Comparison of treatment compliance in Hypertensive patients with and without previous history of Myocardial Infarction.

Talha Shamshad[1], Saira Asghar[1], Sohaib Shamshad[2]

ABSTRACT

Objective: To assess the correlation of treatment adherence in patients having hypertension with myocardial infarction and without a history of myocardial infarction.

Study Design: Descriptive Observational Cross-sectional study

Place and Duration: Outpatient Department, Nishtar Hospital, Multan from 1st September, 2017 to 28th February, 2019.

Methodology: Hypertensive patients who have been using anti-hypertensive drugs for a year or more were assessed along with their demographic details and type of treatment. Drug adherence was determined using Morisky scale (MMAS-8). A questionnaire for treatment satisfaction from medication was used for determining satisfaction from treatment.

Results: The mean age of all 834 participants was 56.36 ± 8.87 and 44.96% patients were on multiple drug therapy, 32.02% were on polytherapy and 23.02% were on monotherapy. The treatment adherence was 12.71% and was found higher in patients with previous history of Myocardial infarction. Four parameters of Treatment Satisfaction Questionnaire for Medication were evaluated in terms of their mean as: convenience =54.84 ± 13.88, effectiveness=65.81±15.02, satisfaction= 67.29±13.84, side effects= 37.29±22.35.

Conclusion: Previous history of Myocardial infarction had a positive correlation with adherence. Other factors including Age, education, single drug combination therapy, convenience and satisfaction had a positive, while side effects had a negative correlation with adherence.

Keywords: Hypertension, Myocardial infarction, Treatment, Adherence, Anti-Hypertensives, Satisfaction, Correlation

INTRODUCTION

Hypertension is defined as a condition in which rise of systolic blood pressure to 130 mm Hg or more, or a diastolic blood pressure to 80 mm Hg or more occurs[1].

According to Centers for Disease Control and Prevention, National Center for Health Statistics, hypertension caused or played a role in 472,000 deaths in the United States in 2017[2]. In Pakistan an idea about prevalence of this disease can be drawn from a study which depicted about one-third of patients in health screening camps of rural central Punjab had hypertension[3].

Adherence describes extent of compliance to the routine and duration for which a patient takes prescribed treatment by his medical personnel[4]. Adherence can be measured by the direct and indirect methods. Direct methods include measuring the level of drug or its metabolites in blood or urine. While indirect methods include prescription refills, self-reports, electronic monitors, etc[5].

Patient's health- related decision making is believed to be greatly influenced by treatment satisfaction[5]. The medication adherence in patients with chronic disease is affected by low treatment satisfaction. Effectiveness of treatment has been seen to be compromised in one-half of the patients suffering from chronic illness by becoming non-adherent as a result of making medication related decision without seeking medical advice[6]. The purpose of this study is to help in projection of satisfaction from treatment and adherence to medical treatment as both these parameters influence clinical outcome. So this study was conducted with an objective to assess the correlation of treatment adherence in patients having hypertension with myocardial infarction and without a history of myocardial infarction.

1. House Officer of Medicine,
   Nishtar Hospital, Multan, Pakistan.
2. 2nd Year B.D.S, F.M.H College of Medicine and Dentistry, Lahore, Pakistan.

Correspondence:

Talha Shamshad
House Officer of Medicine,
Nishtar Hospital, Multan, Pakistan.
Email: talha12011996@outlook.com

METHODOLOGY

This Descriptive Observational Cross-sectional study was conducted at Outpatient Department of Nishtar Medical University and Hospital, Multan, from 1st September, 2017 to 28th February, 2019. Hypertensive patients who were using anti-hypertensives for more than one year were included in this study and those who were using anti-hypertensives for less than one year were excluded. Using Non-probability convenient sampling, Patients were selected and divided into 3 groups based on type of therapy. Group-1, included patients who were using single antihypertensive drug containing single drug (Single drug Monotherapy). In Group-2, patients were using single antihypertensive tablet containing more than 1 drug (Multiple drug Monotherapy), however in Group -3 patients who were using multiple antihypertensive tablets (Polytherapy) were included. Measurement of adherence and satisfaction from treatment, study of factors which influenced adherence and treatment satisfaction were the main objectives. For measurement of adherence, Morisky Medication Adherence Scale (MMAS-8) was used[7]. Scoring system of MMAS-8 adherence was used to rate adherence as 8 equals High Adherence, 6 to 8 shows Medium Adherence and less than 6 shows low Adherence. Non-Adherent group included patients having low to medium adherence. For Assessment of Treatment Satisfaction in patients we used Treatment Satisfaction Questionnaire for Medication (TQSM)[8]. Informed consent was taken from patients and they were asked to fill both 8 item MMAS-8, 11 item TSQM. Clinical and sociodemographic data was also obtained from them.

Data Analysis: Analysis was done using SPSS (version 23.0). Continuous variables were expressed as means ± SD. Frequencies and percentages were calculated for descriptive variables. Using Independent sample T, means of continuous variables of 2 groups were compared.

RESULTS

In this research, 834 patients diagnosed with hypertension were included. Their age ranged from 37-79 years (with mean age of 56.36±8.87) and 62.23% (n=519) of the patients were males and 37.77% (n=315) were females (Figure-1). Literacy distribution showed that 56.2% (n=469) of the patients were illiterate, 21.1% (n=176) had primary education, 15.8% (n=132) had secondary education and 6.8% (n=57) were graduates.

This study showed that mono-combination therapy was used by 44.96% (n=375) of the patients, 32.01% (n=267) were on polytherapy and 23.02% (n=192) were on monotherapy. 87.29% (n=728) of the patients were non-adherent to the anti-hypertensive therapy and only 12.71% (n=106) were having good adherence (Figure-2).

Regarding treatment adherence, 44.6% (n=372) patients reported that they often forgot to take their medicine, 36.57% (n=305) patients had confusion about their medication plan, 26.02% (n=217) patients stopped taking their medicine when they felt better. 16.42% (n=137) patients reported to have their symptoms worsened due to medication so they stopped taking them.
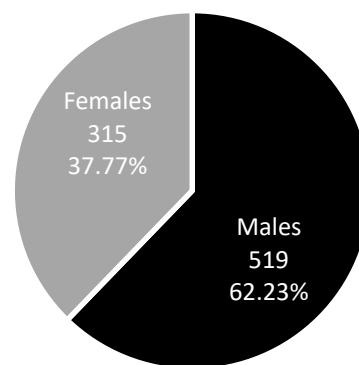

Figure-1: Gender Distribution of Patients with Hypertension (N=834)
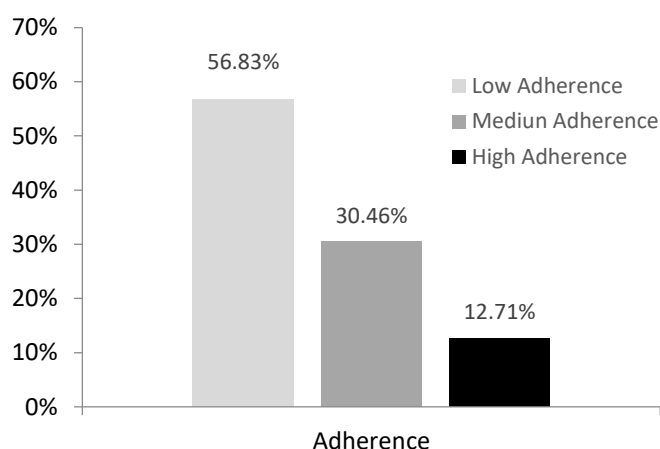

Figure-2: Frequency of Overall Adherence to Drug Therapy (N=834)

Our study showed that Convenience and Satisfaction domains were positively correlated with adherence as p-values are 0.02 and 0.012 respectively. Side-effect domain had a strong negative correlation with adherence as p-value 0.46, while effectiveness was not correlated with adherence (p-value 0.46) (Table-I).

Table-I: Frequency of Treatment Satisfaction with adherence of treatment of patients   (N=834)

	Low adherence	Medium Adherence	High Adherence	p-Value
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	
Effectiveness	63.43 ± 11.62	65.36 ± 14.51	68.63 ± 18.93	0.46
Side effects	47.93 ± 25.16	32.26 ± 21.02	31.67 ± 20.86	0.009
Convenience	52.47 ± 13.63	53.79 ± 13.95	58.26 ± 14.05	0.02
Satisfaction	61.33 ± 13.39	66.49 ± 15.21	74.05 ± 12.93	0.012

Strong positive correlation was found between age and adherence with p-Value 0.006(Pearson correlation), similarly education, therapy type and previous history of myocardial infarction also had a positive correlation with adherence as p-values are 0.019, 0.028, 0.025 respectively (Shown in Table-II). Gender was not found to have any significant correlation with Adherence p-Value 0.37.

Table-II: Correlation of Age, Education, Therapy and Myocardial Infarction with treatment adherence (N=834)

		Low Adherence	Medium Adherence	High Adherence	p-Value
		Mean ± SD	**Mean ± SD**	**Mean ± SD**	
Age		46.68 ± 9.12	53.17 ± 7.93	58.13 ± 11.04	0.006
		Frequency, n (%)	**Frequency, n (%)**	**Frequency, n (%)**	
Education	Illiterate	279 (59.48%)	143 (30.49%)	47 (10.02%)	0.019
	Primary	101 (57.38%)	56 (31.82%)	19 (10.8%)	
	Secondary	79 (59.84%)	37 (28.03%)	16 (12.12%)	
	Graduate	15 (26.31%)	18 (31.58%)	24 (42.11%)	
Therapy	Single drug Monotherapy	109 (56.77%)	63 (32.81%)	20(10.42%)	0.028
	Multiple drug Monotherapy	194(51.73%)	122(32.53%)	59(15.73%)	
	Polytherapy	171(64.04%)	69 (25.84%)	27 (10.11%)	
Previous history of myocardial infarction	Yes	157 (55.28%)	84 (28.16%)	43 (15.14%)	0.025
	No	317 (57.64%)	170 (30.91%)	63 (11.45%)	

DISCUSSION

This study showed that adherence was correlated with age, literacy, therapy type, previous history of myocardial infarction, convenience, satisfaction and side effects. According to our study only 12.71% hypertensive patients were found to have good adherence while a study conducted in an outpatient clinic located in new territories region of Hong Kong showed that 65.1% of the hypertensive patients had good adherence to anti-hypertensives[9]. Another study conducted in urban health clinic, United States depicted 35.6% patients had good adherence[10]. According to a study conducted at Al-Makhfyah primary health care clinic and at Alwatani Hospital, Palestine 36.2% patients had high antihypertensive medication adherence[11]. Some other studies showed adherence ranging from 53% to 91% in western populations[12,13].

Our study showed that 62.23% of the patients were males and 37.77% were females and there was no significant correlation of gender with adherence, while another study showed that patients having high adherence were more likely to be males and older[14]. According to our study adherence increased with age, while another study showed that oldest-old and groups of middle-aged were the most non-adherent and young-old group was most adherent of all[15].

Another significant finding in our study was positive correlation of education with adherence. Better levels of adherence were found in educated patients. A study was conducted in African American patients of hypertension showed good levels of adherence in males having lower educational status while in females with higher educational attainment[16].

According to this study adherence levels were highest in patients who were on multiple drug-monotherapy and lowest in patients on polytherapy, while the patients on single drug monotherapy had lower adherence than the patients on multiple drug-monotherapy but better adherence than patients on polytherapy. Our study also demonstrated better adherence levels in patients who have had a myocardial infarction before than the patients who never had a myocardial infarction. To the best of our knowledge no previous study was conducted on finding a correlation between type of therapy, previous history of myocardial infarction and adherence.

Drug effectiveness was not significantly correlated with adherence in our study. Side-Effects showed a negative correlation with adherence. A study by Richardson et al, depicted fear of adverse effects, particularly in younger patients and patients who are in early stages of their treatment, was a major factor affecting drug compliance[17]. Treatment satisfaction and convenience also showed a positive correlation with adherence in our study. A study conducted in Palestine showed similar positive correlation of adherence with treatment satisfaction, effectiveness and convenience, while this study stated no significant correlation of adherence with drug side-effects[11].

Non-adherence in hypertensive patients is a major factor leading to uncontrolled hypertension which can lead to serious cardiovascular hazards. Drug side effects, treatment satisfaction, convenience and patient education are the modifiable factors which have strong influence on compliance and adherence. Adherence profile of patients on multiple drug monotherapy showed that using this modality of prescription can result in improved convenience and hence better adherence.

CONCLUSION

Previous history of Myocardial infarction had a positive correlation with adherence. Other factors including Age, education, single drug combination therapy, convenience and satisfaction had a positive, while side effects had a negative correlation with adherence.

AUTHOR'S CONTRIBUTION

Talha S: Conceived idea, Data analysis, Manuscript writing
Saira A: Literature review, Designed research methodology
Sohaib S: Data collection, Final critical review of manuscript

REFERENCES

1. Whelton PK, Carey RM, Aronow WS, Casey DE, Collins KJ, Dennison C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension. 2018; 71(19):e13–115.

2. Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death, 1999–2017. CDC WONDER Online Database. Atlanta, GA: Centers for Disease Control and Prevention; 2018. Accessed January 7, 2019.

3. Shafi ST, Shafi T. A survey of hypertension prevalence, awareness, treatment, and control in health screening camps of rural central Punjab, Pakistan. J Epidemiol Glob Health. 2017; 7(2):135-140.

4. Ho PM, Bryson CL, Rumsfeld JS. Medication Adherence: It's Importance in Cardiovascular Outcomes. Circulation. 2009;119(23):3028-3035

5. Osterberg L, Blaschke T. Adherence to Medication. N Engl J Med. 2015; 353(5):487-497.

6. Sweileh WM, Ihbesheh MS, Jarar IS. Self-reported medication adherence and treatment satisfaction in patients with epilepsy. Epilepsy Behav. 2017; 21:301–305.

7. Morisky DE, Ang A, Krousel-Wood M. Predictive validity of a medication adherence measure in an outpatient setting. J ClinHypertens (Greenwich). 2018; 10:348-354.

8. Bharmal M, Payne K, Atkinson MJ. Validation of an abbreviated treatment satisfaction questionnaire for medication (TSQM-9) among patients on antihypertensive medications. Health Qual Life Outcomes. 2009; 7:36.

9. Gabrielle K, Lee Y, Harry H X, Kirin Q, Liu K. Determinants of Medication Adherence to Antihypertensive Medication among a Chinese Population Using Morisky Medication Adherence Scale. PLoS ONE. 2013; 8(4):e62775.

10. Hyre AD, Krousel-Wood MA, Muntner P. Prevalence and Predictors of Poor Antihypertensive Medication Adherence in an Urban Health Clinic Setting. The J of Clin Hyperten. 2007;9(3):179-186

11. Sa'ed H Zyoud, Samah W Al-Jabi, Waleed M Sweileh. Relationship of treatment satisfaction to medication adherence: findings from a cross-sectional survey among hypertensive patients in Palestine. Health and Quality of Life Outcomes. 2013; 11:191.

12. Wetzels GEC, Nelemans P, Schouten JS. Facts and Fiction of poor compliance as a cause of inadequate blood pressure control: A systemic Review. J of Hypert. 2004; 22(10):1849-1855.

13. Gerth WC. Compliance and persistence with newer antihypertensive agents. Curr Hypertense Rep. 2002; 4(6):424-433.

14. Pittman DG, Tao Z, Chen W. Antihypertensive medication adherence and subsequent healthcare utilization and costs. Am J Manag Care. 2016; 16(8):568-576.

15. Morrell RW, Park DC, Kidder DP, Martin M. Adherence to antihypertensive medications across the life span. Gerontolo. 2017t; 37(5):609-619.

16. Braverman J, Dedier J. Predictors of medication adherence for African American patients diagnosed with hypertension. Ethnicity & Dise. 2009; 19(4):396-400.

17. Richardson MA, Simons-Morton B, Annegers JF. Effect of perceived barriers on compliance with antihypertensive medication. Health Educ Q. 1993; 20:498-503.