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Original Research Article

Medication adherence among hypertensive adults residing in a rural area of Dakshina Kannada district

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ABSTRACT

Background: Medication adherence is regarded as a critical determinant for control of hypertension. The objective of the study was to determine the prevalence and factors associated with medication adherence among hypertensive adults, residing in a rural area of Dakshina Kannada district.
Methods: A cross-sectional study was conducted from August to November 2015. A pre-designed, pre-tested proforma was used to collect information. The study participants were enquired about the medication adherence using the Morisky medication adherence scale (MMAS-8). Medication adherence was graded as high (zero score), medium (1-2 score) and low (3-8 score).
Results: A total of 193 hypertensive adults fulfilling the inclusion criteria were included. Low medication adherence was observed in 56 (29.01%) of the study participants. Majority (67.88%), had medium adherence, while a very low percentage (3.11%) had high medication adherence, as per the MMAS-8. Low adherence was found to be higher among participants belonging to low socio-economic status (39.44%) when compared to other classes. This association was statistically significant (p=0.0025). Those having diabetes had higher rates of poor adherence (66.67%) when compared to non-diabetics (13.24%), which was statistically significant (p<0.001). Consuming ≥3 medications was another factor found to be significantly associated with low medication adherence (p<0.001).
Conclusions: We conclude that 29.01% of the study participants had low medication adherence. Low socio-economic status (Class IV+V), presence of diabetes mellitus and number of medications were the factors found to be significantly associated with low medication adherence.

Keywords: Adherence, Medications, Hypertension, Associated factors

INTRODUCTION

An individual with persistent and increased systolic blood pressure of 140 mmHg or above and/or diastolic blood pressure of 90 mmHg or above is considered to be hypertensive.[1] Hypertensive individuals need to be treated successfully in order to reduce the morbidity associated with high blood pressure like cerebrovascular disease and ischaemic heart disease, as well as the increased health care costs.[2] Thus, medication adherence, which may be defined as the extent to which the medication-taking behaviour of a patient corresponds with agreed recommendations from a health care provider, is imperative to achieve blood pressure control.[3] However, if the patient doesn't follow the prescribed drug regimen properly, it may result in uncontrolled hypertension and adverse health outcomes, as mentioned earlier.[4] Moreover, it is evident that poor treatment adherence is a deterrent to achieve a good quality of life.[5] It is also associated with heavy medical expenditure.[6] As per the World Health Organization (WHO), medication adherence to chronic diseases is a mere 50%, which is

likely to be worse in developing countries.[7] In a study conducted by Nagarkar et al in Pune in 2013, medication adherence among hypertensive patients was found to be significantly associated with age, family type and experience of symptoms.[8] In another study conducted by Campbell et al in Nigeria in 2014, majority (74.81%) of the respondents were not compliant to anti-hypertensive drug treatment.[9] Many potential factors have been found to be associated with poor medication adherence which include consumption of multiple drugs, increased frequency of doses, poor doctor-patient relationship, to name a few.[10] However, there exists a dearth of local studies which assess medication adherence among hypertensives and explore the reasons for non-adherence. With this background, we conducted this cross-sectional study.

Objectives

Among adult population (aged ≥18 years) with hypertension, residing in a rural area of Dakshina Kannada district:

- To determine the rate of medication adherence
- To identify the factors associated with poor medication adherence.

METHODS

We adopted a cross-sectional study design to achieve the study objectives, for a period of three months from August to November, 2015. We carried out this study in a rural area named Harekala, which is inhabited by 6,814 people, residing in 1,144 households. Harekala is the rural field practice area attached to a Private Medical College in Mangaluru, a coastal city located in Karnataka State, India. The Department of Community Medicine of the Medical College delivers primary health care to the residents of the study area on a regular basis. We sought to conduct face-to-face interviews on hypertensive adult population (aged ≥18 years), who were permanent residents of the study area (≥1 year), consenting to participate in the study. A study participant whose house was locked and could not be contacted despite 2 visits was regarded as a non-respondent. The sample size was estimated by using the formula, $n=4pq/L^2$.[11] Here "n" is the required sample size, "p" is the population proportion of positive character, "q" is 1-p and L is the Allowable Error. The prevalence of adherence to hypertension treatment, "p" was taken as 24.10%, with "L" being set at 15%.[12] Using this formula which considers 95% confidence limits and on addition of a 10% non-response rate, the sample size was estimated to be 193. Systematic random sampling was applied to select the study participants. Later, we carried out a house to house survey. A face to face interview using a pre-designed, pre-tested and validated proforma was conducted to collect the data. Information pertaining to the socio-demographic profile of the study participants like age, gender, education, occupation, marital status and socio-economic status was collected. Modified BG Prasad Classification according to the All India Consumer Price Index (AICPI) of August 2015 was used for socio-economic status stratification.[13] The study participants were further regrouped into 3 categories: Upper and upper middle class (Class I+ Class II), middle class (Class III) and lower middle and lower class (Class IV+ Class V). Medication adherence will be assessed by Morisky medication adherence scale (MMAS-8), which is a simple and validated self-reported measure of medication adherence.[14] Questions were asked and for every "Yes" response a grade of 1 was given, while 0 grade was given for "No" response. Total grades were computed by adding all score of eight questions answered by study participants were computed. Higher score in MMAS-8 indicates poor medication adherence and it is graded as high (zero score), medium (1-2 score) and low (3-8 score) adherence. Information pertaining to socio-demographic variables, duration of hypertension, co-existing diseases like diabetes, habits like smoking, alcohol, number of drugs used, use of traditional medicines, caregiver details, type of medical facility, distance from the medical facility and expenditure incurred on procuring the medicines were assessed. Data so gathered was analyzed using Statistical Package for the Social Sciences (SPSS) Inc., Chicago, USA, version 17.0. Categorical variables were expressed as proportions and percentages. Bivariate analysis was conducted by applying Chi-square test, to capture the association between two categorical variables. A p value of <0.05 was considered as the criteria for statistical significance.

Ethical considerations

Approval from the Institutional Ethics Committee was obtained before conducting the study. Detailed information pertaining to the nature, objectives of the study and test procedures were provided to the study participants and written informed consent was obtained. Anonymity of the study participants was ensured. Strict confidentiality of the information collected was maintained.

RESULTS

A total of 193 adults with hypertension participated in this study. There were a total of 18 non-respondents. Majority, 124 (64.25%) were women. More than half, 108 (55.96%), were illiterates. A total of 78 (40.41%), belonged to Class III socio-economic status. Majority, 130 (67.36%), were hypertensive for ≥4 years. Nearly 57 (29.54%) also had diabetes. The socio-demographic and clinical profile of the study participants is depicted in Table 1.

Low medication adherence was observed in 29.01%, while majority (67.88%) reported medium adherence. A mere 3.11% were found to have high medication adherence, as per the MMAS-8 (Figure 1).

Class IV+V socio-economic status was found to be factor associated with low adherence to medications among the study participants (p=0.025). A statistically significant association was established between presence of diabetes and low medication adherence (p<0.001). Among those who consumed ≥3 medications, 54.84% had low adherence. In comparison, among those who consumed ≤2 drugs as treatment, 16.79% had low medication adherence. This difference was statistically significant (p<0.001). Further details are presented in Table 2.

Table 1: Socio-demographic profile of the study participants (n=193).

Study variables	Proportion (n=193)	Percentage (%)
Gender		
Females	124	64.25
Males	69	35.75
Education status		
Literates	85	44.04
Illiterates	108	55.96
Socio-economic status[†]		
Class I + Class II	44	22.80
Class III	78	40.41
Class IV + Class V	71	36.79
Duration of hypertension		
<4 years	63	32.64
≥4 years	130	67.36
Diabetes mellitus		
Absent	136	70.46
Present	57	29.51
Salt restriction in diet		
Practiced	16	8.29
Not practiced	177	91.71
Knowledge about control		
Adequate	15	7.77
Inadequate	178	92.23
Number of drugs taken as treatment		
≤2	131	67.87
≥3	62	32.13

[†]Modified BG Prasad classification, August 2015.

Table 2: Factors associated with low medication adherence among the study participants (n=193).

Study variables	Medium-high adherence (n=137))%)	Low adherence (n=56) (%)	Total	$\chi^{2\dagger}$	df[††]	P value
Gender						
Male	53 (80.30)	16 (19.70)	69	1.358	1	0.2440
Female	84 (67.77)	40 (32.23)	124			
Socio-economic status [††††]						
Class I +II	31 (70.45)	13 (29.55)	44	7.38	2	0.025[†††]
Class III	63 (80.77)	15 (19.23)	78			
Class IV+V	43 (60.56)	28 (39.44)	71			
Education						
Illiterates	75 (69.44)	33 (30.56)	108	0.14	1	0.7083
Literates	62 (72.94)	23 (27.06)	85			
Duration						
< 4 years	54 (85.71)	9 (24.90)	63	8.821	1	0.003
≥ 4 years	83 (63.85)	47 (36.15)	130			
Diabetes						
Absent	118 (86.76)	18 (13.24)	136	53.11	1	<0.001[†††]
Present	19 (33.33)	38 (66.67)	57			
Salt restriction						
Practiced	15 (93.75)	1 (6.25)	16	3.27	1	0.0706
Not practiced	122 (68.93)	55 (31.07)	177			

Continued.

Study variables	Medium-high adherence (n=137))%)	Low adherence (n=56) (%)	Total	$\chi^{2\dagger}$	df††	P value
Knowledge						
Adequate	13 (86.66)	2 (13.34)	15	1.2	1	0.273
Inadequate	124 (65.96)	54 (34.04)	178			
Number of drugs						
≤2	109 (83.21)	22 (16.79)	131	27.76	1	<0.001†††
≥3	28 (45.46)	34 (54.84)	62			

†Chi-square test; ††Degrees of Freedom; †††Statistically significant (p value<0.05); ††††Modified BG Prasad Classification, August 2015.

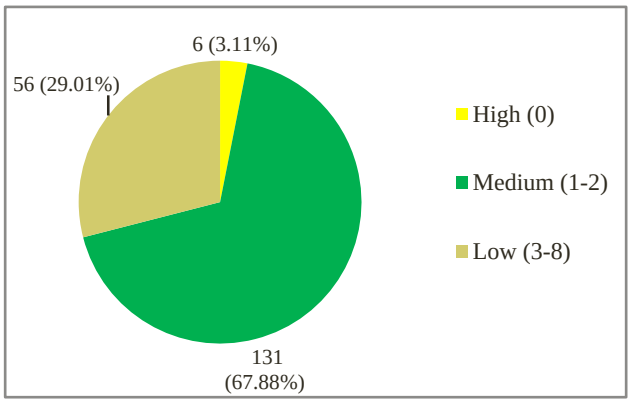

Figure 1: Adherence to medications among study participants, as per MMAS-8 (n=193).

DISCUSSION

The present cross-sectional study was carried out among 193 hypertensive adults to determine the rate of medication adherence and associated factors. A high percentage (64.25%) were women and more than half (55.96%) were illiterates. In a study conducted by Rao et al in 2014 in a coastal population of Southern India, 80.50% of the study participants were women, while 38.13% were illiterates.[15] In the present study, 29.01% had low medication adherence, according to MMAS-8, while 67.88% and 3.11% had medium and high medication adherence respectively. On the contrary, a study carried out by Ramli et al in Malaysia reported that more than half (53.40%) of the participants had good medication adherence.[16] Similarly, a study carried out by Mallya et al in 2016 in Udupi district, Karnataka, reported that majority (96%) of the hypertensive subjects in the study population were having an adherence rate of ≥85.[17] Low socio-economic status (Class IV+V), presence of diabetes mellitus and consuming ≥3 drugs per day as treatment for hypertension were found to be the factors significantly associated with low medication adherence among the participants. In a study conducted by Misra et al to document adherence to the treatment of hypertension in rural community of Haryana, statistically significant poor adherence to treatment of hypertension was reported among subjects belonging lower social class, which was in concordance to our findings.[18] In the study conducted by Mallya et al mentioned previously, there was no significant association between number of medications and medication adherence.[17] However, a statistically significant association was found between factors like gender, education status and compliance to hypertension in a study done in Saudi Arabia, which was not in agreement with the present study.[19] In a study carried out in northern Vietnamese community, adherence seemed to be influenced by age, as older patients used their medication more often in accordance with the doctor's advice.[20]

Our study has certain limitations. The associations observed in this study may not imply causality, as it is a cross-sectional assessment. Secondly, a few important potential factors like satisfaction towards health care accessed, forgetfulness, to name a few, could not be assessed. Nonetheless, our study provides valuable insights about the level of medication adherence among hypertensive adults.

CONCLUSION

Through this study, we conclude that 29.01% of the study participants had low medication adherence. Low socio-economic status (Class IV+V), presence of diabetes mellitus and number of medications were the factors found to be significantly associated with low medication adherence. Intervention programs to address some of the factors identified are imperative to improve adherence and, in turn, to improve control of hypertension.

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