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KNOWN HYPERTENSIVES BUT NON-COMPLIANT. FACTORS RESPONSIBLE FOR NON-COMPLIANCE AMONG HYPERTENSIVE PATIENTS

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ABSTRACT:

BACKGROUND: *The study will explore demographic, psychological, behavioral, and socio-cultural factors that may impact a patient's adherence to prescribed antihypertensive medications. By identifying and understanding these factors, we can develop tailored interventions and strategies to improve medication adherence rates among hypertensive individuals, ultimately leading to better disease management outcomes and reduced cardiovascular risk.*

AIMS & OBJECTIVE: *This research project aims to investigate the various factors responsible for medication non-adherence among diagnosed hypertensive patients. To explore the factors which are responsible for non-compliance to anti-hypertensive medication in Diagnosed Hypertensive patients treated at a tertiary care cardiology center.*

MATERIAL & METHODS: *A total of 300 patients of either gender aged 20 to 80 years were enrolled in the study from the OPD Department of a tertiary care cardiology center. After fulfilling the inclusion criteria, informed consent was obtained. All the biodata and study related information of each patient was entered on the specified data Performa. All the data was then entered into SPSS version 22 for data analysis. All the continuous variables were analyzed as mean and median. Frequency each of the factor responsible for noncompliance was determined. P value was calculated to determine the statistical significance of each variable. All value <0.05 considered significant.*

RESULTS: *A total of 300 participants were included in the study, with 167 (55.7%) being male and 133 (44.3%) being female. The study results pertaining to non-compliance with antihypertensive medications unveiled some compelling patterns within the participant demographics and factors influencing adherence. Notably, the distribution of compliance status revealed a near-even split, with 50.7% exhibiting good compliance and 49.3% manifesting poor compliance, a highly significant finding with a p-value of 0.00*

CONCLUSION: *In conclusion, this study sheds light on the multifaceted nature of non-compliance with antihypertensive medications among hypertensive patients. An understanding of these factors can provide a substrate to focus on, for improving compliance and patient outcomes in hypertension management.*

KEY WORDS: *Hypertension, Non compliance, Factors*

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INTRODUCTION:

Hypertension, characterized by elevated blood pressure levels, is a common but serious condition that often goes undetected due to lack of symptoms. Proper management involves lifestyle modifications and medication adherence, yet uncontrolled blood pressure remains prevalent, often due to treatment non-compliance. Hypertension may remain un-controlled despite treatment. One of the common causes for uncontrolled BP is treatment non-adherence.[1] Factors influencing non-compliance include patients' perceptions and health beliefs, knowledge gaps, personal reasons, and organizational issues.[2] Patient compliance is vital in mitigating hypertension-related risks and improving health outcomes[3]. High blood pressure is a key risk factor for heart disease, the leading cause of death globally[4]. Poor medication adherence has significant and multi-fold effects on the management of HTN, increasing the risk of Coronary heart disease, including end-stage kidney disease and all cause mortality[5]. This study aims to identify the factors contributing to non-compliance with antihypertensive medications among diagnosed hypertensive patients. Understanding and addressing non-compliance factors are essential for improving hypertension management and patient outcome.

OBJECTIVES:

To explore the factors which are responsible for non-compliance to anti-hypertensive medication in diagnosed hypertensive patients treated at a tertiary care cardiology center.

MATERIAL AND METHODS:

This was a Cross Sectional descriptive study. The study was conducted among diagnosed hypertensive patients of Tertiary care cardiology center, Lahore for a period of four month after approval of synopsis. Total 300 patients were enrolled. Convenience Sampling Technique was used. Both genders with age 20 to 80 years, a patient who was diagnosed hypertensive, patients who was advised anti-hypertensive medication by the physician from 6 months were included in the study. The subject who had allergy to any medication, subject who underwent any procedure for hypertension treatment like renal stenting and subject with creatinine more than 1.5 were excluded from the study.

OPERATIONAL DEFINITIONS:

Hypertension: Hypertension is a condition when a person's systolic blood pressure (SBP) in the office or clinic is ≥140 mm Hg and/or their diastolic blood pressure (DBP) is ≥90mmHg following repeated examination.

Non- Compliance: Non-Compliance is Failure or refusal to comply with something as prescribed or ordered intentionally within 3 days or above in previous three months.

Diagnosed Hypertensive Patients: Diagnosed hypertensive patients are individuals who have been diagnosed by a healthcare professional with hypertension, also known as high blood pressure.

Factors: Factors (Education status, employed or un employed, memory, careless, polypharmacy, gender, age status) that are responsible for non-adherence to

antihypertensive medications.
Education Status: Education status refers to the highest level of education completed by an individual, categorized into groups such as well educated (Under graduation) low educated (Under metric).
Socioeconomic Status: Socioeconomic status (SES) is a measure of an individual's or family's economic and social position relative to others, determined by factors such as income, education level, occupation, and wealth.
Gender Status: Gender status refers to an individual's self-identified gender identity, which may be categorized as male, female, transgender, non-binary, or other gender identities.
Age Status: Age status refers to the chronological age of an individual, typically grouped into categories such as above 50 and below 50.
Polypharmacy: Polypharmacy is the concurrent use of multiple medications by an individual, often defined as 1 tablet only or more than 1 tablet.
Side Effects of Drugs: Side effects of drugs refer to the adverse or unintended effects experienced by an individual as a result of taking medication, which may include physical, psychological, or behavioral symptoms.
Memory: Memory refers to the cognitive ability to encode, store, and recall information, which can influence medication adherence by affecting the individual's ability to remember to take their medication as prescribed.
Careless: Careless behavior refers to a lack of attention, diligence, or caution in medication-taking habits, leading to mistakes, omissions, or inconsistencies in adherence to the prescribed treatment regimen.
Irrational Belief: Irrational belief refers to unfounded or illogical beliefs held by an individual that may influence their attitudes, perceptions, decisions, or behaviors related to medication adherence.
Not required: When Bp is stable, the subject checks the blood pressure and if it is normal he/she skipped the regular dose of hypertensive medications. In Routine, where a patient subjectively perceives or believes, as part of their daily routine, that they do not require medication for their condition, potentially leading to noncompliance with prescribed treatment plans due to a perceived lack of necessity. And N/A (Not Applicable) for those who are good compliant.

PROCEDURE:

A total of 300 patients of either gender aged 20 to 80 years were enrolled into the study after from the OPD Department of a tertiary care cardiology center. After full filling the inclusion criteria, informed consent was obtained. All the biodata and study related information of each patient was entered on the specified data Performa. All the data then entered into SPSS version 22 for data analysis. All the continuous variables were analyzed as mean and median. Frequency each of the factor responsible for noncompliance was determined. P value was calculated to determine the statistical significance of each variable. All value <0.05 was considered significant.

RESULTS:

A total of 300 participants were included in the study, with 167 (55.7%) being male and 133 (44.3%) being female. The study results pertaining to non-compliance with antihypertensive medications unveiled some compelling patterns within the participant demographics and factors influencing adherence. Notably, the distribution of compliance status revealed a near-even split, with 50.7% exhibiting good compliance and 49.3% manifesting poor compliance, a highly significant finding with a p-value of 0.00 (Figure 1). Conversely, Gender did not demonstrate on compliance status male 55.7% and female 44.3% ($p=0.90$), age status did not exhibit a significant impact on compliance, as 65.7% of participants above 50 years and 34.3% below 50 years demonstrated comparable adherence levels ($p = 0.90$). Similarly, polypharmacy, with varying tablet intake, did not influence compliance significantly ($p = 0.28$) (Figure 2)

Education status emerged as a significant predictor of compliance, with a striking 81.7% of low-educated individuals demonstrating non-adherence compared

Table-1: All factors and their percentage with both categories			
Factors		**Percentage**	**P-value**
Age Status	Above 50	65.7%	0.90
	Below 50	34.3%	
Education Status	Low-educated	81.3%	**0.000***
	Well-educated	18.3%	
Socio-Economic Status	Employed	24.3%	**0.000***
	Unemployed	75.7%	
Gender Status	Male	55.6%	**0.000***
	Female	44.3%	
Polypharmacy	One tablet only	88.3%	0.28
	More than one tablet	11.7%	
Drug Side effects	Yes	3.3%	**0.000***
	No	96.7%	
Memory Status	Good	77.3%	**0.000***
	Poor	22.7%	
Carelessness	Careless	44.7%	**0.000***
	Not careless	55.3%	
Irrational Belief	Held irrational belief	26.7%	**0.000***
	Did not held irrational belief	73.3%	
Not required	Believe not required when BP stable	38%	**0.000***
	Believe not required in routine	11.3%	
	Not applicable	50.7%	

to 18.3% of well-educated participants, also highly significant with a p-value of 0.00.(Figure 3). In terms of socioeconomic status, a significant association was observed, with 75.7% of unemployed individuals displaying non-compliance in contrast to 24.3% of employed individuals, indicating a highly significant relationship ($p = 0.00$) (Figure 3). Furthermore, the study explored several key factors influencing compliance. Notably, the experience of drug side effects was found to be a compelling determinant, with only 3.3% reporting side effects and 96.7% not experiencing any, a highly significant relationship ($p = 0.00$). Figure 3

Participants' memory status, carelessness, irrational beliefs, and perception of medication necessity were also identified as critical factors affecting adherence, with highly significant associations evident across all parameters ($p = 0.00$).(Figure 4)

DISCUSSION:

This study provides insights into factors influencing non-compliance with antihypertensive medications, emphasizing the roles of demographic characteristics like education and socioeconomic status. While gender did not significantly impact compliance, polypharmacy and perceived side effects warrant further investigation. Psychological factors such as memory, carelessness, and beliefs were significant

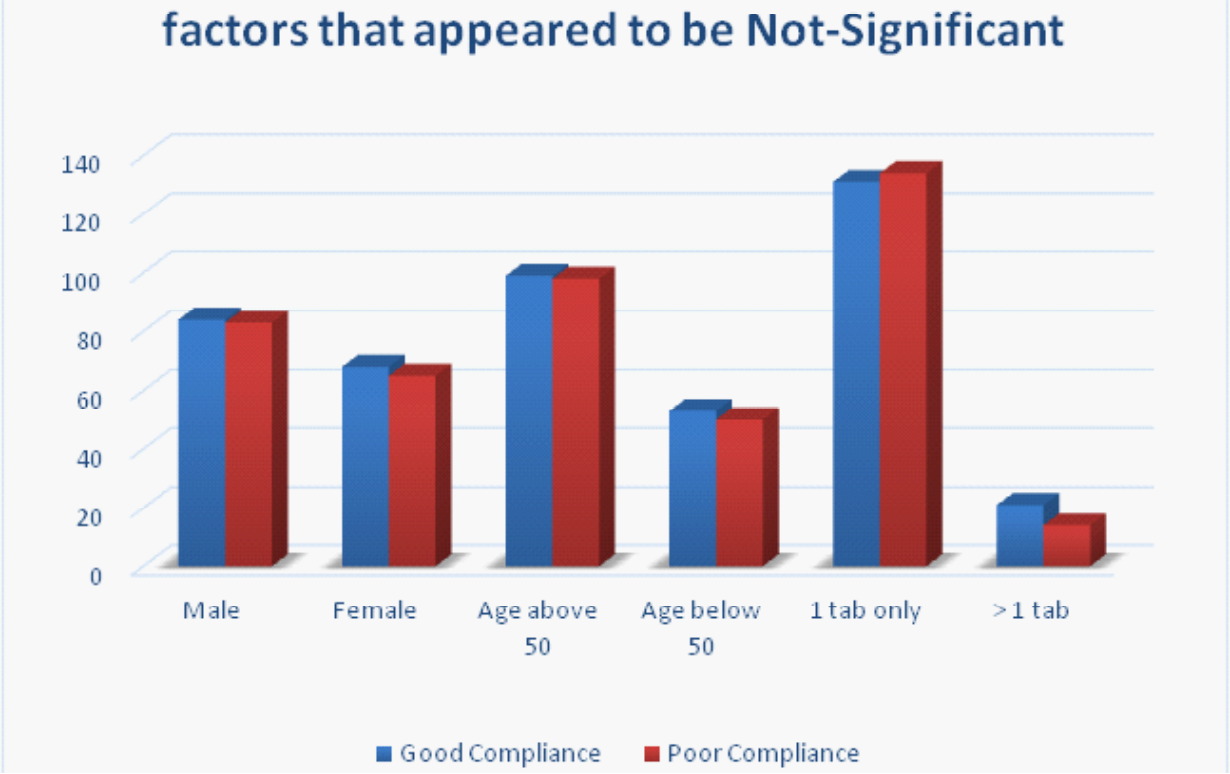

Figure-1

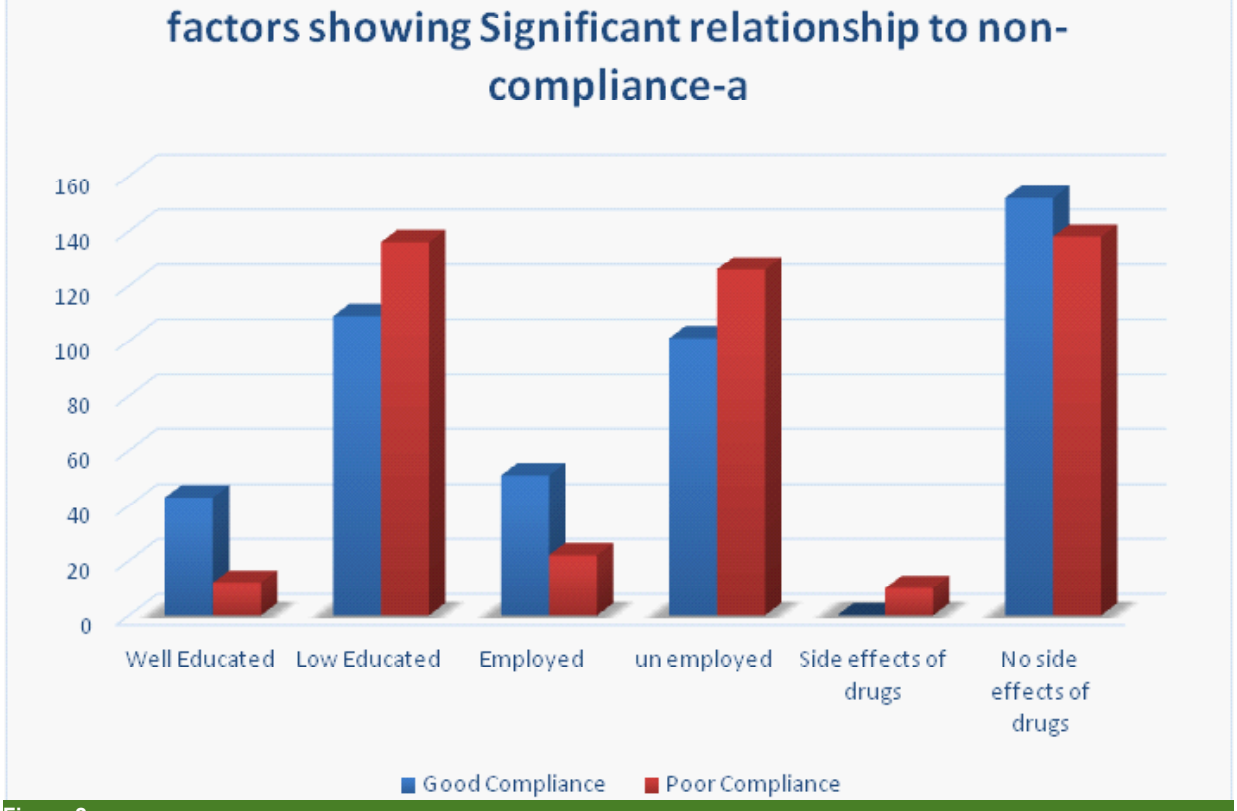

Figure-2

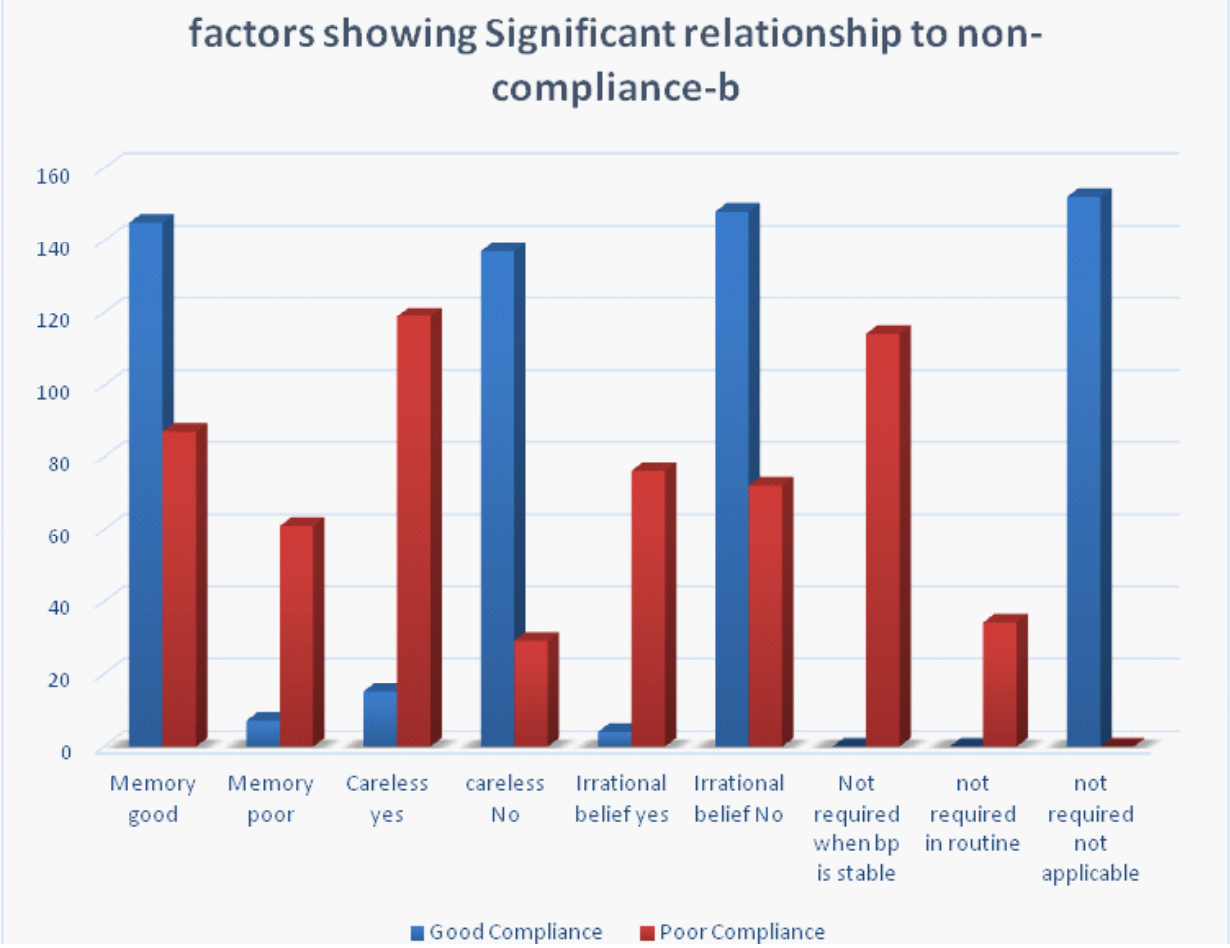

Figure-3

predictors of compliance, underscoring the need for tailored interventions. Hanine Abbas and colleagues conducted a cross-sectional study across all governorates of Lebanon to investigate adherence to antihypertensive medications. Non-adherence to these medications is linked to negative health outcomes and increased healthcare costs. To address this issue, the study aimed to identify factors associated with non-adherence using face-to-face questionnaires based on the World Health Organization's five main categories.[6]

Algabbani F.M. conducted a study in Riyadh, Saudi Arabia to assess adherence to antihypertensive medications among outpatient adults aged ≥18 years diagnosed with hypertension. The study employed a cross-sectional design and utilized systematic sampling to recruit participants. Key objectives included evaluating medication adherence using the Morisky scale and identifying predictors of poor adherence. Factors examined included socio-economic and demographic variables, health status, clinic attendance, medication side effects, availability of medications, and disease knowledge. The findings indicated that inadequate knowledge about hypertension was significantly associated with medication non-adherence. Moreover, patients with comorbidities and those taking multiple medications were identified as particularly susceptible to non-adherence.[7]

Isla S. Mackenzie and Thomas M. MacDonald In UK 2019 ,studied the people with resistant hypertension who do not adhere to their antihypertensive regimens. In individuals with hypertension, noncompliance with antihypertensive drug regimens is a significant cause of morbidity and mortality. It's critical to take antihypertensive drugs as prescribed. Although the study was small in scope

and only examined a limited number of antihypertensive medications, it sheds light on the amount of non-adherence among this significant subset of individuals with resistant hypertension and helps identify potential determinants of non-adherence in this patient population. Measuring medication or biomarkers is only one method of evaluating adherence. Various approaches are possible based on the environment and the available resources. Measuring drugs or indicators in plasma or urine is considered one of the more costly and invasive but objective techniques. Previous unsatisfactory clinician encounters, Depression or other psychiatric illness, Significant competing priorities, e.g. caring responsibilities for other family members, financial issues) that lead to non-adherence[8].

A study was conducted by Farzane Eatberi and colleagues in Iran on non-adherence with the antihypertensive treatment regime in various countries, considering the burden of cardiovascular disease (CVD) on the public health system. Patients with hypertension evaluated at the family medicine clinic of Tabriz University of Medical Sciences were enrolled using simple sampling. Data gathering tool was a questionnaire consisting of three sections including the Hill-Bone compliance questionnaire, the disease characteristics, and patients' socioeconomic. The study results shows that Factors related to the history of the disease and socioeconomic status had no effect on patients adherence with treatment; however, the number of the prescribed antihypertensive drugs is in association with higher overall scores[9].

They suggest targeted interventions to enhance treatment effectiveness. Meanwhile, Chang et al. (2021) investigated non-compliance factors in southern Taiwan, identifying forgetfulness as the primary reason[10]. They noted that younger age, male gender, comorbidities, insomnia, and dietary supplement use were associated with higher non-adherence risk, while adherence to specific diets improved compliance. These findings underscore the need to address behavioral and contextual factors to improve medication adherence in hypertensive patients. Studies from Saudi Arabia, Lebanon, Upper Egypt, the UK, Iran, and Morocco also emphasize diverse factors influencing adherence, stressing the complexity and importance of tailored interventions Despite certain limitations, such as a small sample size and reliance on self-reported data, this research provides valuable insights that can inform healthcare interventions and strategies aimed at improving medication adherence in hypertensive patients. The findings highlight the complexity of medication non-compliance and advocate for personalized approaches to improve adherence among hypertensive patients. Future research should explore additional factors affecting adherence and develop targeted interventions to address specific barriers to compliance.

Two studies examined medication adherence among hypertensive patients across different regions, highlighting its critical role in treatment success. Mahmood et al. (2020) found inadequate adherence to antihypertensive medications in Islamabad, resulting in poor blood pressure control.[11]

CONCLUSION:

In conclusion, this study sheds light on the multifaceted nature of non-compliance with antihypertensive medications among hypertensive patients. An understanding of these factors can provide a substrate to focus on, for improving compliance and patient outcomes in hypertension management.

Study limitations: It included small sample size, self-reported data, cross-sectional design and lack of cultural consideration. Addressing these limitations in future research could advance the understanding of medication non-compliance among hypertensive patients.

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