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Original Research Article

Antihypertension medication adherence and associated factors at tertiary care hospital, Gujarat, India

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ABSTRACT

Background: According to world health organization (WHO) describes poor adherence as the identical cause of uncontrolled blood pressure and estimates that 50-70% of people do not take their antihypertensive medication as prescribed. The objectives of this study were to investigate the adherence and persistence of antihypertensive drugs in Indian rural population as well as monitoring adverse drug reactions and its relation to compliance.
Methods: This cross-sectional study conducted among 300 hypertensive patients taking treatment at tertiary care hospital in Gujarat, India. Structured questionnaires consisting of open and closed ended questions on the antihypertensive drug adherence were distributed to patients for those found on the study area at time of data collection and the left-over pills of individual patient were counted to strengthen the consistency of the research.
Results: Prevalence of non-adherence found in 24.3% participants. Present study found statistically significant association between socio-demographic factors (age, religion, marital status, occupation, substance abuse, education and family history of HT) with treatment adherence of hypertension among study participants. The other factor associated to non-adherence was therapy factor 32.9% (P=0.001) from the total non-adherence, in this case patients were supposed to unwanted effect of the drug and they were not able to take the medication.
Conclusions: The main possible reasons for non-adherence were 'refuse to take regular treatment','cost of treatment', 'poor patient-doctor relation', 'unwanted side effect of drugs' and other factors like age, marital status, occupation, education level, family H/O, substance abuse and religion are also playing supporting role to develop non-adherence to treatment.

Keywords: Hypertension, Medical compliance, Patient-physician interaction, Treatment adherence

INTRODUCTION

Hypertension is a most frequent disorder among all cardiovascular disorder, which is an identical risk factor for coronary artery disease.[1,2] Many researchers found that despite the availability of effective medical therapy, more than 50% hypertensive do not take any treatment and more than 50% of those on treatment have blood pressures remain constant over the 140/90 mmHg threshold. According to world health organization (WHO) describes poor adherence as the identical cause of uncontrolled blood pressure and estimates that 50-70% of people do not take their antihypertensive medication as prescribed.[3,4]

A special case of noncompliance is the primary noncompliance, patients not compensating their prescriptions.[5] Number of doses plays a valuable part;

single dose has been found to improve compliance, but 24-hour antihypertensive activity should be provided by the drug.[6,7] Individual's risk of heart disease and stroke is increases due to uncontrolled blood pressure. High blood pressure is one of the most prevalent chronic diseases for which treatment is available.[7]

Adherence for treatment affected by factors such as age, gender, low socioeconomic status and severity of disease, class of drug prescribed, number of pills per day, side effects of medication, patient's inadequate understanding of the disease and importance of the treatment, co-morbid medical conditions, lack of social support, poor patient provider relationship, cost, forgetfulness, and presence of psychological problems, especially depression.[4]

Patient's noncompliance with the therapeutic regimen has long been a challenge for practitioners, hence this study has been undertaken to investigate the adherence and persistence of antihypertensive drugs in Indian rural population as well as monitoring adverse drug reactions and its relation to compliance.

METHODS

This cross-sectional study was conducted at general medicine department, GMERS medical college and civil hospital, Gandhinagar, Gujarat, India among all hypertensive patients attended outpatients' department (OPD) at general medicine department after taken ethical permission from Institutional ethical committee (IEC) of GMERS Medical College, Gandhinagar, Gujarat, India.

Study included all the patients who fulfilled the inclusion criteria like age greater than 18 years old, patients who have started antihypertensive medication at least for the last three months, hypertensive patients who were willing to respond, patients who had the left-over pills at the time and/or complete the whole dispensed pills during March 2015 to May 2016. Study included all the patients of hypertension who fulfil the inclusion criteria and visited to the study setting area during study period.

Study variable

Dependent variable

Non-adherence to antihypertensive medication.

Independent variable

Age, sex, patients' factor, therapy factor, socio-economic factors, health care provide and health system factors.

A sample size of 300 is obtained by using the hypothesis testing method and based on following assumptions: 95% confidence intervals, prevalence of hypertension in urban area of Gujarat, India 44.0% and 10% margin of error.[8] The calculated minimum sample has been inflated by 10% to account for anticipated subject non-response.

Data collection technique

Structured questionnaires consisting of open and closed ended questions on the antihypertensive drug adherence were distributed to patients for those found on the study area at time of data collection and the left-over pills of individual patient were counted to strengthen the consistency of the research.

Statistical analysis

After collecting data, it was processed using statistical package for social services (SPSS 19.0). Adherence and non-adherence were calculated by the percentage of total missed doses over the total dispensed medications and at a cut off value of 80% was considered as adherence to their antihypertensive medication. Chi-square (p-value) was used to see determine the level of significance of association between adherence and different factors.

RESULTS

Table 1 shows that 35.7% participants were belonged to age group of more than 65 years. Study included 56.0% male participants and 65.3% Hindu participants. Almost 32.7% participants were widow or widower. Around 18.7% participants engaged with agriculture field and shop owners and 26.0% worked as construction worker.

Almost 35.3% participants have any type of addiction. Around 22.0% participants got education up to primary level and 11.3% were graduate and above. Almost 30.3% were residing alone in study setting area and 37.7% participants have family history of hypertension.

Table 2 shows association between socio-demographic factors and treatment adherence of hypertension. More non-adherence observed in age group of ≥65 years and 55 to 65 age group and association also statistically significant (<0.05). Non-adherence observed more among female participants (52.1%) than male (47.9%) but association statistically non-significant (>0.05).

Regarding religion of participants, non-adherence observed more among Muslims (58.9%) than Hindus (41.1%) and association also statistically significant (<0.05). Non-adherence observed less among married (19.2%) and divorcee (16.4%) participants than widow/widower (64.4%) and association also statistically significant (<0.05).

Treatment adherence observed more among professionals, semi-professionals and semi-skilled workers than farmers, clerical workers, unskilled workers and association also statistically significant (<0.05).

Table 1: Socio-demographic information of participants (N=300).

Variable		Number (%)
Age (in years)	25-35	23 (7.7)
	35-45	21 (7.0)
	45-55	56 (18.7)
	55-65	93 (31.0)
	≥65	107 (35.7)
Mean age (Mean ± SD)		44.6±7.6
Gender	Male	168 (56.0)
	Female	132 (44.0)
	Male: female ratio	1.27:1
Religion	Hindu	196 (65.3)
	Muslim	104 (34.7)
Marital Status	Married	172 (57.3)
	Widow/widower	98 (32.7)
	Divorcee	30 (10.0)
Occupation	Profession	12 (4.0)
	Semi-profession	20 (6.7)
	Clerical, shop owner, farmer	56 (18.7)
	Skilled worker	78 (26.0)
	Semi-skilled worker	53 (17.7)
	Unskilled worker	55 (18.3)
	Unemployed	26 (8.7)
Substance abuse	Chikhani	19 (6.3)
	Tobacco chewing	65 (21.7)
	Drinking	43 (14.3)
	None	194 (64.7)
Education	Profession or honours	13 (4.3)
	Graduate or postgraduate	21 (7.0)
	Post high school diploma	47 (15.7)
	High school certificate	82 (27.3)
	Middle school certificate	36 (12.0)
	Primary school certificate	66 (22.0)
	Illiterate	35 (11.7)
Family history of hypertension	Present	113 (37.7)
	Absent	187 (62.3)
Family member	Present	209 (69.7)
	Alone	91 (30.3)

Study observed higher non-adherence among participants with substance abuse than non-substance abuser and association also statistically significant (<0.05). Higher treatment adherence observed among participants without family history of hypertension than participants with family history and association also statistically significant (<0.05).

Study observed statistically non-significant association between adherence and presence of family member (>0.05). From the total non-adherence of respondents 28.8% (P=0.04) comprises of poor patient-physician relationship that patients didn't get enough information from the health care provider and not satisfied with the health facility. Almost 42.5% participants had financial problem, 32.9% had drug related side effect.

These were the existing factors expected to be influential the adherence to anti-hypertensive medication, (Table 3) shows that, some patients respond to more than one factor so that the value seems to be more than the total non-adherence value. From the total non-adherence of respondents 28.8% (P=0.04) comprises of poor patient-physician relationship that patients didn't get enough information from the health care provider and not satisfied with the health facility. Almost 42.5% participants had financial problem, 32.9% had drug related side effect.

Table 2: Association between anti-hypertensive medication non-adherence according to age group distribution among study participants (N=300).

Variable		Level of adherence		P value
		Adherence (227)	Non-adherence (73)	
Age (in years)	25-35	18 (7.9)	5 (6.8)	<0.05
	35-45	14 (6.2)	7 (9.7)	
	45-55	47 (20.7)	9 (12.3)	
	55-65	76 (33.5)	17 (23.3)	
	≥65	72 (31.7)	35 (47.9)	
Gender	Male	133 (58.6)	35 (47.9)	0.14
	Female	94 (41.4)	38 (52.1)	
Religion	Hindu	166 (73.1)	30 (41.1)	0.0001
	Muslim	61 (26.9)	43 (58.9)	
Marital status	Married	158 (69.6)	14 (19.2)	0.0001
	Widow/widower	51 (22.5)	47 (64.4)	
	Divorcee	18 (7.9)	12 (16.4)	
Occupation	Profession	11 (4.8)	1 (1.4)	0.001
	Semi-profession	17 (7.5)	3 (4.1)	
	Clerical, shop-owner, farmer	40 (17.6)	16 (21.9)	
	Skilled worker	59 (26.0)	19 (26.0)	
	Semi-skilled worker	47 (20.7)	6 (8.2)	
	Unskilled worker	32 (14.1)	23 (31.5)	
	Unemployed	21 (9.3)	5 (6.8)	
Substance abuse	Chikhani	14 (6.2)	5 (6.8)	0.002
	Cigarette / Bidi	42 (18.5)	7 (9.6)	
	Tobacco chewing	52 (22.9)	13 (17.8)	
	Drinking	22 (9.7)	21 (28.8)	
	None	145 (63.9)	49 (67.1)	
Education	Profession or Honours	12 (5.3)	1 (1.4)	0.0001
	Graduate or postgraduate	18 (7.9)	3 (4.1)	
	Post high school diploma	38 (16.7)	9 (12.3)	
	High school certificate	70 (30.8)	12 (16.4)	
	Middle school certificate	24 (10.6)	12 (16.4)	
	Primary school certificate	47 (20.7)	19 (26.0)	
	Illiterate	18 (7.9)	17 (23.3)	
Family history of hypertension	Present	53 (23.3)	60 (82.2)	0.0001
	Absent	174 (76.7)	13 (17.8)	
Family member	Present	163 (71.8)	46 (63.0)	0.20
	Alone	64 (28.2)	27 (37.0)	

Table 3: Reason for antihypertensive medication non- adherence with respect to the existing factors among study participants (N=300).

Factors	Contribution of each factor for non-adherence N (%)
Patients refuse to take the drug regularly as prescribed (patient factors)	45 (61.6)
Interruption due to financial constraints (Socio-economic factor)	31 (42.5)
Drug related, unwanted effect (Therapy factors)	24 (32.9)
Pain due to B/P not felt and stop medication (Condition factors)	49 (67.1)
Poor patient-physician relationship	21 (28.8)

DISCUSSION

The findings of the present study suggest that the medication adherence was poor among hypertensive

patients at a tertiary care teaching hospital in Gujarat, India. The results of this study showed that non-adherence was found among 24.3% participants and remaining participants were taking prescribed pills and visiting hospital regularly to maintained satisfactory compliance to medication over a period of 12 months. This finding is correlate with similar study done by PM Ho et al, (34.0%), Newby LK et al, (29.0%) and Chelkeba L et al, (26.0%).[3,9,10] But higher non-adherence was found in similar study done by Jackevicius CA et al, (40.0%), Venketachakem J et al, (75.9%), Santra G et al, (79.2%), Thakur JS et al, (52.7%), Ramli A et al, (46.6%), Bhusal A et al, (41.1%) and Kale S et al, (58.0%).[7,11-16] Higher non-adherence in above mentioned studied observed might be due to use difference methods or tools to measure treatment adherence of hypertension.

Studies done in Colombia, USA (2009) showed that the levels of medication adherence among the elderly ranging from 26% to 59%. Adherence to a medication regimen requires a set of behaviors that include obtaining the medication; timely administration of the correct drug, dose, and route; and persisting with taking the medication as long as the medication is needed.[17]

Many factors were found associated with low compliance which included male gender, young age, initial drug choice, education level, living alone, religion, marital status, unemployment including others.[18] Education was tied to better compliance since they have a better understanding of the long term consequences.[19] Cost of the antihypertensive drug therapy was found to be inversely proportional to compliance.[20] Patients on multiple therapy were more likely to develop adverse drug reaction as compared to patients on monotherapy.[21]

Present study found statistically significant association between socio-demographic factors (age, religion, marital status, occupation, substance abuse, education and family history of HT) with treatment adherence of hypertension among study participants. The patient-physician encounter has consistently been identified as an ideal avenue for delivery of interventions to improve adherence behavior because of one-on-one opportunities for discussing adherence during the initial diagnosis of disease, while physicians are reviewing existing or new medicine prescriptions, and at follow-up visits.[22,23] On the other way patients suffering from unwanted effect of the medication (side effect) supposed to stop taking the drugs were 32.9% ($P<0.05$) still there was statistical significant (association) with non- adherence to antihypertensive medication this problem was able to be overcome through good counseling procedure and advising the patient how to minimize these effects.

CONCLUSION

Present study found higher prevalence of non-adherence (24.3%) among study participants. The main possible reasons were 'refuse to take regular treatment', 'cost of treatment', 'poor patient-doctor relation', 'unwanted side effect of drugs' and other factors like age, marital status, occupation, education level, family H/O, substance abuse and religion are also playing supporting role to develop non-adherence to treatment. The low level of compliance to antihypertensive medication found in this study, is consistent with findings in other countries and studies in India, emphasizing the need of population wide primary prevention of elevated blood pressure and cardiovascular disease. Such measures include educational, legislative, and fiscal actions to encourage the adaptation of a healthy diet and to increase the facilities and opportunities for physical activity at leisure.

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