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Research Article

Knowledge and practice on drug compliance among males with hypertension

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ABSTRACT

Background: Treat to goal was the theme of world hypertension day in 2006 which ensured patients compliance and hypertensive control. In hypertensive care drug compliance is a prime factor. Antihypertensive drugs are highly adhered by 50% of hypertensive. Poor blood pressure control result in many complications, leading to huge economic burden. Objectives of the study to find the level of knowledge and current practice on drug compliance with anti-hypertensive drugs among males with hypertension.
Methods: A cross sectional study was conducted in November 2013, using an interview schedule among 100 males with hypertension in age group of 30-59 years who attended hypertension clinic of medicine Outpatient Department in a Medical College Hospital, Chennai, Tamil Nadu.
Result: Out of 100 hypertensive, 54% had education less than high school level, nearly half of them were from rural population, doing unskilled work and 64% had hypertension for less than 5 years. Among participants 63% were aware that medications should be continued throughout life and 81% were aware that drugs should not be stopped even if blood pressure is under control. Drug compliance rate as prescribed was 52% during last 2 weeks. Noncompliance rate at more than 2times were 22% and less than that were 26%.Common reasons for noncompliance were busy schedule (50%), forgetfulness (33.3%) during consuming alcohol (9%) and others.
Conclusion: Drug compliance was very poor among males with hypertension, could be addressed by health care providers.

Key words: Drug compliance, Hypertension, Knowledge, Practice

INTRODUCTION

Hypertension is the most significant risk factor for death and disease burden. WHO reports that hypertension has caused about 9.4 million deaths and 7.0% disability adjusted life years (DALYs) globally in 2010. The global burden of hypertension will increase by 60% to a total of 1.56 billion hypertensive adults by 2025. Majority of this rise can be attributed to increase in the number of hypertensive adults from economically developing regions. In 2011, The Global Status on Non-Communicable Diseases Report mentioned that in India there were more than 2.5 million deaths from cardiovascular disease in 2008. Coronary heart disease caused two-thirds of death and stroke caused the remaining death.

Goal for hypertension treatment is to decrease the associated morbidity and mortality. Complications of uncontrolled hypertension are cerebrovascular, cardiovascular renal and retinal diseases. This leads to poor quality of life and affects health economics as it

causes permanent disability or death which increases the burden to family, community and nation. Cardiovascular complications are angina, myocardial infarction, left ventricular hypertrophy, coronary arterial disease and heart failure. Cerebrovascular problems are hypertensive encephalopathy, transient ischemic attacks, ischemic strokes, cerebral infarcts and hemorrhages. Hypertension causes kidney failure, peripheral arterial disease, retinopathies, papilledema and blindness. In a Tanzanian study history of hypertension was found among two-thirds of patients who died from stroke and so to avoid stroke it was proposed to include control of high blood pressure, thus drug compliance become vital.

In a study antihypertensive drug compliance was found to reduce the risk of stroke and coronary heart disease by 34% and 21%. Studies have also revealed that medication therapy improves life expectancy and quality of life. About 92% of compliant patients had controlled blood pressure in Eastern Sudan in contrast with 18% of noncompliant patients. Improved control can lead to avoidance of 3 lakhs of the 15 lakhs annual deaths from cardiovascular diseases in India. Drug compliance is a cost saving intervention.

WHO in 2003 mentioned that noncompliance to medical treatment is a major public health concern in patients with hypertension. Noncompliance to antihypertensive drugs or lifestyle modifications can be associated with uncontrolled hypertension and it causes complications. Treat to Goal was the theme of World Hypertension day in 2006 which ensured patients compliance and control of hypertension. Poor compliance decreases optimum clinical benefits and reduces the overall effectiveness of health systems and treatment.[11] Interventions aimed at improving drug compliance would provide a significant positive return on investment through secondary prevention of adverse health outcomes.[11]

Noncompliance to medication comprises of four factors. Medication factors comprising of frequency of doses, number of drugs, adverse effects, unpleasant taste or smell of pills and compatibility to daily activities or lifestyle which are presently overcome through prescription of combination drugs, reducing the frequency of the daily doses and by changing the drug in case of adverse effects, manufacturing smaller size pills and avoid unpleasant taste and smell. Healthcare system factors comprising of cost of drug, usage of many pharmacies/physicians, long waiting time and unhappiness with their healthcare provider which are presently overcome by making drugs available at free of cost, easy accessibility of healthcare facility and healthcare providers providing pleasing services. Disease factors comprising of a few existing symptoms and chronic conditions which are overcome through health education about modifiable lifestyle practices for hypertension, drug compliance and complications of hypertension. Patient centered factors are also a factor for noncompliance.[15] This paper considers patient-centered factors as valuable risk factor for noncompliance.

Patient's knowledge regarding drug compliance in hypertension and its complications as well as their practice are some of the key factors in achieving compliance to medication and control of blood pressure . Most of the previous study revealed that males are more noncompliant than females. Hence this paper discusses about drug compliance among males alone. In an outpatient care settings, feasible, reliable, and valid measure of drug compliance with less cost and time factors is standardized questionnaire. The aim of this study was to assess the drug compliance, factors associated with it and the reasons for noncompliance among hypertensive patients.

METHODS

This was a cross sectional study conducted among the hypertensive males (30-59 years) who were attending Hypertension clinic of Medicine Department in a Medical College Hospital, Chennai, Tamil Nadu for at least 1 year, willing to participate and have given the informed consent. On an average about 160 hypertensive patients were attending for outpatient care at Hypertensive clinic daily. Among them nearly 80 hypertensive were males, in which 10-12 males were from the age group of 30-59 years. Data collection was done for a period of 10 days in November 2013 using an interview schedule. All hypertensive males in the age group of 30-59 years attending hypertensive clinic in Medicine department during data collection period were included as sample in this study. Hypertensive males who were hospitalized during last 30 days or with serious illness were excluded. In a latest study published in India among the hypertensives, the compliance rate was 50% with 5% significant level, the limit of accuracy as 20% of anticipated prevalence, the minimum sample size required was 96 and the same was rounded as 100. This study was approved by Institutional Research Ethical committee, Sri Ramachandra University, Chennai. Data analysis was done using statistical package for social sciences (SPSS) version 16 software.

RESULT

Socio demographic factors-The study result of 100 males with hypertension in the age group of 30-59 years who were attending a tertiary care hospital in Chennai are presented here. Mean age of participants was 51 years (SD=6.9) ranging 32-59 years. Mean duration of hypertension was 4.3 years (SD=3.9) ranging1-20 years. Among the participants 66% were from the age group of 50 or more years, 49% were from middle and low socio-economic status, 64% were hypertensives for less than 5 years duration and 75% had diabetes mellitus as co-morbidity. Nearly half of participants were from rural area (51%), with education less than high school level (54%) and 49% were unskilled workers.

Table 1: Description about knowledge on drug compliance (n=100).

Knowledge about	Frequency	%
Medications not to be stopped even if their body condition was good.	81	81
Medications not to be stopped even if their blood pressure was under control	81	81
Medications not to be stopped till end of life	63	63
Antihypertensive drugs not to be doubled if they missed previous dose	99	99
At least one complication regarding noncompliance	72	72
Any four factors* pertaining to drug-compliant	72	72

*Knowledge about any four among the above five variables.

Table 2: Reasons for noncompliance among 100 hypertensives.

Reasons	Frequency	Percentage
Too busy	24	50
Forgetfulness	16	33.30
During alcohol consumption	4	8.30
Do not believe in treatment	2	4.20
Financial problems	1	2.10
Side effects	1	2.10

Knowledge

About 81% of the hypertensives knew that antihypertensive drugs should not be stopped even if their health condition was good, 81% knew that antihypertensive drugs should not be stopped even if their blood pressure was under control and 63% knew that they had to take antihypertensive drugs till their life. Majority of the participants (99%) knew that they should not double the drugs even if they missed previous drugs and 72% knew that if the drug was not taken regularly could develop cardiac problem. In this study 72% of the hypertensives had good knowledge about any four factors (four among the above five factors) pertaining to drug-compliance. (Table 1). Renal, cerebral and ocular complications were known by 60%, 55%, and 28% of study participants respectively. Minimum of 3 complications of hypertension regarding noncompliance of hypertensive drugs were known by 70% of the hypertensives.

Practice

About 26 (26%) participants missed drugs for 2 or lesser times, 13 (13%) missed 3 to 5 times, 6 (6%) missed 6 to 10 times and 3 (3%) missed more than 10 times. Totally 48 (48%) hypertensives missed medication at least once in the past 2 weeks (Figure 1). Main reason for noncompliance was busy schedule of life 24 (50%), forgetfulness 16 (33.3%), alcohol consumption 4 (8.3%) where alcoholics deliberately skipped drugs during alcohol consumption. Two participants (4.2%) were diagnosed as hypertensives during treatment for other illness and as they had no symptoms of hypertension, they did not believe in medical care and took the drugs irregularly. Though drugs were available free of cost in this hospital 1 (2.1%) participant missed drugs due to financial problem in his family and 1 (2.1%) avoided drugs due to fear of side effects, since he believed that antihypertensive drug intake can cause kidney problem (Table 2). Totally 52% of the hypertensives took antihypertensive drugs regularly during the past 2 weeks as prescribed.

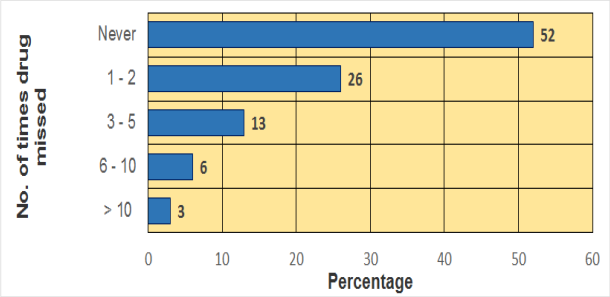

Figure 1: Pattern of drug compliance during last 2 weeks (n=100).

Compliance rate according to various factors (Table 3).

Among the compliant higher proportion (58%)of the hypertensives who had knowledge that they should not stop antihypertensive drugs even when the blood pressure is under control were 3.9 times more drug compliant when compared to the hypertensives who had no knowledge about it (26.3%), (p=0.128). Compliance rate was more among the hypertensives who had awareness (54%) that they should not stop antihypertensive drugs till the end of their life when compared to the hypertensives without awareness about it (48.7%). Larger proportion of hypertensives who had knowledge about cardiac complications (61.1%) were found to be 3.9 times more drug compliant when compared to the hypertensives who had no knowledge about it (28.6%), (p=0.0035).

Greater proportion of hypertensives who had knowledge about minimum of 3 complications of hypertension regarding noncompliance(60%) were found to be 3 times more drug compliant than their counterpart who had no knowledge about it (33.3%), (p=0.0145). The participants who had good knowledge (59.7%) about any four factors pertaining to drug compliance were 3.1 times more compliant with antihypertensive drugs than who had poor knowledge about it (32.1%), (p=0.0132).

Noncompliance rate at more than 2times according to various factors among noncompliant (n= 48).Among the noncompliant who missed medications at more than 2 times, from the age group of 50 or more years (58.63%), missed medications by 3.9 times, when compared to the participants from the age group of less than 50 years (26.32%), (p=0.0280).

Table 3: Compliance rate according to various factors among hypertensives (n=100).

Various factors			Pattern of drug compliance		Odds ratio	p value
			Compliant (%)	Non-Compliant (%)		
demographic factors	Age Group	≥50 years	37(56.1)	29(43.9)	1.616	0.2584
		<50 years	15(44.1)	19(55.9)		
	Socio economic status	Low	27(55.1)	22(44.9)	1.267	0.5428
		High	25(49)	26(51)		
	Residence	Rural	29(56.9)	22(43.1)	1.490	0.3207
		Urban	23(46.9)	26(53.1)		
Illness factors	Hypertension duration	≥5 years	20(55.6)	16(44.4)	1.250	0.5935
		<5 years	32(50)	32(50)		
	Co Morbidity	Present	44(55.7)	35(44.3)	2.043	0.1514
		Absent	8(38.1)	13(61.9)		
Knowledge factors-Aware of	Not to stop drugs even if BP is under control	Aware	47(58)	34(42)	3.871	0.0128
		Not aware	5(26.3)	14(73.7)		
	Taking drugs till the end of the life	Aware	34(54)	29(46)	1.238	0.607
		Not aware	18(48.7)	19(51.3)		
	Cardiac complication regarding noncompliance	Aware	44(61.1)	28(38.9)	3.929	0.0035
		Not aware	8(28.6)	20(71.4)		
	Any three complications regarding noncompliance	Aware	42(60)	28(40)	3.000	0.0145
		Not aware	10(33.3)	20(66.7)		
	Any four factors pertaining to drug compliance	Good	43(59.7)	29(40.3)	3.130	0.0132
		Poor	9(32.1)	19(67.9)		

Table 4: Noncompliance rate at more than 2 times among noncompliant to medications (n = 48).

Various factors		>2times missed medications during the last 2 weeks (%)	Odds Ratio	P value
Age group	≥50 years	17(58.63)	3.967	0.0280
	<50 years	5(26.32)		
Socio economic status	Low	12(54.5)	1.89	0.2661
	High	10(38.5)		
Residence	Rural	11(52.4)	1.584	0.441
	Urban	11(40.7)		
HT duration	<5 years	17(53.1)	2.446	0.1692
	≥5 years	5(31.2)		
Aware of not to stop drugs even if BP is under control	Aware	20(58.82)	8.571	0.0125
	Not aware	2(14.29)		

Among the noncompliant who missed medications at more than 2 times, significantly higher proportion of hypertensives knew that they should not stop drugs even if blood pressure is under control (58.82%),when compared to the hypertensives who did not know it (14.29%), (p=0.0125), (Table 4).

DISCUSSION

Noncompliance to medication was a major factor for uncontrolled blood pressure. Drug compliant in this study was 52%which is lower than a study done in South Africa (63%), in which the enquiry for drug compliance was 3 days alone, whereas in this study missing of drugs during the past 2 weeks was taken to account. WHO defines drug compliance as consumption of a medication for at least 80% of the prescribed time.[11] If hypertensives who missed drugs for 2 or lesser times (26%) were considered as drug compliant in this study, then the drug compliant rate becomes 78%, which is almost equal to the previous study done in India (73%).

Knowledge

Being a teaching hospital, health education is given on the day of diagnosis of hypertension itself in a separate counseling place by health educators, so among the hypertensives knowledge is more on drug compliance (81%) and they had good knowledge about at least any three complications of hypertension (70%). In this study about 63% of hypertensives knew that they had to take hypertensive drugs throughout their life which is in line with South African study (64%), where 41% of the participants had the knowledge about cardiovascular complications due to hypertension and almost half of the participants knew about renal, visual and cerebrovascular problems.[19] In this study most of the participants knew about noncompliance to medication causes cardiac (72%), renal (60%) and cerebral (55%) problems. Very few had knowledge about visual (28%) complications.

Practice–In drug compliance, this study result (52%) was similar with Karachi study (57%). Noncompliant at more than 2 times of missing drugs were 22%in this study. This group of hypertensives should be identified and focused to prevent them from developing complications of hypertension. Like this study noncompliance due to forgetfulness (34%) was more in chapel hill study (45%).This indicates that focus and care should be taken over the behavioral aspects in management of hypertension. Disregarding the behavioral aspects in hypertension management leads to harmful and unnecessary escalation of the drug regimen.

Compliance rate according to various factors. In this study compliance rate was not associated significantly with demographic factors and illness factors, which is similar to a study done in Kuwait. This might be due to the symptom free nature of the disease and lack of continuous reminders. This demands for continuous awareness program and reinforcement to improve the compliant status. This study knowledge factor like not stopping drugs even when blood pressure was under control was significantly associated with drug compliance; this is similar with a study done in Saudi Arabia.

Higher proportion of participants who knew about cardiac complication and any 3 complications of hypertension regarding noncompliance were found 3.9 times and 3 times more drug-compliant respectively when compared to the hypertensives that were not aware about it. These significant associations are similar with a study done in South Africa.[19] This might be due to fear of long term morbidity and mortality due to cardiac problems, which forced them to take drugs regularly.

Significant proportion of participants with good knowledge about any four among five factors pertaining to drug-compliance were found to be 3.1 times more drug-compliant when compared to the hypertensives with poor knowledge. These participants are at low risk of developing complications of hypertension. These factors are comprehensively discussed in this study and were not discussed in any other previous studies.

Noncompliance rate at more than 2 times according to various factors among noncompliant

Drug compliance is consumption of a medication for at least 80% of the prescribed time. Accordingly, the noncompliant who missed drugs for more than 2 times were at risk of developing more complications of hypertension. Among the noncompliant, older age group hypertensives who missed drugs for more than 2 times were significantly higher (58.63%), when compared to their respective counter parts, which is in line with a study published in 2005.

It was also found that among the noncompliant at more than 2 times of missing medications nearly 59% had knowledge that they should not stop drugs even if blood pressure is under control. They are in risk of developing all complications of hypertension due to noncompliance. Attitude and behavioral aspect of these individual should be focused to prevent them from the risk of developing complications by improving their compliance rate. This was not discussed in any other previous studies.

Combined health educational approach, behavioral approach and continuous motivation is needed to noncompliant hypertensive males. The present study will provide base line information that will enable to explore the problem at a wide range by conducting more research in larger study populations with different segment of populations and to investigate the problem in a better way and design interventional activities accordingly.

Strength of the study is this study revealed the knowledge and practice on drug compliance among hypertensives

comprehensively, which were not covered in previous studies. Compliance rate according to various factors were analyzed in this study. Among the noncompliant association of noncompliance rate at more than 2 times of missing of drugs with various factors were studied in detail.

Limitation of the study is this is a hospital based study, so findings could not be generalized to community. This study did not cover attitudes and behavioral aspects of the individuals regarding noncompliance to medications.

CONCLUSION

About 52% were taking drugs as prescribed regularly, which shows drug compliance was very poor among males with hypertension. Among the noncompliant, hypertensives aged 50 or more years who missed drugs for more than 2 times were significantly higher and were at risk of developing more complications of hypertension. This study reveals that knowledge factors play a significant role in improving the drug compliance. This study also reveals that noncompliance was also present among participants who had knowledge that they should not stop drugs even if blood pressure is under control.

Recommendations of the study was there is an urgent need for increasing awareness of hypertension and to promote its treatment and control by repeated health education session among the hypertensives. Complex interventions are most effective. Follow several approaches together including, information about hypertension and the need for lifelong treatments, periodic reminders from healthcare system, family support and pharmacy-based programmes. Drugs could be placed at convenient location such as bedside, dining/office table, office bag or with workers boxes.

Combined educational and behavioral approach with continuous motivation increases drug compliance. This requires doctors to orient themselves towards patient's behavior that may interfere with compliance in order to achieve control of hypertension in the community. Health professionals must educate hypertensive patients about their disease, their medications and the consequences of noncompliance with treatment. They need to stress the importance of compliance with their hypertension treatment despite the absence of symptoms which prevent premature deaths, avoid strokes and heart problems. To motivate the defaulters repeated counseling sessions are needed.

Relevance of the study is no previous studies had exhibited various individual factors comprehensively and their association with drug compliance in detail. Previous studies have not focused on proportion of hypertensives who were noncompliant to medications at more than 2 times and less than 2 times individually and their association with socio demographic and knowledge factors. The result of this study is of value to health care providers to understand drug compliance to medications among hypertensives which in turn prevents treatment failures due to noncompliance, prevent premature death and various complications of hypertension. This decreases economic burden to both individuals and to nation.

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Author's contribution Vanitha D has conceived the idea, designed the methodology and did the data collection, data analysis and report writing. Anitha Rani M has refined the research questions, refined methodology and contributed for data analysis and report writing.

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