Section: Community Medicine

Original Research Article

TREATMENT ADHERENCE OF ANTIHYPERTENSIVE DRUGS IN PATIENTS ATTENDING MTM CLINIC THIRUVANNAMALAI MEDICAL COLLEGE - A DESCRIPTIVE CROSS-SECTIONAL STUDY

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Received : 08/12/2023
Received in revised form : 24/01/2024
Accepted : 13/02/2024

Keywords:
Hypertension, Adherence, Non-Adherence, Awareness, Stroke, CAD, CKD.

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DOI: 10.47009/jamp.2024.6.1.349

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 1766-1770

Abstract

Background: Systemic hypertension is recognized as a major public health problem nowadays, contributing to the burden of cardiovascular diseases, stroke, and renal failure which leads to mortality in young and old people and severe morbidity leading to disability. To find out the adherence to antihypertensive medication in people attending tertiary care centre Thiruvannamalai. To find out level of knowledge about the medication prescribed and to find out about awareness of warning signs. **Materials and Methods:** A cross sectional study done for 8 months among 205 Hypertensive patients attending MTM OPD in Thiruvannamalai Medical College and Hospital using a Pretested semi-structured proforma with treatment adherence assessment questionnaire. Lab investigations also done. The data was collected and entered in MS Excel and analysed using SPSS. Appropriate statistical tests were used. **Result:** Ninety-nine (44%) were found to be non-adherent to medication. 61.6% reported that they missed the medication due to travelling, 48.4% reported non adherence due to non-availability of drugs. Multivariate logistic regression revealed not doing adequate physical activity and not following a SFA restricted diet to be factors determining non adherence. Similarly, participants who were not following a Physical exercise and SFA restricted diet were also found to be two times at increased risk of being non adherent to antihypertensive medication. **Conclusion:** This study shows that more than 50% are not adhering to the treatment. With nearly half of those non adherent said that the non-availability of drugs, which has to addressed by the health facility to make the drugs available all the time. The remaining patients were to be given health education regarding the consequences of Hypertension and make them compliant to take the drugs.

INTRODUCTION

Systemic hypertension is recognized as a major public health problem nowadays.[1] Hypertension contributes to the burden of cardiovascular diseases, stroke, and renal failure which leads to mortality in young and old people and severe morbidity leading to disability.[2]

Recent advances in finding the risk factors, life style modifications, cessation of smoking and alcoholism early diagnosis by screening of cases, Health Education and educational campaigns to change lifestyles contributes to lower the morbidity and mortality.[1] Hypertension or high blood pressure is a non-communicable disease which affects many people worldwide.[3]

It is estimated that about 7.5 million deaths were due to hypertension every year. The global prevalence of hypertension was estimated as 40% in 2008 22% in 2012,[2] with a more number of patients were from sub-Saharan Africa.[3] In Ghana, the prevalence of hypertension was ranging from about 19 % to 33 % in the rural areas, and 26 % to 48 % in urban areas.[3] HTN prevalence in India is 29.8 % varying from 27.6 % to 33.8 % in rural and urban areas. In India, awareness of HTN is there seen in three-fourths of the individuals suffering from HTN, which leads to uncontrolled HTN. Inspite of the improved awareness campaigns over 25 years improvement of HTN awareness levels in India remains much lower than that in the USA, UK, Australia, and Canada.

At the same time, the rate of non- compliance to Hypertensive drugs has remained as a major problem over the past two decades in India.[4] Coronary artery diseasedisease as the leading cause of mortality in Thailand 2017.[5] According to the Ministry of Public Health (MoPH) of Thailand, the number of people registered for hypertension treatment has rised from 4 million in 2013 to over 5.5 million in 2017.[5]

In Spain most of the cardiovascular deaths in people older than 50 years are due to hypertension.[6] It is widely understood that there is a relationship between poor hypertension control and a patient's lack of adherence to antihypertensive drugs, as well as lack of effectiveness to antihypertensive treatments.

Research has been con-ducted in an attempt to reduce non adherence.[6] Hypertension is one of Non-communicable diseases (NCDs), also known as is constantly Elevated Blood pressure, which is of long duration and are expressed by two measurements, namely systolic and diastolic values.[7]

The complications of Hypertension are multi systemic involvement like cerebrovascular, cardiovascular and renal diseases, because they have a major impact on premature morbidity and mortality.[8] The rate of hypertensive subjects who receive medicines is 31.1% and only 8.1% of all hypertensive subjects and 20.7% of subjects who receive pharmacotherapy have their blood pressures under control.[9]

Also important factors like comorbidity like diabetes mellitus (DM) and renal failure often caused by hypertension interfere with hypertension treatment and increases complication.[8] Success rate in hypertension treatment requires the determination of patients in the control and maintenance of blood pressure and adherence to regular visits.

Adherence is defined as patients' understanding to follow clinical recommendations about medication use, dietary advice or lifestyle modifications. Non-adherence is a major barrier to achieving adequate blood pressure control.[10,11] Non-adherence may be affected by many factors acting either alone or in a variety of combinations. Non-adherence may occur as a result of patients disbelief in the benefit of medicine adverse effects, cost, or too much of drugs, poor understanding of the disease, inadequate awareness and doctor patient relationship.

In addition, regular follow up, smoking, limited physical activity, increased calorie intake, and consumption of high fat diet and excessive salt intake , are important factors that lead to non- adherence. Hence interventions should be initiated to increase adherence to the treatment by determining the factors that prevent adherence to antihypertensive treatment in hypertensive patients.[8]

With this Background we have planned to do a study on Treatment Adherence of Hypertension patients attending MTM OPD at Thiruvannamalai Medical College Thiruvannamalai by Department of Community Medicine.

Objectives

- To find out the adherence to antihypertensive medication in people attending tertiary care centre Thiruvannamalai
- To find out level of knowledge about the medication prescribed.
- To find out about awareness of warning signs

MATERIALS AND METHODS

Study Design: Descriptive Cross-Sectional Study.
Study Period: 8 Months (October 2022-June 2023)
Study Area: Department of Community Medicine, Government Medical College and Hospital, Thiruvannamalai.
Study Sample: All Hypertensive patients attending MTM OPD Thiruvannamalai Medical College and Hospital.
Type of Sampling: Convenient Sampling
Sample Size: 205(8)
Study Tools: Pretested semi-structured Proforma with treatment adherence assessment Questionnaire, Lab investigations.
Data Collection: Data Collection was done by interview method using open end Questionnaire consisting of socio demographic factors and medical Adherence Self Efficacy scale (MASES) in a study done by Senaida Fernandez et al in African Americans in 2008(10).
Data Presentation and Statistical Analysis: The data collected were entered into Microsoft excel 360 in order to create a master chart. The master chart was then loaded into statistical package for social sciences (SPSS) version 26 for further statistical analysis. For describing the qualitative variables, frequency and percentages were used. In order to find out difference in distribution of qualitative variable between adherence and non-adherence, chi-square test was applied. A multivariate logistic regression model was run for estimating adjusted odds ratio for those variables found to be significant under chi square test. A P value of less than 0.05 was considered to be statistically significant.

RESULTS

Participants of age 51 to 60 years contributed to 35% and 61 to 70 years was 32.3%. 66.4% were females. 23.3% had studied up to middle school and 21.5% up to primary school. 54.2% were housewives and 25.5% were doing unskilled occupation. 47.9% belonged to family with per capita income of less than or equal to Rs 10,001. 41.7% belonged to upper lower class and 29.6% belonged to lower class [Table 1].

About 17.9% were smokers and 17% were alcoholics. 17.9% were doing exercise and 37.2% were doing adequate physical activity [Table 2].

About 83% reported to be taking salt restricted diet and 34.1% reported to be taking SFA restricted diet. All participants were under anti-hypertensive

ISSN (O): 2687-5365; ISSN (P): 2753-6556

medication. 57.8% were taking antihypertensive medication for 1 to 5 years and 28.7% for 6 to 10 years. 37.2% were having at least one comorbidity [Table 3].

Ninety-nine (44%) were found to be non-adherent to medication [Figure 1]. 61.6% reported that they missed the medication due to travelling, 48.4% reported non adherence due to non-availability of drugs. 35.3% reported being busy made them non adherent [Table 4].

Multivariate logistic regression revealed not doing adequate physical activity and not following a SFA restricted diet to be factors determining non adherence. Those who were not doing adequate physical activity were found to be two tomes at increased risk of being non adherent to antihypertensive medications. Similarly, participants who were not following a SFA restricted diet were also found to be two times at increased risk of being non adherent to antihypertensive medication [Table 5 & 6].

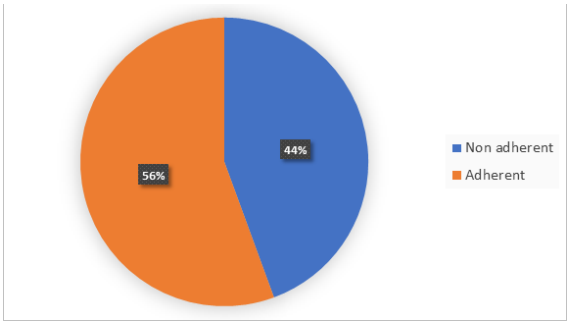

Figure 1: Pie chart showing distribution according to non-adherence of medication.

Table 1: Sociodemographic characteristics among the study participants.

Sociodemographic variables		Frequency (n=223)	Percentage (%)
Age group (In years)	31-40	8	3.6
	41-50	42	18.8
	51-60	78	35
	61-70	72	32.3
	>70	23	10.3
Sex	Male	75	33.6
	Female	148	66.4
Education	Illiterate	19	8.5
	Primary	48	21.5
	Middle	52	23.3
	Secondary	41	18.4
	Higher secondary	37	16.5
	Under graduate	21	9.4
	Post graduate	4	1.8
	Professional	1	0.4
Occupation	Unskilled	57	25.5
	Semiskilled	32	14.3
	Skilled	13	5.8
	House wife	121	54.2
Income (annual per capita)	≤10,001	107	47.9
	10,002 – 29,972	53	23.8
	29,973 – 49,961	41	18.4
	49,962 – 74,755	15	6.7
	74,756 – 99,930	5	2.2
	99,931 – 199,861	2	0.9
	≥199,862	0	0
SES	Lower	66	29.60
	Upper lower	93	41.70
	Lower middle	41	18.39
	Upper middle	21	9.42
	Upper	2	0.90

Table 2: Distribution according to risk factors of hypertension.

Risk factors of hypertension		Frequency (n=223)	Percentage (%)
Smoking	Yes	40	17.9
	No	183	82.1
Alcohol	Yes	38	17
	No	185	83
Exercise	Yes	40	17.9
	No	183	82.1
Physical activity	Adequate	83	37.2
	Not adequate	140	62.8

Table 3: Distribution according to variables related to management of hypertension and comorbidities.

Variables related to management of hypertension		Frequency (n=223)	Percentage (%)
Salt restricted diet	Yes	185	83
	No	38	17

ISSN (O): 2687-5365; ISSN (P): 2753-6556

SFA restricted diet	Yes	76	34.1
	No	147	65.9
Anti-hypertensive medication	Yes	100	100
	No	-	-
Duration of anti-hypertensive medication	< 1 year	12	5.4
	1-5 years	129	57.8
	6-10 years	64	28.7
	>10 years	18	8.1
Other Comorbidities	Present	83	37.2
	Absent	140	62.8

Table 4: Distribution according to reasons for non-adherence to medication.

Reason for non-adherence to medication	Frequency (n=99)	Percentage (%)
Travelling	61	61.6
Non availability of drugs	48	48.4
Being busy	35	35.3
Interrupting daily routine	10	10.1
Normal blood pressure	4	4.1
Too many medications	2	2.0
Fear of side effects	2	2.0

Table 5: Association between selected factors and adherence to medication.

Variables		Non adherent (n=99)		Adherent (n=124)		X2	P value
		N	%	N	%		
Age group (In years)	31-40	2	2	6	4.8	9.574	0.048*
	41-50	14	14.1	28	22.6		
	51-60	33	33.3	45	36.3		
	61-70	34	34.3	38	30.6		
	>70	16	16.2	7	5.6		
Sex	Male	31	31.3	44	35.5	0.429	0.512
	Female	68	68.7	80	64.5		
SES	Lower	22	22.2	44	35.5	9.273	0.054
	Upper lower	49	49.5	44	35.5		
	Lower middle	21	21.2	20	16.1		
	Upper middle	7	7.1	14	11.3		
	Upper	0	0	2	1.6		
Smoking	Yes	17	17.2	23	18.5	0.071	0.790
	No	82	82.8	101	81.5		
Alcohol	Yes	18	18.2	20	16.1	0.164	0.685
	No	81	81.8	104	83.9		
Exercise	Yes	16	16,2	24	19.4	0.381	0.537
	No	83	83.8	100	80.6		
Physical activity	Adequate	27	27.3	56	45.2	7.539	0.006*
	Not adequate	72	72.7	68	54.8		
Salt restricted diet	Yes	80	80.8	105	84.7	0.583	0.445
	No	19	19.2	19	15.3		
SFA restricted diet	Yes	24	24.2	52	41.9	7.671	0.006*
	No	75	75.8	72	58.1		
Duration of anti-hypertensive medication	< 1 year	4	4	8	6.5	1.743	0.627
	1-5 years	60	60.6	69	55.6		
	6-10 years	29	29.3	35	28.2		
	>10 years	6	6.1	12	9.7		
Other Comorbidities	Present	35	35.4	48	38.7	0.265	0.606
	Absent	64	64.6	76	61.3		

Table 6: Adjusted Odds ratio for risk factors determining non adherence among study participants.

Variables		OR	AOR*
Physical activity	Adequate	1	1
	Not adequate	2.19 (1.24-3.86)	2.35(1.31-4.20)
SFA restricted diet	Yes	1	1
	No	2.25 (1.26-4.03)	2.42 (1.33-4.39)

*The multivariable binary logistic regression model includes age, physical activity and SFA restricted diet.

DISCUSSION

Participants of age 51 to 60 years contributed to 35% and 61 to 70 years was 32.3%. A study by Venkatachalam et al., showed that most of the study participants were belong 30 to 39 years followed by other categories. A study by Vignesh et al., showed that most of the study participants were belong 41 to 60 years followed by other categories

About 66.4% were females. A study by Venkatachalam et al., showed that most of the study participants were females followed by males. A study by Vignesh et al., showed that most of the study participants were females followed by males.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

About 23.3% had studied up to middle school and 21.5% up to primary school. A study by Vignesh et al., showed that most of the study participants were studied upto primary and middle school.

54.2% were housewives and 25.5% were doing unskilled occupation. 47.9% belonged to family with per capita income of less than or equal to Rs 10,001. 41.7% belonged to upper lower class and 29.6% belonged to lower class. A study by Shrivastava et al., showed that most of them belong to lower socio economic status and most were doing semiskilled work.

17.9% were smokers and 17% were alcoholics. 17.9% were doing exercise and 37.2% were doing adequate physical activity. A study by Shrivastava et al., showed that the similar results.

83% reported to be taking salt restricted diet and 34.1% reported to be taking SFA restricted diet. All participants were under anti-hypertensive medication. 57.8% were taking antihypertensive medication for 1 to 5 years and 28.7% for 6 to 10 years. 37.2% were having at least one comorbidity. A study by Shrivastava et al., showed that the similar results.

Ninety-nine (44%) were found to be non-adherent to medication. 61.6% reported that they missed the medication due to travelling, 48.4% reported non adherence due to non-availability of drugs. 35.3% reported being busy made them non adherent. A study by Venkatachalam et al., showed that the prevalence of adherence was 24.1%. About 51.6% forget taking medicines regularly, 59.8% were careless about taking their medications, 53.6% stop medication on feeling better, and 55.2% stop medication on feeling worse. A study by Vignesh et al., showed that the prevalence of adherence to hypertensive medication by the patients was found to be 25.1%. A study by Shrivastava et al., showed that among the study participants, 47.6% had good medication adherence, whereas 52.4% had poor adherence.

Multivariate logistic regression revealed not doing adequate physical activity and not following a SFA restricted diet to be factors determining non adherence. Those who were not doing adequate physical activity were found to be two tomes at increased risk of being non adherent to antihypertensive medications. Similarly, participants who were not following a SFA restricted diet were also found to be two times at increased risk of being non adherent to antihypertensive medication. A study by Venkatachalam et al., showed that the Respondents with regular physical activity, non-smokers and non-alcoholics were more adherent to HT medication as compared with respondents with sedentary lifestyle, smoking and alcohol intake ($P < 0.005$). Based on health belief model, the respondents who perceived high susceptibility, severity, benefit had better adherence compared with moderate and low susceptibility, severity, benefit. A study by Vignesh et al., showed that various reasons such as age, female sex, illiteracy and knowledge about normal blood pressure were identified for non-adherence. A study by Shrivastava et al., showed that statistically significant association was observed between indulging in regular physical activity and use of salt-restricted diet and a good level of treatment adherence. Poor adherence to treatment was found more commonly among patients who were prescribed multiple antihypertensive drugs and those with more than once daily dose formulation.

Recommendations

1. With nearly half of those non adherent said that the non-availability of drugs, which has to addressed by the health facility to make the drugs available all the time.
2. The remaining patients were to be given health education regarding the consequences of Hypertension and make them compliant to take the drugs.

CONCLUSION

This study shows that more than 50% are not adhering to the treatment. The most common reason for adhering to treatment was that they missed the medication due to travelling, followed by non-adherence due to non-availability of drugs. Some reported being busy made them non adherent to the medications.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556