regular anti-hypertensive can prevent complication	02	1.08	145	77.96	39	20.97
Preserving prescriptions help to understand HTN status	144	77.4	01	0.54	41	22.04
Buying drugs is wastage of money	22	11.83	49	26.4	115	61.83

Table-XIV*Status of Family support of the respondents*

Family support	Yesn(%)	Non(%)
Family members telling the significance of taking medication and seeking treatment	53(28.5)	133(71.5)
Need monetary support for seeking antihypertensive treatment	87(47)	99(53)

Table-XV*Follow up status of the patients*

Follow up status	Adherentn(%)	Non-adherentn(%)	Total
Missed any follow up	18(63.33)	157(99.36)	175
Did not miss any follow up	10(36.7)	01(0.64)	11
Total	28(100)	158(100)	186

Discussion

In this study, about 85% of patients were non-compliant to treatment and 15% were compliant to their treatment. The hospital based study where the non-adherence rate was 85%¹⁴. Among the studies conducted on

various populations of the world, the adherence observed reported in a similar study in Malaysia (44.2%)¹⁵, comparable to a study in Egypt (74.1%)¹⁶ and lower than what a study in the Western population (Scotland) reports (91%)¹⁷. In this study mean age of the non-

adherent population was 47.40(±5.09) years. Minimum age was 35 and maximum age was 65 years. 75.9% of the non-adherent population is in the 41-50 years age group. Out of 158 non-adherent population 54.43% were male and 45.57% were female. This gender inequality may be due to the negligence of the male members of the family to bring them to health care provider and reflecting the gender discrepancy that are prevailing in our society. Ekram et al (2008)¹⁸ study showed the mean age was 52 (±11) years maximum age group was <50 years, male was 59% that is similar to our study¹⁹.

In this series, among the non-adherent population 33.5% were housewife, 15.29% were farmer and day labor, 17.1% were service holder and 10.6% were businessman. 38.6% of the non-adherent people have no education or a primary education, only 7.6% were graduate and above reflecting the inverse relation between compliance and educational level. Here 42.41% of the non-adherent people were poor and earning <5000 taka and only 13.92% of them earning >20000 taka per month and may contribute to high non-adherence. That result was approximately similar to Ekram et al. study; they reported that 70% were poor and earning < 10,000 taka per month¹⁸ reflecting hypertension is not a disease of rich. Duration of disease has a great negative impact on-adherence as it may bore the patient and promote non-adherence. In this study, the duration of disease ranged from 1 to 15 years, with an average of 3.99(±3.47) years. Ekram et al.¹⁸ study found the duration of disease ranged from 1 to 30 years, with an average of 7.2±5.5 years.

In this series, the most commonly prescribed antihypertensive medicine was beta blockers. 49.41% of the non-adherent population was advised to take relatively costly antihypertensive drug (Calcium channel blocker, ACEI, ARB) that may contribute to the high rate of non-adherence. Khurshidet al.²⁰ reported, among the monotherapy category, the various classes of drugs used were as follows: beta- blockers (28.8%), diuretics (24.1%), calcium channel blockers (21.8%), ACE inhibitors (18.4%), angiotensin II receptor

blockers (5.7%) and < 1- blocker (1.1%). In this study shows about 85% of patients were non-compliant to treatment and 15% were compliant to their treatment, the hospital based study where the non-adherence rate was 85%. Among the studies conducted on various populations of the world, the adherence observed reported in a similar study in Malaysia (44.2%)¹⁵, comparable to a study in Egypt (74.1%)¹⁶ and lower than what a study in the Western population (Scotland) reports (91%)¹⁷.

The present study, reasons for not taking the medication included forgetfulness (48.1%), busy schedule (15.9%), side effect (10%), boredom, travel, reluctance to take, and inability to buy the medication. Egan et al. found forgetfulness, adverse effects and not liking to take medication-among the reasons for poor adherence in a nationally representative sample in the United States²¹. More than half of the non-compliant patients in *Al Mahzaet al.*²² study reported forgetfulness and absence of symptoms of hypertension as reasons for their non-compliance. Other reasons reported were presence of drugs side effects and drugs out of supply. These findings are similar to those of other authors²³. In one study, almost one-half of the non-compliant patients reported absence of symptoms of hypertension and forgetfulness as reasons for their non-compliance²³. Negative attitude to drugs, lack of knowledge on effect of non compliance, busy life style and lack of family member's cooperation contributes to forgetfulness. This calls for more focus and care regarding the behavioural aspects of the management of hypertension²⁴ rather than restricting doctor's attention to the choice of one type of drug or another. Ignoring behavioral aspects of the management of patients could lead to unnecessary and harmful escalation of a drug regimen²⁵.

Regarding the knowledge on complication of uncontrolled HTN the overall Knowledge of the adherent people was relatively higher than that of non-adherent people. 96.7% of the adherent people knew that uncontrolled hypertension can cause brain stroke whereas only 77.1% of the non-adherent people knew that. Ekram et

al.¹⁸ study reported Three fourth of the patients knew that uncontrolled hypertension can lead to stroke and heart disease. That was similar to our study. Baune et al,²⁶ showed a significant correlation between education and *quality of life (QOL)* among patients with hypertension in Gaza Strip and hypothesized that educational interventions would be essential in preventing high blood pressures and consequent mortality. Knowledge of hypertension significantly affected adherence in Hashmi et al.²⁷ study sample. Patients who were aware of the association between certain risk factors for hypertension, such as high salt intake, stress and a positive family history, had better adherence compared to those who with poorer knowledge. Studies from the developed world, however, indicate no association between patients' knowledge and adherence^{28,29}.

Most of the respondent of the both adherent and non-adherent group informed that hypotension, severe weakness, anorexia, nausea and impotency were the important side effect of antihypertensive drugs. Most of the respondents had a poor knowledge of the side-effects of antihypertensive as reported by Ekramet al.¹⁸. Most of the (87.5%) participant went for follow up when they felt hypertensive, 94% of them missed their follow up in their course of illness, 35% changed medicine for expenses and 27% stop taking drug when BP is under control which indicates poor knowledge on adherence. Regarding perception, about 63% patients felt hypertension is not a curable disease, 77.4% of the respondent said that preservation of previous prescription is important to understand HTN status. 62% of the respondent did not think that to buy drug is wastage of money. Knowing all these factors why these people are non-adherent to treatment needs further investigation.

Conclusion

Majority of the patients were non compliant to their medication and the important reason behind it is forgetfulness to take medication. Compliance to medication is directly related to the level of knowledge of the patient regarding healthy life style, importance to

adherence to treatment, complication of uncontrolled hypertension, side effects of antihypertensive medicine, family members cooperation etc. Hence, more attention and care should be given to improve the behavioral aspects of the management of hypertension to improve compliance.

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