Awareness on Hypertension and its Self-Management Practices Among Hypertensive Patients Attending Outreach Clinics of a Medical College in South India

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Citation

Joseph N, Chiranjeevi M, Sen S, Singh P, Saini M, Beg S. Awareness on Hypertension and its Self-Management Practices among Hypertensive Patients Attending Outreach Clinics of a Medical College in South India. *Kathmandu Univ Med J* 2016;55(3): 202-9.

ABSTRACT

Background

Recent data suggest that hypertension is a significant public health problem in India. The success strategies for hypertension management depend upon clients' awareness on hypertension and its self-management practices.

Objective

To determine awareness, self-management practices and compliance with treatment among hypertensive patients.

Method

This cross-sectional study was done in January 2012 at four health centres in Mangalore. All confirmed cases of hypertension attending the outpatient department were interviewed using a semi-structured interview schedule.

Result

Majority (58.7%) of the 315 participants were of the age group 41 to 60 years and majority (53.6%) were males. Most patients (69.5%) were educated up to high school level. The awareness level about hypertension was average or good in majority (52.4%) of the participants. Self-management practices were found to be average or good among 60.6% cases. Good compliance with treatment was seen in 78.7% cases and blood pressure was in control in 72.4% cases. Quality of self-management practices was found to influence control of blood pressure (p=0.021). Awareness, self-management practices and compliance were found to be significantly poor among aged (above 50 years), males, less educated, unemployed, unskilled or retired patients.

Conclusion

Awareness on hypertension and self-management practices were average or above among majority of the studied population. However this study identified groups who need to be better educated and further monitored to achieve universal blood pressure control among hypertensive population during the routine health care services in this settings.

KEY WORDS

Awareness, compliance, hypertension, self-management

INTRODUCTION

Disease scenario in India and other developing countries is currently experiencing a transition from communicable to non-communicable diseases.[1-3] Reasons for emergence of hypertension, obesity and other cardiovascular diseases as a major health problem in India is attributed to rapid urbanization favouring sedentary lifestyle, increase in tobacco and alcohol consumption, junk food culture and excessive salt intake among other reasons such as growth in ageing population.[4,5] In this context, hypertension presents a major area of intervention because it is a common morbidity which can be easily controlled by non-pharmacological and pharmacological methods.

However keeping blood pressure readings within control followed by its periodic monitoring, a collective responsibility shared by patients and their physicians, is not always achieved.[6,7] Reasons such as non-compliance with both medications and lifestyle modifications along with non-adherence to follow-up appointments has been found to be universal problems in hypertension management.[6,7]

Considering the fact that uncontrolled hypertension is a forerunner for multitude of complications which could result in high morbidity, disability and mortality, its control becomes very essential in the population. Satisfactory control takes place only when the people are informed about this disease and its consequences. Moreover good awareness would ensure better compliance with medications and follow up among patients in this settings. The success strategies for hypertension management also depend upon clients' self-management practices which reflects the capability and readiness of the client to modify and later maintain certain desirable behaviours.[8] Therefore there is a need to address these perspectives and develop and evaluate new strategies to achieve better blood pressure control among patients with hypertension. With this background this study was done among hypertensive patients to find out their awareness, self-management practices and compliance with treatment.

METHODS

This cross-sectional study was done in three semi-urban health clinics situated at Shivanagar, Boloor and Jeppinamogaru and one Urban Health Training Centre in Lady Hill area affiliated to a private medical college in Mangalore city of south India. The study protocol was approved by the Institutional Ethics Committee. All confirmed cases of hypertension attending the outpatient department at these centres in the month of January 2012 were enrolled for this study. The nature and purpose of the study was explained to each of these patients. Written informed consent was obtained from all consenting patients.

In accordance to the observations of a previously conducted Indian study wherein 56% hypertensive patients had good knowledge about this disease and with degree of precision of the expected proportion to be 10%, and at 95% confidence intervals, the sample size was calculated as 315.[9] Each patient was interviewed in the local language Kannada using a pre tested semi-structured interview schedule. The schedule was content and language validated by experts before its use in this study. Data regarding socio-demographic factors, clinical details such as presence of other comorbidities or complications due to hypertension and details about treatment were enquired by the investigators. Questions on awareness about hypertension were regarding its symptoms (any five), normal blood pressure values, smoking, alcohol and tobacco chewing as risk factors, any five food substances to be avoided and role of weight reduction and yoga for its prevention. Awareness regarding the fact that hypertension is not curable rather only controllable was also enquired from the participants. Awareness of any five complications of hypertension, any five investigations to be done periodically in hypertensive patents and awareness of need for periodically checking blood pressure readings were also enquired from each participant. Each of these 12 questions assessing awareness were given a maximum score of five and a minimum score zero. Therefore the maximum possible score was 60 and minimum was zero.

Awareness regarding the most essential aspects about hypertension such as food substances to be restricted in the diet, importance of weight reduction, periodic blood pressure check and compliance with antihypertensive drugs lifelong which totaled to a cumulative score of 20 points formed the basis for deciding the cutoff for poor performance. The range from 21 to 60 was then equally divided as average and good awareness level zones. Hence scores 20 or below were considered as poor, 21 to 40 as average and 41 to 60 as good awareness level. Self-management practices was assessed based on average of blood pressure readings whether in control or not, whether currently a smoker, tobacco chewer or alcoholic, whether practicing dietary restrictions and exercising regularly. Each of these questions was given a maximum score of 10 and minimum score as zero. If the patient in spite of being a current user had made attempts to quit or reduce usage of substances of abuse following being diagnosed as hypertensive or if dietary restrictions and exercising are practiced but not regularly a score of five was allotted. Other questions on self-management practices like having good compliance with medications, practicing methods which remind them of medications to be taken at a specified time interval, practice of yoga therapy and following periodic investigations to screen for complications were given a maximum score of 5 and a minimum score of zero. Therefore the maximum score for all 10 questions to assess self-management practices was 80 and minimum was zero. The cumulative scores for most essential aspects of self-management such as control

of current blood pressure values, making at least attempts to quit or reduce usage of substances of abuse, practicing dietary restrictions and exercise to some extent and having good compliance with medications totaled to 40 points. Therefore scores if 40 or less was taken as zone of poor self-management practices. The range between 41 and 80 was equally divided as zones for average and good levels of self-management practices. Therefore cumulative scores 40 or less were considered as poor, 41 to 60 as average and 61 to 80 as good self-management practice level among participants. Socio-economic status was assessed using modified Kuppuswamy's socio-economic scale for 2007.[10] Patients who used to get their blood pressure (BP) examined at least once in a fortnight were considered to be regular with checkups. Average of current BP reading with previous two readings obtained from the medical records was taken and if less than 140 mmHg systolic and less than 90 mmHg diastolic BP was labeled as controlled. Patients having missed any of the daily antihypertensive doses in the past one month were considered to be poorly compliant with treatment.

Statistical analyses were performed using Statistical Package for Social Sciences package (SPSS Inc., Chicago, IL) version 11.0. Descriptive and analytical statistics were used to summarize the data. Chi-square test was used to test association. The significance level was set at 5%.

RESULTS

A total of 315 confirmed cases of hypertension were interviewed during the study period. The mean age of the participants was 55.35±12.06 years. Majority of the participants 185(58.7%) were of the age group 41 to 60 years and majority 169(53.6%) were males. Majority were educated up to high school level 219(69.5%). Majority of the respondents 173(54.9%) were employed in unskilled or semi-skilled occupations. Majority 189(60%) were of middle socio economic status (Table 1).

Of the total participants, only 177(56.2%) knew their previous BP readings correctly. This information was given by greater proportion of females 93(63.7%) than males 84(49.7%) (χ^2 =6.23, DF=1, p=0.013).

Awareness of various risk factors of hypertension such as dietary factors was known to 197(62.5%), over weight was known to 130(41.3%) and stress was known to 122(38.7%) patients. Benefits of yoga therapy in BP control was known to 122(38.7%) patients. Knowledge of target BP levels indicating good control was known to 224(71.1%) patients. At least one complications of hypertension was known to 169(53.6%) patients. The disease was first diagnosed in 126(40%) patients by their own self initiative in getting their BP examined. Misconception that hypertension is curable was reported by 130(41.3%) patients.

The awareness level about hypertension was good in 60(19.1 %), average in 105(33.3%) and poor in 150(47.6%) participants. Awareness level of hypertension was found to be significantly better among young hypertensive (aged 50 years and below), females, well-educated and those who were housewives or doing skilled occupations (Table 1).

Table 1. Association between awareness about hypertension among participants with various socio demographic variables.

Socio demographic variables	Levels of awareness			
	Poor N(%)	Average N(%)	Good N(%)	To-tal
Age group (years)				
35-40	10(41.7)	6(25)	8(33.3)	24
41-50	40(42.5)	31(33)	23(24.5)	94
51-60	44(48.3)	32(35.2)	15(16.5)	91
61-70	38(64.4)	15(25.4)	6(10.2)	59
>70	18(38.3)	21(44.7)	8(17)	47
	χ^2=15.4, DF=8, p=0.05			
Gender				
Male	88(52.1)	58(34.3)	23(13.6)	169
Female	62(42.5)	47(32.2)	37(25.3)	146
	χ^2=7.29, DF=2, p=0.026			
Educational status				
Primary school	39(54.9)	11(15.5)	21(29.6)	71
High school	106(48.4)	85(38.8)	28(12.8)	219
Pre university course	5(20)	9(36)	11(44)	25
	χ^2=30.4, DF=4, p<0.001			
Occupational status				
Unemployed	10(62.5)	4(25)	2(12.5)	16
Unskilled	36(48)	30(40)	9(12)	75
Semi-skilled	46(46.9)	34(34.7)	18(18.4)	98
Skilled	6(37.5)	4 (25)	6(37.5)	16
House wives	21(29.6)	30(42.2)	20(28.2)	71
Retired	31(79.5)	3(7.7)	5(12.8)	39
	χ^2=34.5, DF=10, p<0.001			
Socio economic status				
Middle	87(46)	62(32.8)	40(21.2)	189
Lower	63(50)	43(34.1)	20(15.9)	126
	χ^2=1.40, DF=2, p=0.496			
Total	150	105	60	315

Family history of hypertension was present in 147(46.7%) cases. Out of these 147, proportion of participants with good awareness was 35(23.8%) and average awareness was 52(35.4%) compared to 25(14.9%) with good and 53(31.5%) with average awareness among the rest (χ^2=6.3, DF=2, p=0.043). Thus awareness was significantly more among patients with family history of hypertension in comparison to those without.

Regular check of weight (once in six months) was done by 157(49.8%) and regularity with exercises (at least 3 times a week for at least 30 minutes) was done by 161(51.1%) participants. (Table 2)

Table 2. **Self-management practices among participants (n=315).**

Characteristics	N	%
Regular check of BP	98	31.1
Screening for dyslipidemia (n=217)	87	40.1
Screening for diabetes mellitus (n=165)	145	87.9
Screening for CHD by ECG (n=154)	51	33.1
Regular check of weight	157	49.8
Remember by themselves to take anti-hypertensive drugs	79	25.1
Maintenance of a pill box	35	11.1
Maintenance of a diary to record BP readings as well as drug consumption	95	30.2
Regularity with exercise	161	51.1
Practicing yoga therapy	75	23.8
Strict diet control	206	65.4
Abstinence/ reduction in smoking or tobacco chewing habits following diagnosis (n=220)	35	15.9
Abstinence/ reduction in alcohol consumption following diagnosis (n=169)	110	65.1

Table 3. **Association between self-management practices with various socio demographic variables among study participants.**

Socio demographic variables	Self-management practices			
	Poor N(%)	Average N(%)	Good N(%)	Total
Age group (years)				
35-40	6(25)	12(50)	6(25)	24
41-50	32(34)	46(49)	16(17)	94
51-60	36(39.6)	50(54.9)	5(5.5)	91
61-70	30(50.8)	26(44.1)	3(5.1)	59
>70	20(42.5)	21(44.7)	6(12.8)	47
	χ^2=16.6, DF=8, p=0.035			
Gender				
Male	73(43.2)	85(50.3)	11(6.5)	169
Female	51(34.9)	70(47.9)	25(17.1)	146
	χ^2=9.17, DF=2, p=0.01			
Educational status				
Primary school	28(39.4)	35(49.3)	8(11.3)	71
High school	94(42.9)	107(48.9)	18(8.2)	219
Pre university course	2(8)	13(52)	10(40)	25
	χ^2=26.8, DF=4, p<0.001			
Occupational status				
Unemployed	7 (43.7)	7 (43.7)	2 (12.6)	16
Unskilled	35 (46.7)	36 (48)	4 (5.3)	75
Semi-skilled	51 (52)	39 (39.8)	8 (8.2)	98
Skilled	2 (12.5)	11 (68.7)	3 (18.8)	16
House wives	13 (18.3)	44 (62)	14 (19.7)	71
Retired	16 (41)	18 (46.1)	5 (12.8)	39
	χ^2=30.1, DF=10, p=0.001			
Socio economic status				
Middle	71 (35.6)	94 (49.7)	24 (12.7)	189
Lower	53 (42.1)	61 (48.4)	12 (9.5)	126
	χ^2=1.08, DF=2, p=0.582			
Total	124	155	36	315

Of the total respondents, 79(25.1%) patients remembered by themselves to take anti-hypertensive drug while in 236(74.9%) cases they were reminded by others. BP was in control in 228(72.4%) patients. Out of the patients with good awareness level, proportion of those with controlled BP was 45(75%) and out of the patients with average awareness level, those with controlled BP was 85(80.9%). Awareness level of hypertension was associated with control of BP readings among participants (χ^2=7.79, DF=2, p=0.02). Only 35(11.1%) patients were maintaining pill box and 95(30.2%) were maintaining a diary to note BP readings.

Overall the self-management practices were good in 36(11.4%), average in 155(49.2%) and poor in 124(39.4%) cases. Self-management practices was found to deteriorate with increasing age of the participants (above 50 years), was poor among males, less educated and those participants with unskilled or semi-skilled occupations or those who were unemployed or retired (Table 3). Out of 60 participants with good awareness level, proportion of participants with good self-management practices were 20(33.3%), average self-management practices were 29(48.3%) and poor self-management practices were 11(18.3%) (χ^2=39.5, DF=2, p<0.001).

Out of the patients with good, average and poor self-management practices, 25(69.4%), 123(79.3%) and 80(64.5%) had control of BP respectively (χ^2=7.76, DF=2, p=0.021).

Compliance rate with treatment was found to be good in 248(78.7%) participants. Good compliance was significantly associated with patients aged 50 years and below, females, well-educated and those patients with presence of comorbidities or complications of hypertension. It was poor among retired and unemployed employees (Table 4).

Out of the patients with good compliance, 206(83.1%) had good BP control compared to 22(32.8%) with good BP control out of the remaining with poor compliance (p<0.001). Out of the patients with good, average and poor awareness about hypertension, 49(81.7%), 85(80.9%) and 114(76%) respectively had good compliance with medications (χ^2=1.29, DF=2, p=0.526). Reasons for poor compliance stated by the 67 poorly compliant patients were forgetfulness 43(64.2%) followed by false sense of security as BP was well in control 28(41.8%).

Of the total patients, 165(52.4%) had diabetes mellitus as a comorbidity while 154(48.9%) had coronary heart disease as a comorbidity. Asthma was present in 83(26.3%)

Table 4. Association between compliance with treatment with socio demographic variables and co-morbidities/complications among study participants.

	Poor compliance N(%)	Good compliance N(%)	Total
Age group (years)			
35-40	3 (12.5)	21 (87.5)	24
41-50	7 (7.4)	87 (92.6)	94
51-60	18 (19.8)	73 (80.2)	91
61-70	19 (32.2)	40 (67.8)	59
>70	20 (42.6)	27 (57.4)	47
	χ^2=28.9, DF=4, p<0.001		
Gender			
Male	43 (25.4)	126 (74.6)	169
Female	24 (16.4)	122 (83.6)	146
	χ^2=3.79, DF=1, p=0.05		
Educational status			
Primary school	32 (45.1)	39 (54.9)	71
High school	30 (13.7)	189 (86.3)	219
Pre university course	5 (20)	20 (80)	25
	χ^2=16.3, DF=1, p<0.001		
Occupational status			
Unemployed	9 (56.3)	7 (43.7)	16
Unskilled	12 (16)	63 (84)	75
Semi-skilled	12 (12.2)	86 (87.8)	98
Skilled	5 (31.2)	11 (68.8)	16
House wives	8 (11.3)	63 (88.7)	71
Retired	21 (53.9)	18 (46.1)	39
	χ^2=47.6, DF=5, p<0.001		
Comorbidities/complications			
Present	35 (17.4)	166 (82.6)	201
Absent	32 (28.1)	82 (71.9)	114
	χ^2=4.93, DF=1, p=0.026		
Total	67	248	315

cases, chronic obstructive pulmonary disease in 51(16.2%) cases and peripheral vascular disease in 20(6.3%) cases. Of the 315 hypertensive patients, 220(69.8%) were smokers, 169(53.6%) were alcoholics and 201(63.8%) were overweight.

DISCUSSION

This study highlighted the fact that the awareness of hypertension was not found to be satisfactory in about half of the participants in this study. Studies done in other parts of India and abroad have reported better awareness level of hypertension amongst patients in comparison to this study.[9,11,12]

The misconception that hypertension is curable with treatment was seen from 44% to 64.6% among participants in other studies which was more than our observations.[13-15] However in a study done in North Carolina, USA such misconceptions were reported only in 20% cases.[11] This needs to be corrected, else patients on antihypertensive medication may discontinue treatment after few days thinking that hypertension is completely curable. Also the awareness of dietary risk factors was known to 76% patients in a study done in Pakistan which was better than that reported in this study.[16] Overweight or obesity as risk factor of hypertension was known to more than 70% participants in other studies.[14,17] A study done in Chandigarh, India reported awareness of overweight as a risk factor in 63.9% cases which was also higher than our findings.[18]

Awareness of stress as a risk factor for hypertension was known to 50% patients in a study done in Nigeria and by 100% participants in a study done in Pakistan which was more than our observations.[14,19]

Awareness of complications of hypertension was again better in studies done in Israel where it was 91% and in USA where it was 65%.[17,20] Only a study done in Sindh found that only 6% of participants were aware of complications.[16]

However the awareness of participants in certain aspects about hypertension in this study was better than that mentioned in other studies. For example, the awareness of target BP levels was better than the observations made in studies done in other parts of the world where it ranged from 21% to 46%.[13,15,17,20] But in a study done in North Carolina, USA 86% patients knew the target BP levels which was higher than our findings.[11] Also in this study knowledge of previous BP readings was higher than that reported in other studies where it ranged from 27% to 52.4%.[13,15]

Hence specific aspects about hypertension where knowledge is lacking needs to be identified and improved upon. Other studies done in India and other parts of the world have reported control of hypertension ranging from 10% to 69% cases which was lesser than our findings.[12,13,17,21-23]

The awareness level about hypertension was better among young hypertensive in this study which was similar to the observations made in other studies.[11,16,20] Awareness about previous BP reading and normal BP reading was more among women in other studies as also supported by findings of the present study.[13,24]

People with family history of hypertension were significantly more aware about hypertension which was also supported by the observations of a study done in Pakistan.[14] This substantiates the role played by family members with hypertension in educating others in their households about this disease.

In this study only 31.1% patients practiced regular checking of BP which was lower than the findings of a study done in Seychelles where 40% patients had their BP checked within the previous month.[13] But lifestyle modification among participants with respect to diet control and regularity with exercise observed in this study was better than that observed in several other studies done worldwide.[8,17,19]

The self-management practices in this study was found to deteriorate with increasing age of participants similar to the observations of Nudrat et al. where patients above 65 years had increasing difficulty of controlling BP due to poor self-management practices.[25]

The self-management practices were found to be significantly better among females probably due to greater health consciousness and sensitivity among them as also indicated in the study done by Cutler et al.[26]

Good compliance with treatment reported by 78.7% patients in the present study was better than the findings of several other studies.[14,16,19,22,27-31] In contrast a study done in Kuwait reported a higher compliance rate which was 88.6%.[12] Several studies have reported a greater compliance rate with treatment among females which was similar to our observations.[13,30,32] This might reflect the general tradition in our society that females are more compliant with medical advices than males. Also it has been observed that males might forget to take medication due to their busy daily work habits.[29]

A study done in Saudi Arabia reported compliance to be better among young hypertensives which was similar to our findings.[33] Better compliance among youngsters could be because of greater realization of responsibilities on their shoulders towards family support.

In this study compliance with treatment was significantly better among more educated participants as also observed in a study done in Nigeria.[31] But in a study done in Iraq compliance rate was found to be significantly better among less educated participants.[29] The association of socio economic status with compliance was not done in this study as all the available hypertensive drugs at these centres were dispensed free of cost to patients. The presence of associated illnesses was found to increase compliance rate in this study which was also observed in other studies.[29,34] This might be due to greater severity of symptoms or due to intense concern about life and health among these patients.[29]

Awareness level about hypertension was not influencing compliance with treatment among participants in this study and in another Karachi based study.[14] This implies that although improvement in knowledge of hypertension and its complications might help to correct patient's non-compliance behavior,[12] it may not always be the case. Rather it is essential to educate patients that hypertension is not treatable but only controllable by good compliance with treatment on a day to day basis. This was substantiated by the finding of a Saudi Arabia based study where compliance rate among patients was observed to be significantly better among patients who knew about the importance of compliance than those who were not aware.[33]

In this study most patients did not take medications because they were forgetful which was similar to observations of a Kuwait based study.[12] However in studies done at Chandigarh, India,[18] and Nigeria,[31] ignorance on the need for regular treatment and in a study done in Iraq,[29] feeling of wellbeing among patients were other reasons stated.

Forgetfulness leading to non-compliance can be minimized only if behavioural changes are brought about among patients.[35] This along with methods like maintaining a pill box or a diary to record daily intake of medications would support the cause to improve compliance among patients. This will hence avoid unnecessary changes in drug regimen for controlling hypertension on the part of the treating doctor.[36]

The other reason for not taking medicines regularly in this study was normal BP reading. This is an area where the physician needs to educate the patients of the chronicity and non-curable aspects of this condition. However individual needs during consultation hours may not be often addressed due to time constraints. An appropriate solution to this problem would be organizing focus group discussions (FGDs). This would allow hypertensives in bringing out and sharing their concerns in a group with the doctor. For the doctor, FGDs would mean more efficient use of consultation time and would enhance interaction with group of patients on important messages for blood pressure control and strategies to improve compliance.[37]

Although doctors recommend lifestyle modifications in the form of regular exercise and dietary restrictions like salt intake, it has been observed that no rational explanations is given by them regarding how it would benefit individuals in keeping blood pressure values in control. Moreover practical advises on how to go about doing these are also observed as to be lacking in consultations.[38]

In this study abstinence or reduction in smoking/tobacco chewing habits was reported by 15.9% and in alcohol consumption by 65.1% participants following disease identification. In the Seychelles study attempt to change was reported by 74% of smokers and 60% of heavy drinkers which means that strategies to bring out behavioural changes needs further improvement in this settings.[13]

This study does not have information on the awareness and attitude of family members of patients towards hypertension. This is important as family members too play a key role in patient care. Studies which are community based would be ideal to get more information on these aspects.

CONCLUSION

Awareness level of hypertension and self-management practices to control the same was found to be average or good in majority of the participants. Compliance rate with treatment was regular in more than three fourth of the participants. Awareness, self-management practices and compliance were found to be poor among older hypertensives (above 50 years), males, less educated,

unemployed, unskilled or retired patients. These groups need to be better educated and further monitored during the routine health care delivery services.

ACKNOWLEDGEMENT

We authors would like to thank Dr. Ganesh S Kumar from Department of Community Medicine, JIPMER, Puducherry, India, Dr. Maria Nelliyanil from Department of Community Medicine, A.J. Institute of Medical Sciences, Mangalore, India and Dr.Raghavendra Babu YP from Department of Forensic Medicine, Kasturba Medical College, Mangalore, India for their help in editing this manuscript. We also thank Dr. Animesh Jain, Professor and HOD, Department of Community Medicine, Kasturba Medical College, Mangalore for his guidance and support in this research work.

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