

Original article

FACTORS ASSOCIATED WITH ADHERENCE TO ANTIHYPERTENSIVE TREATMENT AMONG HYPERTENSIVE PERSONS IN A URBAN SLUM AREA OF HYDERABAD

¹Dr.B.Babu Rao, ²Dr.Pratyush R Kabra, ³Dr.M.Sreedhar

¹Associate Professor, Department of Community Medicine, Osmania Medical College, Hyderabad

² Senior Resident, Department of Community Medicine, Osmania Medical College, Hyderabad

³Associate Professor, Department of Community Medicine, Osmania Medical College, Hyderabad

Corresponding author: Dr.M.Sreedhar

Abstract

Background: Hypertension is an overwhelming global challenge with high morbidity and mortality rates. Poor adherence is associated with bad outcome of the disease and wastage of healthcare resources.

Objective: To assess adherence to antihypertensive therapy and to assess associated factors for adherence among HTN patients.

Method: A cross-sectional study was conducted on 220 hypertensive patients aged 20 years and above residing in Urban Slum area of Hyderabad. The data was collected using a pretested structured questionnaire consisting of 3 sections: Section I- Participants general information, Section II-Diagnosis and treatment details of hypertension, and Section III -The 4-item Morisky questionnaire.

Results: A total of 220 individuals aged 20 years and above on anti-hypertensive treatment for more than 6 months were interviewed. Better adherence and a statically significant association were found in patient above 60 years of age (67.2%), married people (84.7%), non smokers (74.8%) and non tobacco users (68.9%) and among people consuming 1 tablet a day (67.7%).

Keywords: hypertension, adherence, Morisky

Introduction:

Hypertension (HTN) or high blood pressure (systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg) is an overwhelming global challenge which ranks third as a cause of disability adjusted life-year [1]. Hypertension causes 7.1 million premature deaths each year worldwide and accounts for 13% of all deaths globally [2].

The problem of non-adherence to medical treatment remains a challenge for the medical professions and social scientists. As a result, substantial numbers of patients do not get the maximum benefit of medical

treatment, resulting in poor health outcomes, lower quality of life and increased health care costs. In spite of many advances made in adherence research, no adherence rates have remained nearly unchanged in the last decades [1,3,4].

Adherence to antihypertensive medication is very important in preventing complications [5]. Poor adherence to anti-hypertensive therapy is one of the biggest obstacles in therapeutic control of high blood pressure [6]. Failure to adhere causes medical and psychological complications of the disease, reduces

patients' quality of life, wastes health care resources and erodes public confidence in health systems [7].

Poor adherence to anti-hypertensive therapy is usually associated with bad outcome of the disease and wastage of limited health care resources

Methodology:-

A cross-sectional study was conducted among the hypertensive patients residing in Urban Slum area belonging to the Department of Community Medicine, Osmania Medical College, Hyderabad. The study participants were above 20 years of age and on anti-hypertensive treatment for more than 6 months. The sample size of 200 was calculated taking the level of adherence to anti-hypertensive medication as 50% (Rule of Half [8]) with a relative precision of 20% and 95% confidence interval. Adding a non-response error of 10%, the total sample size to be studied was 220. The data was collected using a pretested structured questionnaire consisting of 3 sections: Section I - Participants general information, Section II-Diagnosis and treatment details of hypertension, and Section III -The 4-item Morisky questionnaire (the Morisky Medication-taking Adherence Scale- MMAS-4) [9] was used to assess drug adherence status of the patients. The total score ranges from 0 to 4. During analysis, a cut-off value of MMAS mean score ≥ 2 and < 2 were used for labeling patient as good drug adherence or poor drug adherence respectively [10]. The study participants were briefed about the nature and the purpose of the

study, and were included in the study after taking a written informed consent. The socioeconomic status was assessed using the Modified Kuppaswamy Scale [11].

Statistical Analysis:-

The data was entered in Microsoft office excel, and all the statistical analyses were performed with the available computer program SPSS 16.0. Comparisons of variables were performed with the use of chi-square test and $P < 0.05$ was considered statistically significant.

Results:-

A total of 220 individuals aged 20 years and above on anti-hypertensive treatment for more than 6 months, residing in a urban slum area of Hyderabad were contacted of which 11 did not give consent to participate in the study and another 6 did not give the complete information giving a response rate of 92.3%.

Majority (57.1) of the participants were aged more than 60 years and 59.1% of the total participants were females. A total of 117 (82.7%) people were married where as 26 (17.3%) are single (Unmarried, divorced, widow). According to Kuppaswamy socio economic classification only 71 (35%) belonged to middle class. In the study it was observed that a total of 103 used tobacco in any form of which 92 (45.3%) were smokers. 102 participants consumed alcohol. (Tab. 1.)

Medworld asia

Dedicated for quality research

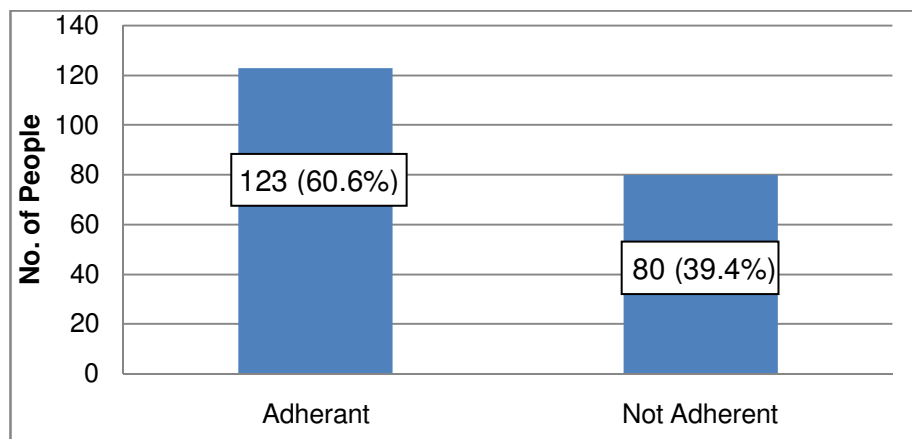
www.medworldasia.com

Tab 1: Socio-demographic characteristics of the study population (N=203)

	Number	Percentages
Age Groups (years)		
20 – 40	18	8.9
40 – 60	69	34.0
>60	116	57.1
Gender		
Male	83	40.9
Female	120	59.1
Marital Status		
Married	177	87.2
Unmarried	2	1.0
Divorced	3	1.5
Widow	21	10.3
Socioeconomic status		
Upper Middle	19	9.4
Lower Middle	52	25.6
Upper lower	108	53.2
Lower	24	11.8
Smoke Tobacco		
Yes	92	45.3
No	111	54.7
Chew Tobacco/Use tobacco in other forms		
Yes	39	19.2
No	164	80.8
Alcohol Consumption		
Yes	102	50.2
No	101	49.8

In the study it was observed that 123 (60.6%) of the population were adherent to their treatment (Fig. 1.). The mean duration of hypertension among the patients was 5.2 years.

Fig. 1. Adherence to antihypertensive medication among study population



Adherence rate towards anti-hypertensive medication was better among patient above 60 years of age (67.2%) and this was found to be statistical significance. Females (64.2%) were comparatively more adherent to treatment when compared males (55.4%) but it was not statically significant. Better adherence and a statically significant association

were found in married people (84.7%), non smokers (74.8%) and non tobacco users (68.9%) and among people consuming 1 tablet a day (67.7%). Though better adherence was observed among middle income people (63.4%) and non alcoholic (66.3%) but with no statistical significance association (Tab. 3.).

Tab.3 Effect of selected socio-demographic on adherence to antihypertensive treatment

Variables	Adherence	Not Adherence	OR(95% CI)	p-value
Age Groups (years)				
≥60	78 (67.2)	38 (32.8)	1.91 (3.40-1.08)	0.02
< 60	45 (51.7)	42 (48.3)		
Gender				
Male	46 (55.4)	37 (44.6)	0.7 (1.23-0.39)	0.21
Female	77 (64.2)	43 (35.8)		
Marital Status				
Staying together	150 (84.7)	27 (15.3)	3.45 (8.43-1.37)	0.04
Single	16 (61.5)	10 (38.5)		
Socioeconomic status				
Middle	45 (63.4)	26 (36.6)	1.2 (2.19-0.66)	0.55
Lower	78 (59.1)	54 (40.9)		
Smoke Tobacco				

No	83 (74.8)	28 (25.2)	3.83 (7.01-2.12)	<0.001
Yes	40 (43.5)	52 (56.5)		
Chew Tobacco/Use tobacco in other forms				
No	113 (68.9)	51(31.1)	6.36 (14.63-2.93)	<0.001
Yes	10 (25.6)	29 (74.4)		
Alcohol Consumption				
No	67 (66.3)	34 (33.7)	1.62 (2.87-0.91)	0.09
Yes	56 (54.9)	46 (45.1)		
Number of antihypertensive tablets.				
1	88 (67.7)	42 (32.3)	2.26 (4.11-1.26)	0.006
>1	35 (47.9)	38 (52.1)		

Discussion:-

There is strong evidence that many patients with chronic illnesses have difficulty adhering to their recommended regimens. This results in less than optimal management and control of the illness. Poor adherence is the primary reason for sub-optimal clinical benefit [12,13]. It causes medical and psychosocial complications of disease, reduces patient's quality of life, and wastes health care resources. Taken together, these direct consequences impair the ability of health care systems around the world to achieve population health goals.

Reviews from developed countries such as the United States have shown that only 51% of the patients treated for hypertension adhere to the prescribed treatment where as in developing countries like China, Gambia and the Seychelles, only 43%, 27% and 26%, respectively, of patients adhere to their antihypertensive medication regimen [14].

In our study it was observed that 60.6 % of the respondents were adherent to their treatment, which is similar to the study done by Abere Dessie Ambaw et.al. [15] i.e. 64.5%. It is higher than what has been reported from Malaysia (44.2%), Gambia 27% [16,

17] and Mangalore, a Coastal city in South India 54.2%[18]. However, it is lower than the studies done in Egypt (74.1%), another part of Pakistan (77%) and Scotland (91%) This might be due to better access and care to patients in these countries. It is also supported by the findings of this study that, for 71.3% of the non adherents, the hypertension treatment and care service was not accessible [15].

Various studies across countries have identified different factors influencing adherence to antihypertensive medication. In studies from China [19] and Pakistan [20] age seemed to be an important factor influencing adherence with older patients being more adherent compared to younger patients. Similar observations were made in our study where people above 60 years were almost two times more adherent to their treatment. In this study, no significant association between sex and adherence level was observed, men were found to be less adherent when compared to women. This finding is in line with a study done in India [21], where men had almost threefold increase in risk of nonadherence as compared to women. This can be explained by the fact that; men are burdened by the outdoor activities

which make them busy and make them forget their medications. Alcohol consumption, a commonly practice by males, could also be a barrier for their treatment adherence [15].

Patients staying together (with their partner) were 3 times more adherent than staying single this possible explains that family support is important for better adherence. Patients on single antihypertensive tablets were also found to be almost twice adherent to treatment when compared to patients on more one tablets.

The limitation of our study would be that the Morisky adherence questionnaire used in this study has not been validated in the Indian population. Also the sample size of our study is small to generalize the findings to a large extent.

References:

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J: Global burden of hypertension: analysis of worldwide data. *Lancet* 2005, 365 (9455):217–223.
2. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr: Jones DW, Materson BJ, Oparil S, Wright JT Jr, et al: Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension* 2003, 42(6):1206–1252.
3. Primatesta P, Poulter NR: Improvement in hypertension management in England: results from the Health Survey for England 2003. *J Hypertens* 2006, 24(6):1187–1192.
4. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM, Ishaq M, Ambreen A, Ahmad U: Factors associated with adherence to antihypertensive treatment in Pakistan. *PLoS One* 2007, 2(3):e280.
5. Kumar N, Unnikrishnan B, Thapar R, Mithra P, Kulkarni V, Holla R, Bhagawan D, Mehta I. Factors Associated With Adherence To Antihypertensive Treatment Among Patients Attending A Tertiary Care Hospital In Mangalore, South India. *IJCRR*. (2014), [Cited January 30, 2015]; 6(10): 77-85.
6. Ong KL, Cheung BMY, Man YB, Lau CP, Lam KSL: Prevalence, Awareness, Treatment, and Control of Hypertension Among United States Adults 1999–2004. *Hypertension* 2006, 49:69–75.
7. Balkrishnan R: The importance of medication adherence in improving chronic-disease related outcomes: what we need to further know. *Med Care* 2005, 43(6):517–520.
8. K Park. Park's Textbook of Preventive and Social Medicine, 21st ed. Jabalpur: Bhanot Publishers; 2011. Pg no 345.
9. Morisky DE, Green LW, Levine DM: Concurrent and predictive validity of a self-reported measure of medication adherence. *Med Care* 1986, 24(1):67–74.

Recommendation :

Patient self-help groups need to be formed and promoted where in the patients can discuss their reasons for non-adherence and try to solve it. The health system needs to be strengthened to make sure lack of medication is never a cause for non-adherence. The National Programme on Prevention and Control of Diabetes, Cardiovascular diseases and Stroke (NPDCS) should address the issue of Non-adherence to medication and recognize it as one of modifiable risk factor for complications of hypertension. By preventing this risk factor, the qualities of life for individuals with hypertension can be improved and will reduce the overall cardiovascular morbidity and mortality.

10. Inkster ME, Donnan PT, MacDonald TM, Sullivan FM, Fahey T: Adherence to antihypertensive medication and association with patient and practice factors. *J Hum Hypertens* 2006, 20(4):295–297
11. Bairwa M, Rajput M, Sachdeva S. Modified kuppuswamy's socioeconomic scale: social researcher should include updated income criteria, 2012. *Indian J Community Med* 2013;38:185-6
12. Rybacki JJ. Improving cardiovascular health in postmenopausal women by addressing medication adherence issues. *Journal of the American Pharmaceutical Association*, 2002, 42:63-71.
13. Dunbar-Jacob J et al. Adherence in chronic disease. *Annual Review of Nursing Research*, 2000, 18:48-90.
14. WHO 2003. Adherence to long-term therapies-Evidence for action. Available at URL:<http://whqlibdoc.who.int/publications/2003/9241545992.pdf>. Accessed on: 24/01/2015.
15. Abere Dessie Ambaw, Getahun Asres Alemie, Solomon Meseret W/Yohannes, Mengesha J B. Adherence to antihypertensive treatment and associated factors among patients on follow up at University of Gondar Hospital, Northwest Ethiopia. *BMC Public Health*, 2012, 12:282 Available at <http://www.biomedcentral.com/1471-2458/12/282>.
16. Morisky DE, Green LW, Levine DM: Concurrent and predictive validity of a self-reported measure of medication adherence. *Med Care* 1986, 24(1):67–74.
17. van der Sande MA, Milligan PJ, Nyan OA, Rowley JT, Banya WA, Ceesay SM, Dolmans WM, Thien T, McAdam KP, Walraven GE: Blood pressure patterns and cardiovascular risk factors in rural and urban gambian communities. *J Hum Hypertens* 2000, 14(8):489–496.
18. Kumar N, Unnikrishnan B, Thapar R, Mithra P, Kulkarni V, Holla R, Bhagawan D, Mehta I. Factors Associated With Adherence To Antihypertensive Treatment Among Patients Attending A Tertiary Care Hospital In Mangalore, South India. *IJCRR*. (2014), [cited January 30, 2015]; 6(10): 77-85.
19. Lee GK, Wang HH, Liu KQ, Cheung Y, Morisky DE, Wong MC. Determinants of medication adherence to antihypertensive medications among a Chinese population using Morisky Medication Adherence Scale. *PLoS One* 2013; 8 (4): e62775. doi:10.1371/journal.pone.0062775
20. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM et al. Factors associated with adherence to anti-hypertensive treatment in Pakistan. *PLoS One*. 2007 Mar 14;2 (3):e280.
21. Inkster ME, Donnan PT, MacDonald TM, Sullivan FM, Fahey T: Adherence to antihypertensive medication and association with patient and practice factors. *J Hum Hypertens* 2006, 20(4):295–297.