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Assessment of patients adherence to therapeutic recommendations after percutaneous coronary intervention in Al-Najaf Al-Ashraf governorate

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***Abstract*---**Cardiac catheterization (CC) is a technique in which a symptomatic patient with heart disease undergoes a routine that necessitates hospitalization. This study aims to assess patients' adherence to therapeutic recommendations after percutaneous coronary intervention. Cross-sectional quantitative descriptive design carried out in Al-Najaf Governorate. Non-probability purposive sampling consisted of 120 patients with coronary artery disease for at least six months after percutaneous coronary intervention. The start date was from October 1st, 2020 and last to May 1th, 2022. The data gathered via interview method by Adhrerence questionnaire which include 54 items. This study finds that from sample 40.8% were within 51-60 years old, 65.8% were male, 20.8% were intermediate school graduated, 59.2% were rural residence, 90% were married, 72.5% experienced CAD for less than 6 years, 98.3% received therapeutic recommendations, 38.3% admitted for the second time, and 70.8% have fair level of adherence. In turn Age, level of education, disease duration significantly associated with adherence variable. Patients' adherence to therapeutic recommendations is moderate after PCI. As age increases, adherence to therapeutic recommendations decreases. Good level of adherence accelerates among patients with high educational level.Longer disease duration accompanying with poor adherence.

***Keywords*---**adherence, therapeutic recommendations, percutaneous coronary intervention.

Introduction

Cardiac catheterization (CC) is a technique in which a symptomatic patient with heart disease undergoes a routine that necessitates hospitalization. According to another study [1], cardiac catheterization is an intrusive operation that can result in a variety of major and minor problems, all of which can increase morbidity and death. An arrhythmia, renal damage, blood clots, and heart attacks are all typical problems of the surgery, In case of CAD early detection and good care are logically linked to taking action to obtain timely treatment and so minimize subsequent issues through change in life style [2].Coronary angiography is a common types of cardiac procedures that are performed, according to [3]. Annually, more than 1,000,000 cardiac catheterization operations are conducted in the United States. In CAD, patient adherence to the treatment regimen is critical for optimal disease control. Poor adherence is widespread in chronic illnesses, and it leads to higher rates of morbidity. Patients' perceptions of their sickness, the kind of therapy or medicine, the quality of patient-provider communication, and the social culture all influence adherence.

Patients are more likely to stick to therapy if they feel it will help them manage or control their condition, or if they expect substantial repercussions if they don't. Providers are crucial in assisting patients in comprehending the nature of the condition, possible treatment advantages, addressing concerns about potential side effects and occurrences, and encouraging patients to acquire self-management skills. It is critical for doctors to investigate patients' views and worries regarding the treatment's safety and benefits, as many patients have silent misgivings. Inadequate adherence is also caused by complex regimens and polytherapy [4].Patients must undoubtedly make several changes and adaptations to their everyday habits in order to fit into the therapeutic regimen. Non-adherence to the prescribed dietary change and medications is prevalent among patients after percutaneous coronary intervention. The needed dietary change (restricted in fat and salt) and the numerous medications must take, in addition to behavioral and medical follow up all of them make challenge to maintain health. Chronic disease management necessitates a lot of effort on the part of patients, their families, and caregivers. Non-adherence to diet and medicine can have substantial effects, including poor health outcomes and increased morbidity and death [5].

Educational status and health literacy, socioeconomic status, the presence of multiple co-morbidities, the complexities of the medication regimen, and inadequate education about the prescribed lifestyle change or medicines have all been suggested as precipitating factors that affect medical advice adherence [6, 7].Several educational interventions have been created and implemented across the world to empower people with chronic conditions by improving their knowledge or psychological readiness to sustain advised adjustments or adherence to prescribed drugs [8]. The CAD patients views, health-related behaviors, and adherence to the suggested diet and drugs were all changed as a result of the experiences and time spend with new life style [9].Patients must be actively engaged in their therapy, with non-adherence prevention techniques in place. The medical regimen should be adjusted as rarely as possible to avoid interfering with memorization, which leads to forgetting and, as a result, non-

adherence. Medical or nursing appointments are used to inform or speak with the client and his or her family on the last stages of disease, its results, and of natural progression of disease [10].Adherence is the degree to which a patient willingly participates in activity or is guided toward following health advice. Adherence is critical for patients in order for them to have the motivation and internal moral incentive to achieve their goals. The objective is for them to recover from their disease [11].

In individuals with CAD, non-adherence to pharmaceutical or non-pharmacological therapy (nutrition, behavioral, and medical follow-up) based on agreed-upon advice from healthcare professionals is prevalent. Non-adherence to maintenance medications, stopping smoking, maintaining physical activity and regular exercise, beginning pulmonary rehabilitation, continuing the post-exercise, exercise recipe, and adhering to effective self-management patterns result in a variety of undesirable outcomes [12].Patients' non-adherence to therapy, which the World Health Organization (WHO) has identified as a new medication problem, is the majority of the repercussions encountered by health-care professionals. Patients' non-adherence to therapy is mostly influenced by traditional treatment procedures. The drug's usage in this situation might be costly, and it could endanger the lives of CAD patients. According to [13], in order to prevent possible hazards, an issue should be recognized and appropriate remedies implemented.Adherence to therapy should be considered a health problem for individuals with chronic conditions, such as those with chronic obstructive pulmonary disease. Patients' life and other health issues may be jeopardized if they do not follow the treatment plan. Problems can also lead to an increase in costs and a waste of effort and time; for example, non-adherence to medicine is a genuine issue [14].

Material and Methods

The current paper employs a cross-sectional, quantitative, descriptive methodology to assess patients' adherence to therapeutic recommendations following percutaneous coronary intervention. This study began on October 1st, 2020 and concludes on May 1st, 2022 in order to accomplish the aforementioned objectives through the department of adult nursing at the college of nursing at the University of Babylon. During the study period, 120 patients who underwent PCI were included in this study using a non-probability purposive (according to the researcher-determined inclusion and exclusion criteria) design at Alnajaf centre of cardiac surgery and cardiac Cath. in Alnajaf Alashraf.Clients at this center receive therapeutic suggestions for nutrition, behavior, medicine, and medical follow-up following percutaneous coronary intervention, particularly prior to release by a health care practitioner.The Adherence questionnaire had 52 items divided into four categories: dietary, behavioral, medicine, and medical follow-up domain to assess patients adherence to therapeutic recommendations through 3 Likert scale measure.The current study's data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20 and Microsoft Excel (2010). These data are evaluated using two statistical methodologies that may aid in determining the outcomes like: descriptive statistics, and inferential statistics

Results

Table (1) illustrates that major portion of study's sample which compose approximately (40.8%) percent of total number of study participant's drop within ranking of (51-60) years old. Versus the ranking of (31-40), appear to be the smallest group via 4.2% percent, also it is important to note the mean and standard deviation of participants age which appear at this table consequently by 59.38(10.87). Regarding the term gender, the study results revealed that the majority of individuals included in the study, which serve approximately (65.8%) percent of total sample size are male. In relation with persons educational categories, the study's present that (20.8%) percent within whole participants whom involved in the research project are intermediate school graduated, on the other side primary school graduated come in the second step by (19.2%) percent while the smallest group of them are of college or higher graduated by (8.3) percentage. Additionally, and concerning the residency the study statistics reflecls that 59.2% of 100% sample are rural residence. Concerning the subjects' marital status, the table shows that biggest portion up to (90%) percent of the study sample are married. In regards to the last item of study participants' demographic characteristics, occupational status the above table reflects that up to (25%) of them continued with free jobs. While housewives and employed ones build the same percentage of sample size by (17.5) percent and this range is the smallest part of total number of people involved in this study.

Table 1
Demographical Characteristics of Study Sample

Demographic Data	Rating And Intervals	F	%
Age / years	(31-40)	5	4.2
	(41-50)	17	14.2
	(51-60)	49	40.8
	(61-70)	30	25.0
	(71<)	19	15.8
	Total	120	100
Mean (St. deviation.)	59.38(10.87)		
Gender	Male	79	65.8
	Female	41	34.2
	Total	120	100
Levels of education	Illiterate	16	13.3
	Able to read and write	20	16.7
	Primary school graduated	23	19.2
	Intermediate school graduated	25	20.8
	Secondary school graduated	12	10.0
	Institute graduated	14	11.7
	College graduated / higher	10	8.3
	Total	120	100
Residency	Urban	49	40.8
	Rural	71	59.2

	Total	120	100
Marital status	Single	7	5.8
	Married	108	90.0
	Widowed	4	3.3
	Separated	1	.8
	Total	120	100
Occupation	Retired	22	18.3
	Housewives	21	17.5
	Employee	21	17.5
	Jobless	26	21.7
	Free job	30	25.0
	Total	120	100

F (frequency), % (percentage), St. deviation (standard deviation), and < (less than).

Table 2
Assessment of Overall Patients Adherence to Therapeutic Recommendations

Main Domains	Rating & ranking	F	%	M.S.	Asses.
Overall assessment for patients' adherence	Poor	11	9.2	2.07	Fair
	Fair	85	70.8		
	Good	24	20.0		
	Total	120	100		

Cut off point (0.66), M.S (mean of scores), poor (mean of score 1-1.66), fair (mean of score 1.67-2.33), high (mean of score equal or more than 2.34), F (frequency), % (percentage), and Asses. (Assessment).

Figure 1. Patient Adherence to Therapeutic Recommendations

To answer the study objective table (2) find that the majority of study sample have fair level at mean of score of (2.07) and range of (70.8) percent.

Table
The Association between Patients' Adherence to Therapeutic Recommendations and Their Demographic Data

Demographic Data	Rating And Intervals	Poor	Fair	Good	X^2	D.F	P-Value
Age / years	(31-40)	1	3	1	20.004	8	.01 (H.S)
	(41-50)	0	8	9			
	(51-60)	3	38	8			
	(61-70)	6	21	3			
	(71<)	1	15	3			
Gender	Male	8	56	15	.351	2	.839 (N.S)
	Female	3	29	9			
Levels of education	Illiterate	2	13	1	29.611	12	.003 (S)
	Able to read and write	4	15	1			
	Primary school graduated	0	21	2			
	Intermediate school graduated	2	19	4			
	Secondary school graduated	0	7	5			
	Institute graduated	2	7	5			
	College graduated / higher	1	3	6			
Residency	Urban	6	31	12	2.36	2	.307 (N.S)
	Rural	5	54	12			
Marital status	Single	1	4	2	12.291	6	.056 (N.S)
	Married	9	77	22			
	Widowed	0	4	0			
	Separated	1	0	0			
Occupation	Retired	2	16	4	7.176	8	.518 (N.S)
	Housewives	3	16	2			
	Employee	0	14	7			
	Jobless	2	20	4			
	Free job	4	19	7			

X^2=X^2 = Chi-square, D.F= Degree of freedom, P-value= Probability value, N.S.= Non-significant, S.= Significant, H.S.=Highly significant.

Table (3) reveals the relationship between patient's adherence to therapeutic recommendation and their socio-demographic data. The results find out that there are significant association regarding to the age groups through p-value of less than 0.01, degree of freedom of 8, and chi-square value of 20.004. In relation to level of education, also this table shows that there is highly significance association depending on p-value 0.003, degree of freedom 12 and X2 value equal to 29.611. Concerning the remainder demographic characteristics there are no relationship marker because of p-value of more than 0.05.When interpreting the above table it is clearly visible that concerning age groups, patients with younger age have better adherence to therapeutic recommendations than older one. In

addition, in concerning with level of education as the patient's level of education increases their adherence also increases.

Discussion

The present research illustrates that vast majority of the study respondent resides in urban areas, which is in line with previous findings. This finding is consistent with the findings of [15], who found that the majority of the research sample resides in large cities rather than rural areas, as previously reported. Furthermore, [16] believe that the bulk of research participants come from urban residential areas, which is supported by the data. Also in agreement with the present study's findings is [17], who discovered that 78.8 percent of his study sample came from metropolitan areas, which is consistent with the present study's findings. When it comes to the gender of the study respondents, the findings suggest that men constitute a greater proportion of the study sample, as demonstrated in the current study by a margin of (65.8) percent. Accompanying this finding are the findings of [18], as well as [19], who both concluded that the vast majority of patients with ischemic heart disease are male. As an additional point of agreement, the current research corroborated the findings of [20], who conducted a study to assess "Knowledge and Meaning of Cardiac Catheterization from the Perspective of Cardiac Patients," and discovered that the vast majority of the participants in the study were men.

According to [21], a study published in the Cardiology journal to determine the predictors of medical management in patients undergoing elective coronary angioplasty (CC) for chronic ischemic heart disease had the same results as this study, which revealed that the majority of the patients (74 percent) were men.Regarding the age groups included in the study sample, the findings suggest that the largest proportion of the study sample falls within the age range of (51-60) years old, which accounted for 40.8 percent of the total. Additionally, the study showed that the mean and standard deviation for age groups were 59.38 and 59.38, respectively (10.87).The present study agreed with a study done in Egypt by [22], which indicated that the majority of the analyzed patients were between the ages of 18 and 25. (51-60). This conclusion was similar with the findings of [23], who discovered that the age of the patients in their research ranged from (51-65) years at the time of the investigation. This study, which was published in the American Journal of Cardiology in 2012 and analyzed "the efficacy, and outcomes of cardiac catheterization in Nonagenarians," indicated that the majority of the sample was in the age range of 53-61 years, which corresponds to the findings of this study.

Finally, the findings of [24] indicate that the majority of patients are between the ages of 45 and 65, which is consistent with the findings of the current study.According to [25], these findings are compatible with a large number of scientific facts, which suggest that the risk for ischemic heart disease increases with increasing age in humans. Individuals with advanced age are less likely to engage in regular physical activity, which is related to the physical impairment of the ageism phenomenon. Another factor is that regular physical activity is difficult for individuals with advanced age are less likely to engage in regular physical activity. He also points out that the risk of developing hypertension and

diabetes mellitus increases as a patient's age increases, which increases the likelihood of developing ischemic heart disease in the elderly population.When it comes to marital status, the majority of the research individuals are happily married (90 percent). It was discovered that a large proportion of study participants are married. This finding is similar to that of [26], who discovered that a large proportion of study participants are married. The majority of respondents in this survey are above the age of fifty-five, which is consistent with the standard finding that the majority of them are married.

Finally, [27] discovered that the association among both marriage status and health status differed depending on the sex of the study respondents. Being single and never married was found to be a substantial risk factor for hypertension in men, as well as a significant risk factor for death in this group.According to the educational levels examined in this survey, those who graduated from intermediate school (20.8% percent) and those who graduated from elementary school (19.2% percent) had the highest percentage of graduates. In addition, the survey reveals that institute graduates (11.7 percent) and college graduates or higher with (8.3 percent) made up the smallest proportion of study participants in this regard as well.In this regard, according to the findings of the study done by [28], 31.2 percent of patients had completed primary school, 23.7 percent had completed high school, and just 20.4 percent had completed university. According to the findings of [29] study, 68.33 percent of those working in the same profession had a poor degree of education. In addition to the previously stated research, the study by [30], which indicates that 79 percent of the respondents had educational levels below pre-university level, is in agreement with and supports these findings. Pre-university education is the most common level of education, accounting for 21% of all levels.

In terms of employment status, the patients who are free to work (25 percent) have the greatest rate of participation, followed by the patients who are unemployed (21.7 percent). Among the reasons for this outcome are not only the advanced age of the patients (both male and female), but also the fact that ischemic heart disease is exacerbated by several factors such as excessive physical activity, exposure to cold weather, and emotional stress, all of which cause the patients to be forced to leave their places of employment. The findings of [31] indicate that fifty two percent of the research total sample are out-work, but [32] illustrate that the largest proportion of study participants is out of work at 60 percent, and these findings corroborate the current study's conclusions about employment.In terms of disease duration, the highest percentage (72.5%) is seen among people who have been afflicted by the condition for less than 6 years. This results is consistent with the findings of the [25] research, which was conducted at the same cardiac facility and argues that ninety one percent of People who took part in the study had been ill for less than 4.5 years at the end of the study period. When it comes to past admissions, the highest percentage is seen among those who are accepted for the second time (38.3 percent), followed by those who are admitted for the third time.

Patients' adherence to therapy suggestions is found to be fair in the majority of research participants, according to the study's findings, which have a mean score of (2.07) and a rate of (70.8) percent. Furthermore, the data demonstrates that

excellent adherence levels are much higher than bad adherence levels, by a factor of (20) and (9.2) percent, respectively. Among cardiac patients in Iran, the researchers at [33]. Conducted a study in 2015 on the relationship between awareness of disease and adherence to therapeutic regimens. According to the findings of the study, the majority of study participants had a high degree of adherence to therapy recommendations, with just a tiny proportion of them having a low level of adherence. However, the findings of this study differ from those of the current study on the one hand, and they are consistent with them on the other, as this study demonstrated that patients who are highly committed to their treatment have the highest percentage of patients who adhere to treatment recommendations. The findings of this study were in agreement when they demonstrated that the minority of participants in this study were those who did not follow to treatment suggestions to a high enough degree. When assessing the nature of relationships, it is apparent that, when it comes to age groupings, younger patients adhere to therapy suggestions better than older patients. Furthermore, when it comes to degree of education, as a patient's level of education rises, so does their adherence.

In [34] study on the relationship between patient variables and medication adherence. Their findings back with the current study, indicating that there is a strong link between a patient's educational level and their adherence to therapy suggestions. In another study published in 2020 [35], The Link between Locus of Control Orientation and Patients' Adherence to Medication After Chronic Obstructive Pulmonary Disease, the findings revealed a significant relationship between study participants' educational levels and their medication adherence. Similarly, [36] research on "The effect of locus of control on self-rated health in the setting of chronic illness." Their findings suggest that there is a relationship between medication adherence and a high degree of education. In addition, [37] in Factors influencing adherence to psychopharmacological medications in psychiatric patients: a structural equation modeling approach, "The first logistic regression model built to predict adherence according to sociodemographic variables showed a strong link between gender, age, and level of education, and treatment adherence to psychopharmacological medications. Female gender, older age, and a university degree all boosted treatment adherence, according to this study.

After adding the clinical variables (medication utilized, quantity of medicines used, treatment length, and diagnosis) to the second logistic regression model (Model 2), age and educational level continued to favorably affect treatment adherence. After the attitudinal factors were included to Model 3, the variables that increased adherence were age and education. Finally, after including the perceived health control variables (health locus of control, general self-efficacy, and psychological reactance) in the fourth model, it was discovered that age was the only significant demographic variable that predicted a high level of treatment adherence, while university degree was marginally significant."Finally, in regarding the link between age and therapeutically adherence, [38], complement our findings by revealing a very significant link with a probability value of 0.001, which is consistent with our findings.

Conclusion

Patients' adherence to therapeutic recommendations is moderate after PCI. As age increases, adherence to therapeutic recommendations decreases. Good level of adherence accelerates among patients with high educational level.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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