



## FACTORS ASSOCIATED WITH COMPLIANCE TO ANTIHYPERTENSIVE THERAPY IN PATIENTS VISITING TERTIARY CARE HOSPITAL.

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**ABSTRACT... Objectives:** The objective of this study is to factors associated with compliance to antihypertensive therapy in patients visiting tertiary care hospital. **Study Design:** Cross-Sectional study. **Setting:** (Dow Institute of Cardiology) Cardiology Department, Dow OJHA Campus and Karachi Institute of Heart Diseases (KIHD), Karachi. **Period:** July, 2019 to Dec, 2019. **Material & Method:** Over a period of 6 months participants were evaluated for their compliance to therapy. Data was collected using a questionnaire which consisted of sociodemographic profile, type of treatment regimen, compliance to medication and lifestyle changes. Compliance of all participants was calculated and factors associated with low compliance were pointed out. Data was analyzed using SPSS version 20. **Results:** A total of 271 patients visiting the hospital's outpatient department matched the inclusion criteria of this study. Among them there were 69.3% (n=188) were males and 30.6% (n=83) females. Around 83% patients were married, while the rest were unmarried or divorced. Patients in our study had age range of 38-84 years with mean age of 49.5 + 11.7 years. Approximately 52.7% (n=143) patients were addicted to smoking, 15.4% (n=42) patients were addicted to alcohol. Our study showed that 47.6% (n=129) hypertensive patients were highly compliant to treatment, whereas 20.6% (n=56) were moderately compliant and 31.7% (n=86) patients were not compliant to the treatment. Only 39.4% of the patients were carrying out lifestyle modifications along with antihypertensive treatment. **Conclusion:** Compliance to antihypertensive therapy is of prime importance to decrease morbidity and mortality as complication to hypertension. Factors associated with non-compliance to antihypertensive therapy should be studied and possible interventions should be taken to increase adherence.

**Key words:** Antihypertensive, Compliance, Factors.

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## INTRODUCTION

Globally hypertension affects around 31.1% of adult population aged 18 or above.<sup>1</sup> Hypertension affects approximately 50% of the population in the United States and its treatment is necessary to lessen complications. It is yet the most common reason for patient to visit a physician, still blood pressure control is difficult to maintain. Along with time many revolutionary therapies for hypertension have been found but ideal blood pressure control is still not achieved.<sup>2</sup> Prevention of hypertension is of prime importance to prevent primary and secondary complications of hypertension. Poor compliance to antihypertensive medication is the most common cause of raised blood pressure. The question still remains why patients are non-

compliant and what can be done to change this behavior.<sup>3</sup> In chronic illness non-compliance rates can be as high as 50%. It is very important to identify patients if they're not taking their medications intentionally or forgetting to take them. Patients who are intentionally not taking their medications over any rational should be discussed with the doctor. Factors favoring compliance to antihypertensive medication are trust in the physician, strong will to control blood pressure and fear of complications. Factors strongly favoring non-compliance include fear of side effects, non-belief in the disease, depression, and distrust in the physician.<sup>4</sup> Patients who don't feel obvious symptoms of hypertension or don't have severe hypertension. Polytherapy as

compared to monotherapy is more associated with non-compliance. As the treatment regime becomes more complex, patients are at risk of missing medication.<sup>5</sup> Multiple factors are responsible for non-compliance; no single factor can be identified for this. Many theories have been used to study beliefs in compliance of therapy. A trial named systolic BP intervention trial was done to evaluate the importance of blood pressure control. The trial showed that intensive blood pressure control decreases the incidence of stroke, acute coronary syndrome, myocardial infarction, heart failure and death.<sup>6</sup> The lifespan of patients and quality of life also improved. Optimal control of blood pressure requires proper treatment regimens and compliance to treatment. Along with medical treatment, lifestyle changes are also important for blood pressure control.<sup>7</sup> Non-compliance to antihypertensive therapy can lead to increased hospital stay and death.<sup>8</sup> Compliance to antihypertensive therapy is linked to various factors like type of treatment, poly therapy or mono therapy, comorbidities, treatment cost, psychological condition of patient and doctor patient relationship.<sup>9</sup> Counseling the patient regarding the disease and treatment can improve the chances of adherence to therapy.<sup>10</sup> The objective of our study is to assess the compliance to antihypertensive therapy and factors associated with it.

**MATERIAL & METHODS**

This cross-sectional study was conducted in Cardiology department, DOW Ojha Campus and Karachi Institute of Heart Diseases (KIHD), Karachi during the time period of July, 2019 to Dec, 2019. Patient visiting the cardiology outpatient department having hypertension were selected for the study. Inclusion criteria for participants was

- Age 18 years or above
- Diagnosed case of hypertension according to (ACC/AHA) guidelines European society of cardiology
- patients should be taking antihypertensive medication for last 3 months

Informed and written consent was taken from patients to enroll them in the study. Patients

unable to give consent were excluded from the study. Over a period of 6 months participants were evaluated for their compliance to therapy. Data was collected using a questionnaire which consisted of sociodemographic profile, type of treatment regimen, compliance to medication and lifestyle changes. A pilot study was done with 25 participants to validate the questionnaire. Operational definition of non-compliance to antihypertensive therapy is skipping one prescribed daily dose for >3 days in a week or lifestyle habits like smoking, consumption of alcohol above normal, consumption of large amount of red meat (11). Compliance of all participants was calculated and factors associated with low compliance were pointed out. Data was analyzed using SPSS version 20.

**RESULTS**

A total of 271 patients visiting the hospital’s outpatient department matched the inclusion criteria of this study. Among them there were 69.3% (n=188) were males and 30.6% (n=83) females. Around 83% patients were married, while the rest were unmarried or divorced. Patients in our study had age range of 38-84 years with mean age of 49.5 + 11.7 years.

64% of the participants of our study were employed, whereas rest of them was unemployed or retired from jobs. Approximately 52.7% (n=143) patients were addicted to smoking, 15.4% (n=42) patients were addicted to alcohol. Our study showed that 47.6% (n=129) hypertensive patients were highly compliant to treatment, whereas 20.6% (n=56) were moderately compliant and 31.7% (n=86) patients were not compliant to the treatment. Only 39.4% of the patients were carrying out lifestyle modifications along with antihypertensive treatment.

Education Level	Frequency (n)	Percentage (%)
Uneducated	49	18.0%
Primary school	68	25.09%
Secondary school	25	9.2%
Graduation	96	35.4%
Masters	33	12.1%

**Table-I. Education level of study participants**

## DISCUSSION

Studies conducted in US showed that 62.5% patients are compliant to anti-hypertensive therapy, whereas in Europe 69.8% patients are highly compliant.<sup>12</sup> In a cross-sectional study it was shown that non-adherence to treatment was associated with younger age and low education level.<sup>13</sup> Factors affecting non-compliance were also identified. Identifying these factors and working to improve compliance to therapy. Counseling the patients regarding exercise, diet and stopping smoking and alcohol consumption also helps in lowering blood pressure.<sup>14</sup> The most important thing about identifying factors is that individualized programs for increasing adherence to therapy can be made. Female gender is associated with more compliance; similarly higher education level and socioeconomic status are linked to higher compliance rates.<sup>15</sup> There is a lot of variability associated with age of the patient and compliance to therapy. Some studies suggest that young patients are more compliant with the treatment regime and some showed that older patients have low adherence rates.<sup>16</sup> Patients of age group 51-60 years has lowest adherence rates of <20% suggesting a strong association between non-compliance and male gender.<sup>17</sup> Elderly patients have developed some level of cognitive impairment and forgetfulness which accounts for decreased adherence in this age group. Apart from environmental factors many psychological theories have been proposed to explain compliance. Health belief model and theory of planned behavior are the most commonly used theories. Health belief model suggests that the patient measures compliance to the perceived improvement in health and complications of the disease. Theory of planned behavior proposes that the patients' acts (shows compliance) as his/her intention secondary to its benefits like improvement in health.<sup>18</sup> Counseling the patients regarding health benefits and long term outcomes of blood pressure control may improve compliance to antihypertensive therapy. Psychological aspects of compliance should be studied extensively to counteract accordingly. Health beliefs from different cultures may also affect compliance to antihypertensive therapy. Thus information should be gathered regarding

patient's cultural and individual perceptions.<sup>19</sup> A study conducted on 535 hypertensive adults showed that compliance to antihypertensive therapy was directly proportional to controlled blood pressure. Upon analysis, no association is found between compliance and concomitant presence of chronic kidney disease or diabetes mellitus along with hypertension. Compliance to antihypertensive therapy also depends upon the type of pharmacotherapy being given to the patient. Angiotensin receptor blockers (ARBs), angiotensin converting enzyme inhibitors (ACEI) and beta blocker (calcium channel blocker) are associated with persistent compliance to therapy.<sup>20</sup> A cross-sectional study conducted in Russia suggests that patients with dual therapies for hypertension and concomitant dyslipidemia or diabetes are more prone to decreased adherence to treatment. Only 17% of the patients were compliant to dual therapies and had controlled blood pressure.<sup>21</sup> Good compliance to antihypertensive therapy and hypercholesterolemia shows significant decrease in CVD and decreases mortality.<sup>22</sup>

## CONCLUSION

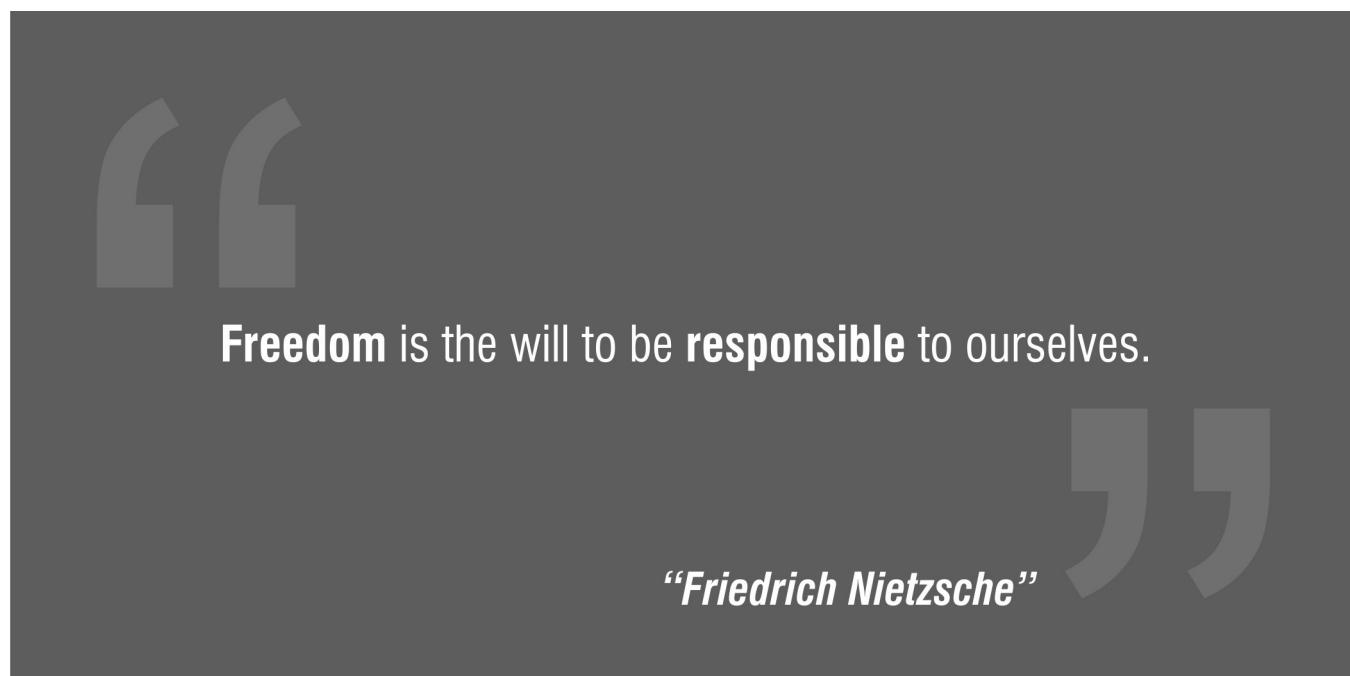
Compliance to antihypertensive therapy is of prime importance to decrease morbidity and mortality as complication to hypertension. Factors associated with non-compliance to antihypertensive therapy should be studied and possible interventions should be taken to increase adherence.

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## REFERENCES

1. Mills KT, Bundy JD, Kelly TN, et al. **Global disparities of hypertension prevalence and control a systematic analysis of population-based studies from 90 countries.** *Circulation.* 2016; 134(6):441-450.
2. Lee S, Nguyen. 2018. **Effect of additional antihypertensive medications in patients with high-risk hypertension: A post hoc analysis of the SPRINT (Systolic Blood Pressure Intervention Trial) database.** *The Journal of Clinical Hypertension* 20:4, 814-815.
3. Ognja VF, Burnier M. **Determinants and Barriers to Adherence in Hypertension.** In *Drug Adherence in Hypertension and Cardiovascular Protection* 2018 (pp. 107-122). Springer, Cham.

4. Svensson S, Kjellgren KI, Ahlner J, Saljo R. **Reasons for adherence with antihypertensive medication.** *Int J Cardiol* 2000; 76: 157–163.
5. Iskedjian M. **Relationship between daily dose frequency and adherence to antihypertensive pharmacotherapy: Evidence from a meta-analysis.** *ClinTherap* 2002; 24: 302–316.
6. Cushman WC, Whelton PK, Fine LJ, et al. **SPRINT trial results: latest news in hypertension management.** *Hypertension*. 2016; 67(2):263–265.
7. Schiffrin EL. **The year in clinical hypertension from other pages.** *Am J Hypertens*. 2018; 31(2):136–138.
8. Herttua K, Tabák AG, Martikainen P, Vahtera J, Kivimäki M. **Adherence to antihypertensive therapy prior to the first presentation of stroke in hypertensive adults: Population-based study.** *Eur Heart J*. 2013; 34(38):2933–2939.
9. Mekonnen HS, Gebrie MH, Eyasu KH, Gelagay AA. **Drug adherence for antihypertensive medications and its determinants among adult hypertensive patients attending in chronic clinics of referral hospitals in Northwest Ethiopia.** *BMC Pharmacol Toxicol*. 2017; 18(1):27.
10. Jankowska-Polańska B, Uchmanowicz I, Dudek K, Mazur G. **Relationship between patients' knowledge and medication adherence among patients with hypertension.** *Patient Prefer Adherence*. 2016; 10:2437–2447.
11. Shah AJ, Singh V, Patil SP, Gadkari MR, Ramchandani V, Doshi KJ. **Factors affecting compliance to antihypertensive treatment among adults in a tertiary care hospital in Mumbai.** *Indian journal of community medicine: Official publication of Indian Association of Preventive & Social Medicine*. 2018 Jan; 43(1):53.
12. Fortuna RJ, Nagel AK, Rocco TA, Legette-Sobers S, Quigley DD. **Patient experience with care and its association with adherence to hypertension medications.** *Am J Hypertens*. 2017; 31(3):340–345.
13. Boima V, Ademola AD, Odusola AO, et al. **Factors associated with medication nonadherence among hypertensives in Ghana and Nigeria.** *Int J Hypertens*. 2015; 2015:205716.
14. Alhalaiqa F, Al-Nawafleh A, Batiha AM, Masa'Deh R, Al-Razek AA. **A descriptive study of adherence to lifestyle modification factors among hypertensive patients.** *Turk J Med Sci*. 2017; 47:273–281.
15. Daniel AC, Veiga EV. **Factors that interfere the medication compliance in hypertensive patients.** *Einstein (Sao Paulo)* 2013; 11(3):331–337.
16. Dorobantu M, Darabont R, Ghiorghe S, et al. **Hypertension prevalence and control in Romania at a seven-year interval. Comparison of SEPHAR I and II surveys.** *J Hypertens*. 2014; 32:39–47.
17. Tilea I, Petra D, Voidazan S, Ardeleanu E, Varga A. **Treatment adherence among adult hypertensive patients: A cross-sectional retrospective study in primary care in Romania.** *Patient preference and adherence*. 2018; 12:625.
18. Hand CH, Adams M. **How do attitudes to illness and treatment compare with self-reported behaviour in predicting inhaler use in asthma?** *Primary Care Respir J* 2002; 11: 9–12.
19. Ross S, Walker A, MacLeod MJ. **Patient compliance in hypertension: Role of illness perceptions and treatment beliefs.** *Journal of human hypertension*. 2004 Sep; 18(9):607.
20. Tilea I, Petra D, Voidazan S, Ardeleanu E, Varga A. **Treatment adherence among adult hypertensive patients: A cross-sectional retrospective study in primary care in Romania.** *Patient preference and adherence*. 2018; 12:625.
21. Cybulsky M, Cook S, Kontsevaya AV, Vasiljev M, Leon DA. **Pharmacological treatment of hypertension and hyperlipidemia in Izhevsk, Russia.** *BMC Cardiovasc Disord*. 2016; 16:122.
22. Oung AB, Kosirog E, Chavez B, Brunner J, Saseen JJ. **Evaluation of medication adherence in chronic disease at a federally qualified health center.** *Ther Adv Chronic Dis*. 2017; 8(8–9):113–120.



**AUTHORSHIP AND CONTRIBUTION DECLARATION**

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Afzal Qasim	Conception and design, Statistical expertise, Critical review of the article for important intellectual content.	<i>Afzal Qasim</i>
2	M. Inam Qureshi	Data collection critical revision of the article for important intellectual content.	<i>M. Inam Qureshi</i>
3	Darshan Kumar	Data collection Critical revision, Drafting of the article.	<i>Darshan Kumar</i>
4	Syed M. Kashif	Data collection.	<i>Syed M. Kashif</i>