Factors Affecting Adherence to Therapeutic Regimens and it's Association with Knowledge Level among Patients with Cardiac Valve Replacement

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Abstract

Background: Adherence is a dynamic, multidimensional process in which many factors play a part. So, nurses play an important role to informed Patient with all health information needed about the medical condition, to improve quality of life. **Aim:** This study aimed to assess factors affecting adherence to therapeutic regimens and it's association with knowledge level among patients with cardiac valve replacement. **Design:** A descriptive exploratory design was conducted to achieve aim of this study. **Setting:** the study was carried out in Cardiac Surgery Care Unite and Department at Benha University Hospitals and Heart Academy Hospital at Ain Shams University. **Subjects:** A Convenient sample of 60 patients admitted in previous mentioned setting. **Tools:** Three tools were used to collect the study data. Tool I: Patient's knowledge assessment questionnaire, Tool II: adherence scale, Tool III: Medical and socio-economic factors affecting adherence to therapeutic regimen. **Results:** 80% of studied patients had unsatisfactory level of knowledge. 65% of them had low level of adherence to therapeutic regimen, the study revealed that**,** 43% of them had highly affecting with social factors, while, 57% of them had low affecting with physical factors. **Conclusion:** There were high percentages of patients had unsatisfactory level of knowledge and low level of adherence in the light of presence of affecting factors. finally, there was a positive correlation between total adherence and total knowledge. **Recommendations:** Establishment of patients' educational centers in hospitals equipped by suitable related materials, medias and audio-visual aids for teaching all patients with cardiac valve replacement how to cope with their health condition.

Keywords: Adherence , Cardiac valve replacement, Factors, Knowledge, Therapeutic regimen.

Introduction

Cardiac valve surgery is a procedure to treat cardiac valve disease. Cardiac valve disease involves at least one of the four heart valves not working properly. Cardiac valves keep blood flowing in the correct direction through the heart. The four heart valves are the mitral valve, tricuspid valve, pulmonary valve and aortic valve. Each valve has flaps called leaflets for the mitral and tricuspid valves and cups for the aortic and pulmonary valves. These flaps should open and close once during each heartbeat **(Ferri, 2020).**

There are many causes of heart valve damage include: Congenital heart disease (bicuspid aortic valve), inflammatory/ immunologic disorders (rheumatic fever, AIDS), bacterial infection, viral infection and inflammation of valves (infective endocarditis), endo cardiac disorders diseases and disorders of other organs (chronic renal failure, aging, calcific aortic stenosis and mitral annular calcification) **(Yang et al., 2021).**

The basic types of cardiac valve disease usually takes the form of stenosis as blood flow is obstructed or regurgitation with retrograde

of blood flow, valve disease occurs in all four cardiac valves, but it is most commonly found in the mitral and aortic valves followed by bicuspid aortic valve **(O'Donnell & Yutzey, 2020).**

Mechanical and biological valves are used to replace damaged valves **(Borregaard, et al., 2022)**. Mechanical valves are usually made from materials such as plastic, carbon, or metal. Mechanical valves are strong, and they last a long time. Because blood tends to stick to mechanical valves and create blood clots, patients with these valves will need to take blood-thinning medicines (anticoagulants) along their life **(Bahaa, et al., 2021).** Biological valves are made from animal tissue (called a xenograft) or taken from the human tissue of a donated heart (called an allograft or homograft). Sometimes, a patient's own tissue can be used for valve replacement (called an auto graft). it doesn't increase risk of developing blood clots, doesn't last as long as a mechanical valve and may require replacement in the future **(Syed, et al., 2021,).**

Adherence is defined as the extent to which a person's behaver in taking medication, following a diet and performing changes in lifestyle, corresponds to the recommendations agreed upon by a health professional. Producing an effective improvement, could either reduce the risk of complications caused by ineffective treatment or decrease the frustrations of the health **(Keenan, 2017).**

There are many factors affecting patients' compliance toward therapeutic regimen include; social and economic factors (e.g., family functioning, social supports and medication costs), health care system-related factors, condition-related factors (e.g. symptoms, comorbidities, psychiatric conditions), therapy-related factors (e.g., treatment side effects, duration of treatment and regimen complexity) and patient-related factors (e.g. health beliefs, self-efficacy, knowledge and perceived barriers to compliance)) **(Suhail et al., 2021**) .

So, knowledge plays an influential and significant part of a patient's life and recovery High levels of knowledge about nature of disease, risk factors and self-efficacy increase the level of drug use, change lifestyle and self-care. Knowledge and awareness have a major role in coping with their condition, controlling their symptoms, understanding and accepting their prescribed treatment, recognizing the time they need medical follow-up, in other words: exerting control over their own situation **(Ali, et al., 2017).**

Nurses have an important role in influencing patients adherence toward therapeutic regimens and ability for change behaviors and promote treatment. Patients should be active partners with healthcare professionals in their own care and thus, good communication between patient and healthcare professional is a must for an effective clinical practice **(Pedretti et al., 2022).**

Significance of the study

Degenerative valve disease has replaced rheumatic heart disease (RHD) as the leading cause of valvar heart disease (VHD). RHD remains the most common cause of VHD in developing countries and affects 33.4 million people worldwide. In developing countries. In 2018 the prevalence of moderate VHD is 2.5% and increases with age. Mitral regurgitation and aortic stenosis are the most common VHD in the community and hospital settings, respectively. . The incidence of infective endocarditis has remained stable at 3 to 7 cases per 100,000 person years, but Staphylococcus has

replaced Streptococcus as the most common organism **(Rhdgen, 2021).**

In Egypt, mitral valve replacement surgery representing (33.9%) followed by combined

aortic valve replacement and tricuspid valve repair **(Elnahal, et al., 2022)**. According to Benha University Hospital statistical center the number of cases of cardiac valve replacement admitted to cardiac surgery unit in the latest three years were (38cases in2019,42cases in 2020 and 44cases in 2021) **(Statistical Center of Benha University Hospital, 2021)**. According to Heart Academy in Damerdash Hospital, Ain Shams University the number of cases admitted to cardiac surgery unit in the last year was 300 cases **(Statistical Center of Heart Academy in Demerdash Hospital, 2021).**

Aim of study:

The study aimed to assess factors affecting adherence to therapeutic regimens and it's association with knowledge level among patients with cardiac valve replacement.

Study questions:

- What is the level of patients' knowledge regarding cardiac valve replacement?
- What are factors affecting adherence to therapeutic regimens among patients with cardiac valve replacement?
- Is there a significant association between knowledge and adherence to therapeutic regimens among patients with cardiac valve replacement?

Study design:

A descriptive exploratory study design to achieved the aim of study.

Study Setting:

The study was conducted in Cardiothoracic Surgery Intensive Care Unit, it is located in the second floor, which contain 5beds, and Cardiac Surgery Department, it is located in the third floor which contain 12beds at Benha University Hospital. as well as, Cardiothoracic Surgery Intensive Care Unit, it is located in the fourth floor which contain 11beds, Cardiac Surgery Department it is located in the sixth floor which contain 17 beds at Heart Academy in Demerdash Hospital affiliated to Ain Shams University.

Study subjects:

Convenient sample of 60 conscious patients, adult male and female, age with the group of ranged from 20-60 years old admitted to previously mentioned settings with heart valve replacement within 6 months and agreed to participate in the study.

Tools for data collection:

Data were collected through the following three tools:

Tool (1): Patient's Knowledge Assessment Questionnaire.

This tool was developed by the researchers based on reviewing of literature **(Erfan,et al.,2021)**, this questionnaire was presented in simple Arabic language related to different aspects .It included three parts: Part I: patients' personal data. Part II: Patients' medical history. Part III: Patients' Knowledge Questionnaire.

Scoring system for knowledge:

The score was distributed as: each correct answer was given one mark and each incorrect answer was given zero.

The total score which was converted into percentage and categorized into:

≥70 % was graded as satisfactory level of knowledge.

≤ 70% was graded as un satisfactory level of knowledge**.**

Tool II: Adherence scale:

It was adapted from **(WHO., 2017; Etiwa et al., 2022)**, it was concerned with assessment of patients' adherence level regarding to therapeutic regimen including medication, diet, level of exercise, rest, sleep and follow up.

Scoring system for adherence:

The responses were measured on a three point Likert scale and polarized in (1= all times, 2=

sometimes, 3= never). Scores of the statement of each component were summed up, converted into percent score and the total was divided by the number of the items, giving a mean score for each component. The total adherence level was considered adherent if percent score equal 60% or more and not adherent if less than 60%.

Tool III: Medical and Socio-economic Factors Affecting Adherence to Therapeutic Regimens:

It was adapted from **(WHO, 2017, Etiwa et al ,.2022),** it was concerned with assessment of factors affecting adherence to therapeutic regimens among patients post cardiac valve replacement

Scoring system:

The responses were measured on (No = 0, Yes= 1). Score of the statement of each component were summed up, converted into percent score and the total divided by the number of the items giving mean score for each component, total score Medical and socio-economic factors affecting adherence to therapeutic regimens level was

considered effective factors if percent score equal 60%.

 effective factors if more than 60%.

Content Validity:

The tools were revised and ascertained by a panel of five experts from the field of Medical Surgical Nursing and Cardiac surgery at Faculty of Nursing Banha University (3 Assist professor, 2professor) their opinions were regarding the content, format, layout, consistency, accuracy and relevancy of the tools needed modifications were applied.

Reliability:

Testing reliability of knowledge questionnaire was determined using Cronbach's alpha coefficient which was 0.877. For the second tool adherence, reliability was 0.880 and medico economic factors was 0.

705. This only proves that this tool is an instrument with good reliability.

Administrative Design:

Permission was obtained from the dean of faculty of nursing, Benha University, the director of Benha university hospital and Heart Academy in Damerdash Hospital, Ain Shams University. The official permission was included the aim of the study and tools of data collection.

Ethical considerations:

The research approval was obtained from the Ethical Committee in the Faculty of Nursing, Benha University before starting the study. Approval on informed oral consent from all study patients was obtained after explaining the purpose of study to gain their trust and cooperation. Each patient has choice to participate or withdraw from the study. privacy and confidentiality were assured. Patients' Ethics, values, cultures and beliefs were respected.

Pilot study:

A pilot study was conducted on 10% of the study sample (n = 6) patients with heart valve replacement in order to test the applicability, clarity, feasibility of tools then modification was carried out according to the results of the pilot study. Also, the pilot study had served to estimate the time needed for filling the form and to identify obstacles that may be encountered during data collection. The patient who were in the pilot study were excluded from the study sample because modifications were done after conducting the pilot study.

Field work:

Data were collected from the beginning of October 2022 to the end of march 2023, after taking proper permission from hospital director, at Benha university. The total number 20 patients, and from 14 march 2023 to the end of august 2023, at Heart Academy in Damerdach Hospital, at Ain Shams University.

The total number 40 patients, (work schedules on Saturday, Tuesday and Wednesday / week during afternoon shifts from 1pm to 3pm).

The researchers started by introducing herself to the patients, the aim of the study and the components of the tools were explained to the patient who agreed to participate in the study prior to any data collection. Finally, patient's personal data obtained from patients. Researchers assessed each patients' past, present and family history and assessed patients level of knowledge regarding cardiac valve replacement using tool I and time required to fill the questionnaire was range from 10 - 15 minutes. Then researchers assessed patient level of adherence to therapeutic regimens using tool II and time required to fill the tool was 10 minutes, after that, the researchers assessed factors that affect adherence to therapeutic regimens among patient with heart valve replacement using tool III and time required to fill the tool was 10 minutes.

Statistical analysis:

The collected data organized, tabulated and statistically analyzed using Statistical Package for Social Science (SPSS) version 25 for windows, running on IBM compatible computer. Descriptive statistics were applied (e.g. frequency, percentages, mean and standard deviation). Qualitative variables were compared using qui square test (x2) as the test of significance and paired (t) test was used to compare between quantitative variables. Correlation coefficient test (r) was used to test the correlation between studied variables. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered when $p < 0.01$. No statistical significance difference was considered when $p > 0.05$.

Results:

Table (1) shows that, 46.7% of studied patients were within age group of 50- 60 years with a mean age of 50.37 ± 0.663, 63.3 % of the studied group were females, 71.7 % were married and 70.0 % lived in rural area45,0 % of the studied patients could read and write and 50% of them were housewives as well as 60.0% reported that their monthly income is not enough for treatment costs.

Table (2) shows that, 40% of patients had comorbid disease ,86.7% of studied patients hadn't previous surgery, 88.35% hadn't any other heart disease.

Figure (1) illustrates that 45.8% of of studied patients had hypertension followed by 29.2% had diabetes mellitus. Table 3 shows that, 55.0% of them had their mitral valve replaced. 83.3% of them had periodic examination.

Figure (2) illustrates that 80% of them had un satisfactory level of knowledge, while 20% of them had satisfactory level of knowledge. Figure 3 illustrates that**,** 35% of them had high adherence level, while 65% of them had low adherence level. Figure 4 illustrates that, 43% of them had highly affected factors, while 57% of them had low affecting factors.

Table (3) shows, the there was a significant statistically relation between total adherence level and educational level, occupation level and monthly income.

Table (4) shows that social factors were the highest affecting factors of adherence to therapeutic regimens While, their lowest affecting factor for adherence was the physical factors.

Table (5) shows that there was a positive correlation between total knowledge and adherence to therapeutic regimen among the studied patients.

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Table (1): Distribution of the studied patients according to their personal data (n = 60).

| Patients' personal data		(No.)	%
Age (in years)	30-<40	6	10.0
	40-<50	26	43.3
	50- 60	28	46.7
	Mean ± SD	50.37± 0.663	
Gender	Male	22	36.7
	Female	38	63.3
Marital status	Single	1	1.7
	Married	43	71.7
	Widowed	11	18.3
	Divorced	5	8.3
Residence	Urban	18	30.0
	Rural	42	70.0
Education level	Illiterate	7	11.7
	Read and write	27	45.0
	Secondary education	20	33.3
	High education	6	10.0
Occupation	Employee	7	11.7
	Housewife	30	50.0
	Free work	12	20.0
	Retired	11	18.3
Monthly income	Enough for treatment costs	24	40.0
	Not enough for treatment costs	36	60.0
Current financing for the cost of treatment	Health insurance	37	61.7
	At state expense	23	38.3
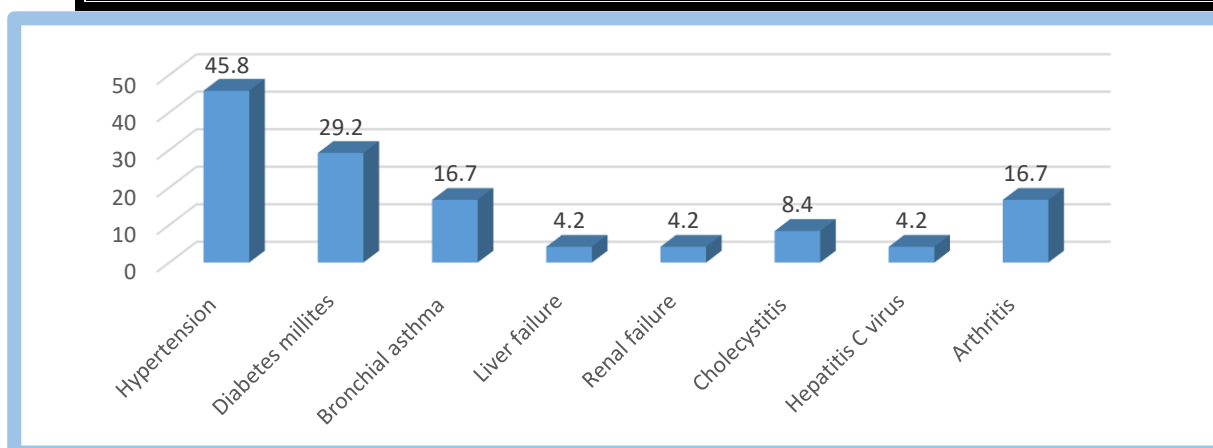
Figure (1). Distribution of the studied patients according to comorbid diseases (n= 24) #
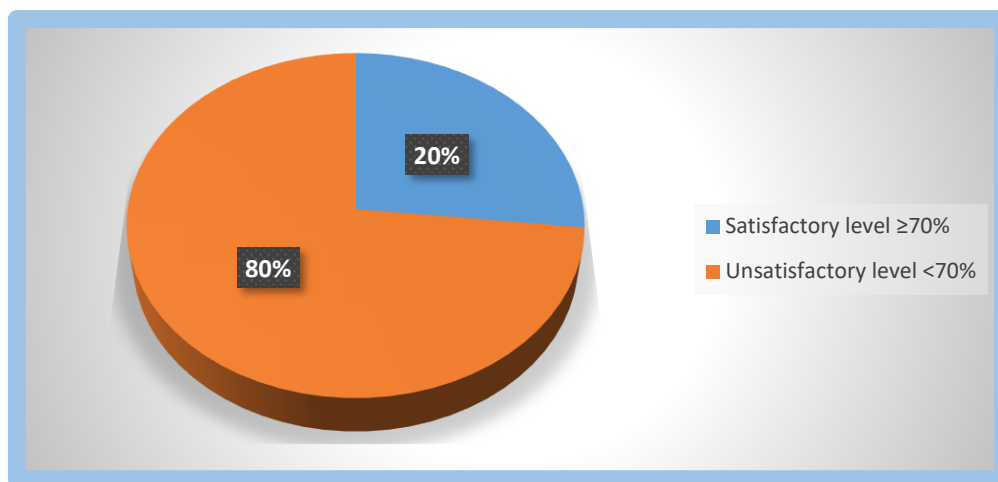**# not mutually conclusive**

Figure (2). Distribution of the studied patients according to their total knowledge level regarding heart valve replacement (n= 60)
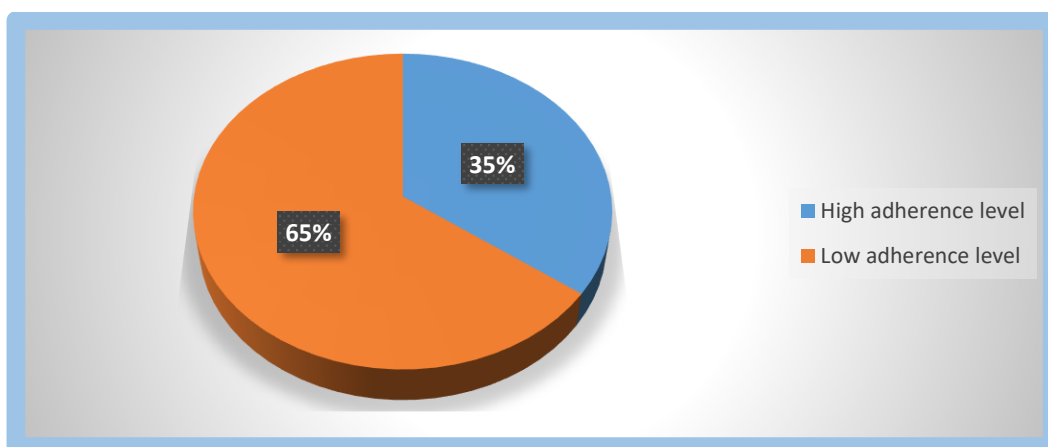

Figure (3). Distribution of the studied patients according to their total adherence level to therapeutic regimen (n= 60)
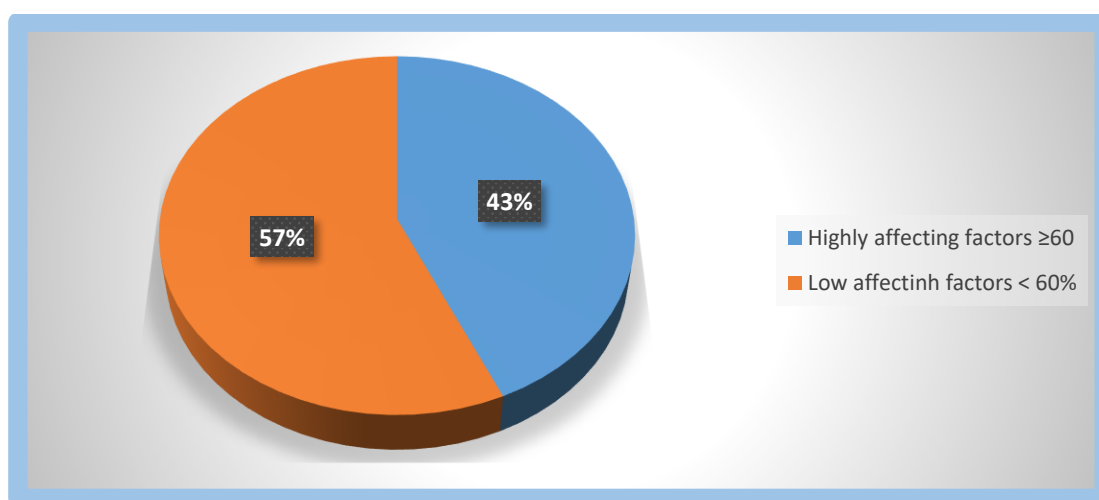

Figure (4). Distribution of the studied patients according to the total medical and socio-economic factors affecting adherence to therapeutic regimens among the studied patients (n= 60)

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Table (3): Relation between total adherence level to therapeutic regimen and personal data of the studied patients (n = 60).

Personal data	Total adherence level				Chi-square	
	High adherence (n=21)		Low adherence (n=39)		X^2	P value
	No.	%	No.	%		
Age						
30-<40	1	4.8	5	12.8	1.597	0.450 n.s
40-<50	11	52.4	15	38.5		
50-60	9	42.8	19	48.7		
Gender						
Male	9	42.9	13	33.3	0.533	0.465 n.s
Female	12	57.1	26	66.7		
Marital status						
Married	0	0.0	1	2.6	5.874	0.118 n.s
Single	19	90.4	24	61.5		
Divorced	1	4.8	10	25.6		
Widowed	1	4.8	4	10.3		
Residence					1.008	0.315 n.s
Urban	8	38.1	10	25.6		
Rural	13	61.9	29	74.4		
Education						
Illiterate	2	9.5	5	12.8	1.283	
Read & write	8	38.1	19	48.7		
Secondary	8	38.1	12	30.8		0.733 n.s
University	3	14.3	3	7.7		
Occupation						
Employee	0	0.0	7	17.9	7.786	0.050*
Housewife	10	47.6	20	51.3		
Free work	4	19.1	8	20.5		
Retired	7	33.3	4	10.3		
Monthly income						
Enough for treatment costs	12	57.1	12	30.8	3.956	0.047*
Not enough for treatment costs	9	42.9	27	69.2		
Current financing for the cost						
Health insurance	14	66.7	23	59.0	0.342	0.559 n.s
At state expense	7	33.3	16	41.0		

(n.s) Not significant   (*) Statistically significant

Table (4): Mean and standard deviation of total medical and socio-economic factors affecting adherence to therapeutic regimens among the studied patients (n = 60).

Adherence to therapeutic regimen	Total level		Total Score	Mean ±SD	Mean %	Ranking
	Highly affecting factors ≥ 60%	Low affecting factors <60%				
	No. (%)	No. (%)				
Medical factors	22(36.7)	38(63.3)	10	4.700 ± 2.211	47.0%	2
Social factors	45(75.0)	15(25.0)	5	3.300 ± 1.168	66.0%	1
Physical factors	35(58.3)	25(41.7)	2	0.783 ± 0.761	39.2%	3

Table (5): Correlation coefficient between studied patients' total knowledge and adherence to therapeutic regimen (n=60).

Variables	Total knowledge	
	R	P value
Total adherence	.286	0.027[*]

*A Statistical significant p ≤ 0.05

Discussion

Valvar heart disease (VHD) is a major contributor to loss of physical function, quality of life and longevity. So, patient must be fully informed with all health information needed about the medical condition, different available line of treatment and potential complications risk for each one to achieve treatment success among patients with cardiac valve replacement. Nurses and health care providers must be familiar with patient`s priorities, expectations and tailoring intervention for each patient to reach high level of patient`s satisfaction with treatment success and minimize risk of complications as well as in return improve patients' quality of life **(Javan, et al 2019)**.

The result of the present study revealed that, approximately near half of studied groups were within age group of (50- 60) years old with a mean age of 50.37± 0.663 years, the researchers' opinion regarding this group of age may be due to the aging process, disease prognoses and increase the risk for chronic diseases and disabilities. These findings were supported by findings of **Abd Elhafeez, et al**

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(2023) who conducted study about "Health Related knowledge and Behaviors among Patients with Coronary Artery Disease" and reported that more than half of patients under study were between the age group 50 to less than 60 years,, While coming into contradiction with **Ahmed, et al. (2023)** who conducted a study about " Functional Health Status Assessment for Patients Undergoing Coronary Artery Bypass Graft" and stated that, the highest percentage of studied patients ages ranged between forty to sixty-five years old. Concerning gender of the studied patients, the present study findings revealed that about more than three fifth of the studied group were females. According to the researchers' opinion, this may be because of the study participants were of marriage age and subjected to the stress of daily life.

This finding was to some extent in agreement with the study by **Ferreira, et al., (2018),** who conduct study about "Effect of a Perioperative Intra-Aortic Balloon Pump in High-risk Cardiac Surgery Patients" and found that the female is at highest percentage of studied patients and females are more risk especially with advanced age. On the other hand, this finding was in contrast with the result of a study done by **Ahmed, et al (2023)** who stated that the highest percentages of studied patients were males. Concerning marital status, the current study revealed that near three quarters of the studied patients were married. According to researchers' opinion this was may be due to the Egyptian social and religious principles which dominate the value of marriage.

This finding was correspondent to **Said, et al. (2022)**, who conducted a study about "Assessment of Patients' Knowledge and Lifestyle Before Coronary Artery Bypass Grafting Surgery" and reported that most of the study subjects were married. Regarding

Residence, the current study found that about two thirds of studied patients lived in rural area. According to researchers' opinion this due to low economic status and according to place of birth. Finding was in the same line with **Said, et al (2022)** who conducted a study about "Health Related Quality of Life for Patients after Mitral Valve Replacement Surgery" and reported that majority of studied patients lived in rural areas. On the other hand, this finding disagreed with **Mohamed, et al (2022)** who carried out a study about "Adherence to Therapeutic Regimen among Patients undergoing Coronary Artery Bypass Graft Surgery" and stated that the majority of the studied patients were lived in urban areas. Regarding patient' level of education, the current study revealed that around near half of the studied patients could read and write and. According to researchers' opinion this was may be due to social factor and financial factor make patients in this age group see that this level of education was enough.

This finding was in agreement with **Khodaveisi, et al (2023),** who carried out a study about "Effect of Education Based on the Health Belief Model on Treatment Adherence in Patients With Heart Valve Replacement Surgery" and demonstrated that approximately two fifth of the studied patients could read and write, this finding was on contrary with **Markova, et al (2022)** who conducted a study about " Compliance of patients after prosthetics mitral double valve mechanical prostheses" and stated that more than two third of the studied patients had secondary education.

Furthermore, as regard to occupation, the current study found that half of the studied patients were housewives (not working). According to the researchers' opinion, this may be because culture of some families that woman should not work. This finding was

consistent with **Ni, et al (2023)**, who performed in their study about ″Adherence, Belief and Knowledge about Oral Anticoagulants in Patients with Bio prosthetic Heart Valve Replacement″ and pointed out that three quarters of the studied patients were not working. But this finding was contradicted with **Berg, et al (2019)** whose study was about ″Patient-Reported Outcomes are independent predictors of one-year mortality and cardiac events across cardiac diagnoses″ and found that more than two thirds of studied patients worked in public and private sector.

As regards Economic Status, the current study found that three fifth of the studied patients reported that their monthly income was not enough for treatment costs. According to the researchers' opinion, this may be due to half of studied patients not working, some of medication not available in health insurance so, their monthly income was insufficient to fulfill the daily requirements. These findings were in the same line with **Zilla, et al (2020)** who conducted a study about ″A glimpse of hope: cardiac surgery in low-and middle-income countries″ who found that, more than one half of studied patients had inadequate income, but majority of patients had health insurance.

Regarding past medical and surgical health history, the present study revealed that, it was obvious that around approximately near half of them had hypertension followed by one third of them had diabetes mellitus. From the researcher's point of view High blood pressure significantly increases the risk of heart disease or stroke. This is because high blood pressure damages the lining of the arteries and majority of patient aged over 50 years old had high risk to type 2 diabetes which can damage blood vessels and the nerves that control the heart. This comes in agreement with results of **Elsaed, et al (2020),** stated that approximately two fifth of the studied patients had

hypertension and diabetes mellitus. This finding was in disagreement with **Khodaveisi, et al (2023)** who carried out a study about ″Effect of Education Based on the Health Belief Model on Treatment Adherence in Patients with Heart Valve Replacement Surgery″ and revealed that most of the studied patients had no family health history of cardiac disease and no history of chronic disease. Regarding total knowledge level regarding heart valve replacement, the current study revealed that the majority of studied patients had un satisfactory level of knowledge. According to researchers' opinion this due to insufficient resources to receive enough information regarding their disease and low education. This finding agreed **with Said, et al (2022)** who conducted a study about ″Health Related Quality of Life for Patients after Mitral Valve Replacement Surgery″ who showed that more than two thirds of the study subjects had an unsatisfactory level of total knowledge. Also, this finding was consistent with **El-gafour, et al. (2021)**, who conduct study about ″Assessment of Patients' Needs Pre and Post Open Heart Surgery″ and reported that three-quarters of the studied patients had unsatisfactory level of total knowledge about heart surgeries.

Regarding total adherence level to therapeutic regimen, the current study revealed that more than one third of studied patients had high adherence level, almost two thirds of studied patients had low adherence level. This finding was in the same line with **Abd Elaziz, et al (2022)** who conducted a study about ″Effect of Pre rehabilitation on Patient's Undergoing Coronary Artery Bypass Graft Outcomes″ and reported that more than half of studied patients had low adherence level. This finding disagree with **Ghias, et al (2020) ,** whose study about ″The Effect of Continuous Care Model on Self-Efficacy, Quality of Life and Treatment Regimen of Patients

Undergoing Coronary Artery Bypass Graf″ and found that three quarters of patients had high level of adherence.

Concerning total medical and socio-economic factors affecting adherence to therapeutic regimens among the studied patients, the result of the current study revealed that more than two thirds of studied patients had highly affected with social factors, while less than two fifth of them had slightly affected by physical factors. This findings were agreed with **Etiwa, et al (2022)** who conducted study about ″ Factors Affecting Adherence to Therapeutic Regimens among Patients with Cardiac Valve Replacement ″and stated that nearly three quarters of studied patients' were affected by medical, physical and socio-economic factors. On the other hand, this result in disagreement with **Park & Jang (2021)** who conduct a study about ″Factors Affecting Medication Adherence in Patients with Mechanical Heart Valves Taking Warfarin: The Role of knowledge on Warfarin, Medication belief, Depression, and Self-efficacy″ and mentioned that there more than half of studied patients not affected by socio-economic factors.

The current study clarified that there was a statistical significant relation with education level revealing that more than half of patients could read and write and had unsatisfactory level of knowledge. According to researchers' opinion this may be due to low level of education affects comprehension and the ability to understanding instruction. This finding was in agreement with **Sallam, et al (2021)** who conducted a study about ″Effect of an Educational Program for Patients Post Coronary Artery Bypass Surgery on the Compliance with Symptoms Management Strategies″ and found that there was a highly statistically significant relation between patients' education level and their total level of

knowledge for therapeutic regimen section. Also, this finding agreed with **Amudha, (2017),** whose study was about ″Effectiveness of Information Guide Regarding Home Care Management on Knowledge and Post Discharge Problems of Post-CABG Patients″ and reported that there was statistically significant relation between total level of knowledge and the education level. On the other hand, this finding disagreed with **Liang, et al (2021)** who conducted a study about ″Survey on the Readiness for Hospital Discharge and Its Influencing Factors among Patients with Cardiac Valve Replacement″ and found that there was no statistically significant relation between total level of knowledge and the education level.

Concerning relation between total adherence level to therapeutic regimen and personal data of the studied patients, the current study clarified that there was a statistical significant relation with occupation level revealing that more than half of studied patients were housewives and had unsatisfactory level of adherence. These findings disagreed with **Power, et al (2020)** who conducted a study about ″ Job strain and the incidence of heart diseases″ and mentioned that there were half of studied patients were governmental employees with high socioeconomic status had higher level of adherence. Furthermore, the present study found that there was a statistical significant relation between patient adherence and monthly income revealing that more than two thirds of patients had not enough income for treatment costs and had unsatisfactory level of adherence. According researchers opinion this was may be due to monthly income is an essential factor for commitment to treatment. This finding in agreement with **Abd Elhafeez, et al (2023)**, who conducted study about ″Health Related knowledge and Behaviors

among Patients with Coronary Artery Disease" and stated that there was a statistically significant positive relation between patients' adherence level and monthly income.

The current study revealed that there was a positive correlation between total knowledge and adherence to therapeutic regimen among the studied patients. According to researchers' opinion this was may be due to knowing the patient about the nature of disease encourage him to participate in treatment and increases the level of adherence. This finding was agreed with **Rief, et al (2017)**, who conducted a study about "Preoperative Optimization of Patient Expectations Improves long- term Outcome in Heart Surgery Patient" and found that there was a positive correlation between total knowledge and adherence to therapeutic regimen among the studied patients. This finding was in the same line with **Shojaeee, et al (2023)** who conduct a study about "Predictions of Adherence to Treatment in Patients' Heart Failure" and stated that there was a positive correlation between total knowledge and adherence to therapeutic regimen among the studied patients.

Conclusion:

Majority of studied patients had un satisfactory level of knowledge regarding cardiac valve replacement and almost two thirds of studied patients had low adherence level to therapeutic regimen. Also, While, social factors were the highest affecting factors of adherence to therapeutic regimens followed by medical factors and the lowest affecting factors were physical factors Finally, there was a positive correlation between total knowledge and adherence to therapeutic regimen among studied patients

Recommendations:

Recommendation for patient:

- Educational guidelines for patient with cardiac valve replacement to increase

patients' awareness about importance of adherence to improve general condition and prevent complications.

- Designed illustrated and comprehensive instructional Arabic booklet with images including information about cardiac valve replacement, lifestyle changes for positive adherence post cardiac valve replacement and its therapeutic regimen.

- A multidisciplinary rehabilitation program should available for all patients undergoing cardiac valve surgery.

- Establishment of patients' educational centers in hospitals equipped by suitable related materials, medias and audio-visual aids for teaching all patients' with cardiac valve replacement how to cope with their health condition.

Recommendation for further studies:

- Replication of the study on larger sample in different settings for generalization of the study findings.

- Study the impact of cardiac valve replacement surgery health teaching program on the patient's adherence to the therapeutic regimen.

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العوامل المؤثرة على الالتزام بالأنظمة العلاجية وارتباطها بالمستوى المعرفي لدى مرضى استبدال صمام القلب

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الالتزام هو عملية ديناميكية متعددة الأبعاد تلعب فيها عوامل كثيرة دورًا. لذلك، تلعب الممرضات دورًا مهمًا في إطلاع المريض على جميع المعلومات الصحية اللازمة عن الحالة الطبية، لتحسين نوعية الحياة. لذا هدفت هذه الدراسة إلى تقييم العوامل المؤثرة على الالتزام بالأنظمة العلاجية وارتباطها بمستوى المعرفة لدى المرضى الذين يخضعون لاستبدال صمام القلب. وقد تم إجراء تصميم وصفي استكشافي لتحقيق هدف هذه الدراسة. وقد أجريت الدراسة في وحدة وقسم رعاية جراحة القلب بمستشفيات جامعة بنها ومستشفى أكاديمية القلب بجامعة عين شمس على عينة ملائمة مكونة من ٦٠ مريضاً تم قبولهم في الأماكن المذكورة سابقاً. واظهرت النتائج ان ٨٠% من المرضى الذين شملتهم الدراسة لديهم مستوى غير مرض من المعرفة. ٦٥% منهم لديهم مستوى منخفض من الالتزام بالنظام العلاجي، وأظهرت الدراسة أن ٤٣% منهم لديهم تأثير كبير بالعوامل الاجتماعية، في حين أن ٥٧% منهم لديهم تأثير منخفض بالعوامل الجسدية. واوصت الدراسة بإنشاء مراكز تثقيفية للمرضى في المستشفيات مجهزة بالمواد والوسائط والوسائل السمعية والبصرية المناسبة لتعليم جميع مرضى استبدال صمامات القلب كيفية التعامل مع حالتهم الصحية.