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BARRIERS TO MEDICATION ADHERENCE AMONG CARDIOVASCULAR DISEASE PATIENTS AND ASSESSMENT OF COMPLIANCE TOWARDS TREATMENT

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Abstract

Background: *Medication adherence refers to how well patients follow their prescribed treatment. In Pakistan, a survey revealed that 68.14% of patients do not take medications as directed, highlighting a serious issue that can negatively impact health outcomes.*

Objectives: *To access the barriers towards medication adherence and evaluate the Compliance towards treatment among cardiovascular disease patients*

Method: *A descriptive cross-sectional study was conducted in Sheikh Zaid hospital, Lahore and completed in 4 months. Convenient sampling technique was used with sample size of 138. A modified questionnaire was used for data collection and analyzed by Chi-Square test to find the significance between categorical variables.*

Result: *The finding of this study concluded that most of the patients were male, having age between 51-65 years, primary level of education. Regarding to patients' compliance toward treatment (67.39%) with good compliance, while (32.60%) participants with poor. There is a significant difference between the compliance level of all study participants with the p less than 0.06.*

Conclusion: *According to this study majority of patients were with good compliance towards treatments. Furthermore, barriers that affect medication adherence in cardiovascular disease patients were forgetfulness and concern adverse reactions. Study suggested those who visited Shiekh Zayad hospital OPD should receive educational intervention and lifestyle modification.*

INTRODUCTION

Cardiovascular diseases, as the name implies, are disorders of the heart and blood vessels. The four main types are coronary heart disease, aortic disease, stroke, and peripheral vascular disease (1). The patient's continuous and routine use of their

prescribed medication is known as medication adherence (2).

According to statistics, 126.9 million people over 20 had these illnesses in 2018, and their frequency rises with age in both men and women. 2017 had 17.8 million deaths worldwide due to heart-related conditions (3). Approximately 50% of global mortality and 80% of the burden are found in low- and middle-income countries (4). Cardiovascular deaths are rising in developing countries like Pakistan due to lifestyle changes and aging. Over 60% of heart patients show poor treatment adherence, worsening outcomes (5).

Non-adherence is still a problem in both developed and developing countries. An estimated 125,000 fatalities in the US each year from cardiovascular disease are attributed to non-adherence(6). Drug nonadherence, either partial or total, has been reported to occur at rates as high as 50% worldwide.. If statin nonadherence was noted, there was a 12% to 25% increase in the relative risk of death in the year after being admitted to the hospital for myocardial infarction (7).

A review found 15.4% of statin users didn't receive their medication within 90 days, while only 1.5% of French patients showed similar non-adherence to inhaled steroids highlighting rising costs and poor outcomes (8). Non-adherence leads to poor disease management, higher treatment costs, and increased cardiovascular risk and mortality (9). A study across 27 European countries found most CVD patients had unhealthy lifestyles, worsening their condition (10). Medication adherence in heart failure and chronic illnesses is influenced by factors like age, gender, income, education, side effects, and social support (11). Additional predictors include race, BMI, smoking, depression, cognitive issues, and medication-related challenges (12).

About 32% of patients reduced their medication to cut costs. Another study showed varied responses to rising drug expenses some stopped, some reduced doses, while others adhered despite the cost (13)

Medication non-adherence costs the USA, Europe, and Australia billions annually and causes 10% of hospital admissions among older adults. Non-adherent patients need three extra visits yearly, adding around $2,000 in costs (14). Nonadherence increases adverse drug events, emergency visits, and hospitalizations, especially among seniors. It accounts for 30% of medicine-related admissions and raises hospitalization risk by 10–40% in cardiovascular patients (15).

The Information-Motivation-Behavioral Skills Model explains medication adherence through three key factors: knowledge of its importance, motivation to change behavior, and the skills needed to follow treatment, especially in chronic illness (13).

Understanding the factors that hinder adherence is vital for developing targeted interventions and improving patient compliance. This study aims to explore the barriers to medication adherence among cardiovascular disease patients and assess their level of compliance with prescribed treatment regimens. Identifying these challenges will contribute to better patient education, policy development, and clinical strategies that can enhance adherence and ultimately reduce the burden of cardiovascular disease.

Methodology: This descriptive cross-sectional study was conducted over four months at Sheikh Zayed Hospital, Lahore, to assess barriers to medication adherence among cardiovascular disease (CVD) patients. A sample of 138 participants, aged 30–60, was selected using convenience sampling. Inclusion criteria required patients to be on regular cardiovascular treatment and willing to participate, while those with poor prognosis, psychiatric issues, or language barriers were excluded. Data were collected using a self-structured questionnaire covering demographics and 23 adherence-related questions. After obtaining informed consent, responses were collected and analyzed using SPSS version 27. Descriptive statistics included frequencies and means, while Chi-square tests ($p < 0.06$) were used to identify significant associations with medication adherence.

Results

Table No 1: Demographic variables: Gender, Age, Marital status, economical status			
		n	%
Gender	Male	98	71.0
	Female	40	29.0
Age	20-35	3	2.2
	36-50	38	27.5
	51-65	97	70.3
Marital Status	Married	118	85.5
	Divorced	19	13.8
	Widowed	1	0.7
	Total	**138**	**100.0**
Analyzed by frequency (n) and percentage (%)			

Table 1 shows that most cardiovascular patients were male (71%), aged 51–65 years (70.3%), and married (85.5%). This highlights a higher prevalence of cardiac disorders among older, married men.

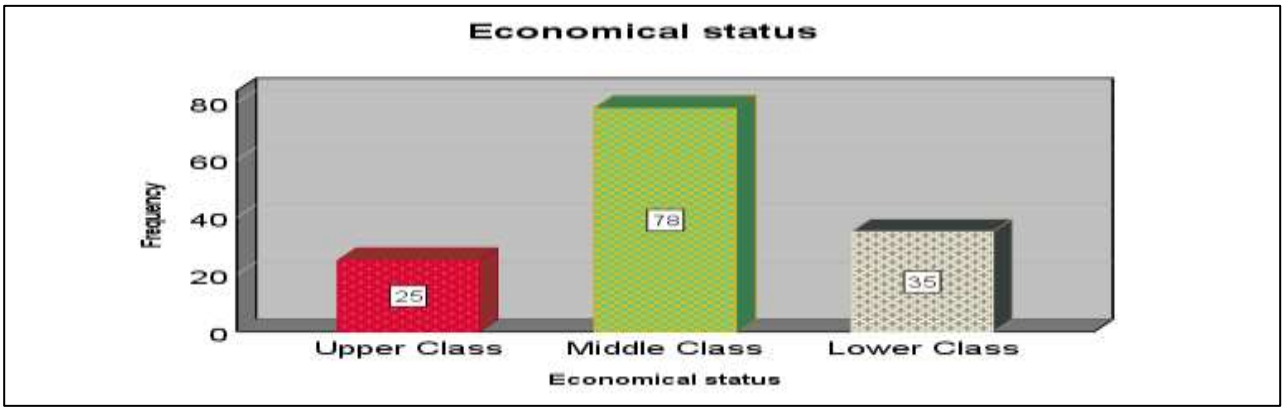

Figure 1: Economic Status of the study participants

Figure 1 shows that most cardiovascular patients were from the middle class (56.5%), followed by the lower class (25.4%) and upper class (18.1%).

Table No 2: Demographic variables: smoking, exercise, walking			
		n	%
Do you smoke	No	75	54.3
	Yes	63	45.7
If yes age started	No	75	54.3
	< 1 year	16	11.6
	>1year	47	34.1
Exercise and walking	No	15	10.9
	Yes	123	89.1
If yes, how many times a week	No	15	10.9
	1-2	56	40.6
	3-4	38	27.5

	7-8	29	21.0
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 1 shows that most cardiovascular patients were male (71%), aged 51–65 years (70.3%), and married (85.5%). These demographics indicate a higher prevalence of cardiac disorders among older, married men.

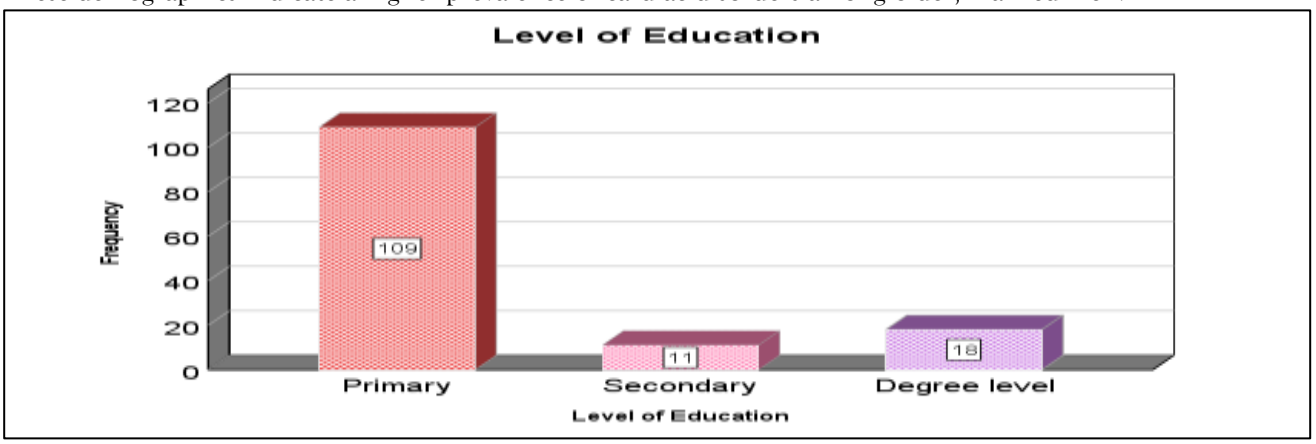

Figure 2: Level of education

The graph shows that most cardiovascular patients had primary education (79%), while 13% had a degree and 8% had secondary education.

Table No 3: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Forget to take your medicine?	None of the time	65	47.1
	Some of the time	58	42.0
	Most of the time	1	0.7
	All the time	14	10.1
Decide not to take your medicine?	None of the time	43	31.2
	Some of the time	60	43.5
	Most of the time	35	25.4
Eat salty food?	None of the time	63	45.7
	Some of the time	72	52.2
	Most of the time	3	2.2
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 3 highlights key barriers to medication adherence among cardiovascular patients: 68.9% struggled with deciding to take medicine, 54.4% consumed salty food, and 52.8% forgot to take their medication at times. These factors significantly impact treatment compliance.

Table No 4: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Are you suffering from high blood pressure?	No	53	38.4
	Yes	85	61.6
If yes, how many antihypertensive drugs are you taking?	No	53	38.4
	one tablet	67	48.6
	Two tablets	13	9.4
	Three tablets	5	3.6
How many tablets did you miss in the past month?	no tablet	52	37.7
	One tablet	68	49.3
	Tow tablets	18	13.0
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 4 shows that 61.6% of cardiovascular patients had hypertension, with most taking at least one antihypertensive tablet. In the past month, 62.3% missed a dose, indicating poor adherence despite ongoing treatment.

Table No 5: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Eat fast food? [Fat cook, Burger, Chips]	None of the time	77	55.8
	some of the time	31	22.5
	Most of the time	29	21.0
	All the time	1	0.7
Do not get the next appointment before you leave the clinic?	None of the time	87	63.0
	some of the time	28	20.3
	Most of the time	23	16.7
Miss scheduled appointments?	None of the time	86	62.3
	some of the time	29	21.0
	Most of the time	14	10.1
	All the time	9	6.5
Leave the dispensary without obtaining your prescribed pills?	None of the time	77	55.8
	some of the time	28	20.3
	Most of the time	25	18.1
	All the time	8	5.8
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 5 shows key barriers to medication adherence among cardiovascular patients: 44.2% frequently ate fast food or left the dispensary without collecting prescribed pills, while 37.6% missed appointments or failed to book follow-ups before leaving the clinic.

Table No 6: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Run out of disease pills?	None of the time	86	62.3
	Some of the time	35	25.4
	Most of the time	8	5.8
	All the time	9	6.5
Do you interrupt medication intake when symptoms been relieved?	None of the time	40	29.0
	Some of the time	40	29.0
	Most of the time	32	23.2
	All the time	26	18.8
Do you interrupt the medication intake? It seems that drugs are ineffective and disease condition are not be relieve after treatment?	None of the time	65	47.1
	Some of the time	56	40.6
	Most of the time	17	12.3
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage *(%)*			

Table 6 shows major barriers to adherence: 71% of patients stopped medication when symptoms improved, 52.9% felt drugs were ineffective, and 37.7% interrupted treatment after running out of pills—impacting consistent disease management.

Table No 7: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Do you interrupt medication intake due to the belief that treatment is not necessary because of old age?	None of the time	71	51.4
	Some of the time	49	35.5
	Most of the time	9	6.5
	All the time	9	6.5
Do you interrupt medication intake due to your busy schedule?	None of the time	59	42.8
	Some of the time	20	14.5
	Most of the time	49	35.5
	All the time	10	7.2
Do you interrupt medication intake treatment course being too long and the dose being too large	None of the time	56	40.6
	Some of the time	34	24.6
	Most of the time	48	34.8
	Total	**138**	**100.0**
Analyzed by frequency (n) and percentage (%)			

Table 7 shows that 59.4% of cardiovascular patients interrupted medication due to long treatment duration, 57.2% due to a busy routine, and 48.5% believed treatment wasn't necessary due to old age—highlighting key adherence barriers.

Table No 8: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Do you always forget to take drugs, leading to the interruption of medication?	None of the time	72	52.2
	Some of the time	66	47.8
Do you interrupt your medication due to fear of severe adverse drug reaction?	None of the time	80	58.0
	some of the time	21	15.2
	Most of the time	19	13.8
	All the time	18	13.0
Do you worry about your body being damaged by medicine, leading to the interruption of medication intake?	None of the time	72	52.2
	Some of the time	44	31.9
	Most of the time	22	15.9
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 8 shows that 47.8% of cardiovascular patients forgot to take their medication, 42% feared adverse drug reactions, and 47.8% worried about long-term body damage—highlighting key psychological barriers to adherence.

Table No 9: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Do you interrupt medication intake due to the influence of appetite after taking drugs?	None of the time	77	55.8
	Some of the time	59	42.8
	Most of the time	2	1.4
Do you interrupt medication intake due to comorbid of other diseases?	None of the time	64	46.4
	Some of the time	55	39.9
	Most of the time	19	13.8
Do you interrupt medication intake due to migration from your area?	None of the time	96	69.6
	Some of the time	40	29.0
	Most of the time	2	1.4
	Total	**138**	**100.0**
Analyzed by frequency(n) and percentage (%)			

Table 9 shows that 53.7% of cardiovascular patients interrupted medication due to other illnesses, 44.2% due to appetite changes after taking drugs, and 30.4% due to relocation—highlighting additional adherence barriers.

Table No 10: Barriers to medication adherence among cardiovascular disease patients.			
		n	%
Do you interrupted medication intake due to not following doctor's advice?	None of the time	97	70.3
	Some of the time	28	20.3
	Most of the time	13	9.4
Do you interrupted medication intake due to following other people's suggestions?	None of the time	92	66.7
	Some of the time	37	26.8
	All the time	9	6.5

	Total	138	100.0
Analyzed by frequency(n) and percentage (%)			

Table 10 shows that 33.3% of cardiovascular patients interrupted medication due to others' suggestions, while 29.7% did so by not following doctor's advice—highlighting social influence and noncompliance as key barriers.

Table No 11: KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.660
Bartlett's Test of Sphericity	Approx. Chi-Square	3792.579
	Df	276
	Sig.	0.000
Analyzed by factor analysis with KMO > 0.6 and Bartlett's Test <0.05		

Table 11 shows factor analysis results with a KMO value of 0.660, indicating adequate sampling. Bartlett's test confirmed significant item correlations (p = 0.000), supporting the validity of the data for analysis.

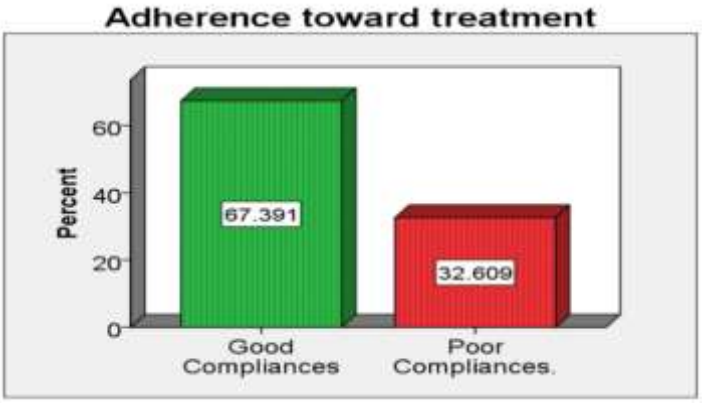

Figure 3: Analyzed by chi-square test with p less than 0.05

Figure 3 shows that 67.39% of cardiovascular patients had good treatment compliance, while 32.60% had poor compliance, with a statistically significant difference (p < 0.06).

Discussion

The findings of this study reveal critical insights into the demographic and behavioral patterns associated with treatment compliance among individuals with cardiovascular conditions. A majority of participants were older males aged 51–65, a demographic consistent with global trends in cardiovascular disease prevalence (16). This age group often experiences increased vulnerability to chronic illnesses, making their adherence to treatment particularly significant (13).

Encouragingly, a substantial proportion (67.39%) of participants demonstrated good treatment compliance, with statistically significant variation (p < 0.05). This suggests a promising level of engagement with prescribed therapies (17). However, the role of socioeconomic factors cannot be overlooked.

The majority of participants were married (85.5%), had only primary education (79.0%), and belonged to the middle-income group (56.5%). These factors are known to influence health behaviors and access to healthcare resources. For instance, being married may enhance social support, while limited education could hinder understanding of complex medication regimens (18).

Interestingly, although a high percentage of participants reported engaging in physical activity (89.1%), nearly half (45.7%) also admitted to

smoking—highlighting a contradiction in health behaviors. This duality may reflect a lack of comprehensive health education or conflicting cultural and social norms regarding lifestyle choices (19).

Importantly, the study identified key barriers to medication adherence: forgetfulness (47.8%) and fear of side effects (58.0%). These findings underscore the need for targeted interventions. Cognitive aids such as reminders or pill organizers could help address forgetfulness (20), while structured counseling and clear communication from healthcare professionals might alleviate concerns related to medication side effects (21).

Overall, the study emphasizes the multifaceted nature of treatment adherence in cardiovascular patients, influenced by demographic, behavioral, and psychosocial factors. Enhancing patient education, providing psychological support, and fostering a supportive environment could collectively improve adherence rates and health outcomes in this population.

Conclusion: The study found that the majority of participants were older males with good treatment compliance. Socioeconomic factors such as marital status, lower educational attainment, and middle-class background were associated with health behaviors. Most participants engaged in regular physical activity, although smoking remained common. Key barriers to medication adherence included forgetfulness and concerns about side effects, highlighting the importance of targeted educational and psychological support to enhance cardiovascular care.

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