Effectiveness of Planned Preoperative Teaching on Self Care Activities for Patients Undergoing Cardiac Surgery

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ABSTRACT

Background: Cardiovascular diseases are the primary cause of death worldwide, claiming approximately 17.9 million lives annually. **Aim:** the study aimed to explore the effectiveness of planned preoperative teaching about self-care activities for patients undergoing cardiac surgery. **Sample:** a purposive sample of 80 patients undergoing cardiac surgery**. Research design:** A quasi-experimental design with pre- and post-assessment was employed. **Setting:** The study was conducted in the adult cardiac surgical unit of El-Nasr Specialized Hospital, which is part of the Egypt Health Care Authority in Port Said. **Data collection tools:** Two data collection tools were used: Tool I, a questionnaire assessing patients' knowledge of self-care activities, and Tool II, an observation checklist for self-care practices. **Results:** revealed that 61.3% of the participants were male, and 48.8% were aged between 55 and 60 years. Initially, none of the patients demonstrated adequate knowledge of self-care activities before the intervention. However, they rose to 100% immediately after the intervention. Significant improvements were observed in the patients' self-care practices across the three study phases, with a p-value of 0.001. **Conclusion:** The study concluded there was a notable enhancement in both knowledge and practice of self-care activities among cardiac surgery patients. Additionally, statistically significant differences were found between the pre-and post-intervention phases, as well as the postoperative phase, concerning knowledge and practices related to self-care. **Recommendations:** Regular training sessions on preoperative education for cardiac surgery patients should be conducted using a variety of multimedia tools, such as television programs, videos, booklets, audio tapes, and brochures to reinforce health behaviors and improve patients' adherence to recommended self-care practices.

Keywords: *Cardiac Surgery, Preoperative Teaching, Self Care Activity.*

Cardiac surgery is a specialized medical field dedicated to the surgical treatment of both acquired and congenital conditions affecting the heart and major blood vessels. Common procedures within this specialty include the treatment of heart anomalies, surgeries involving the aortic, mitral, and tricuspid valves (such as repair or replacement), thoracic aortic surgery, and coronary artery bypass grafting (CABG). Furthermore, the scope of cardiac surgery encompasses a wide range of techniques, including robotic, endoscopic, minimally invasive, and endovascular procedures (Anastasiadis & Tagarakis, 2020).

Cardiovascular surgery extends beyond addressing heart-related issues; it is also essential for treating major blood vessel disorders, enhancing blood flow through obstructed arteries, alleviating angina (chest pain), and increasing physical activity capacity in individuals limited by angina or ischemia. Additionally, it plays a critical role in stroke prevention and can involve replacing a damaged or diseased heart valve with a healthy one. To address blocked heart arteries, cardiac surgery employs grafts—veins or arteries harvested from other parts of the patient's body—to redirect blood flow around the blockage and restore adequate blood supply to the heart muscle. This procedure is widely known as bypass surgery or coronary artery bypass grafting (CABG) (AHA, 2020).

Cardiovascular diseases represent the leading cause of illness and death worldwide, contributing to 366 million individuals living with disabilities and 18 million deaths annually. Over 80% of cardiovascular conditions occur in low- and middle-income countries, largely due to limited access to cardiology and cardiac surgical services (Vervoort & Pezzella, 2022). Globally, approximately 5 billion people lack access to surgical care, resulting in 16.9 million deaths each year, as reported by the Lancet Commission on Global Surgery. While North America and Europe have one cardiac center for every 120,000 people, Southeast Asia and sub-Saharan Africa have only one center for every 25 million and 38 million people, respectively (Vervoort, 2019).

Patient education is a process through which healthcare providers equip patients and their caregivers with the knowledge needed to improve health outcomes and

encourage active participation in care and treatment decisions. This process helps patients understand specific or general medical conditions, adopt preventive measures, embrace healthy lifestyles, use medications correctly, and manage injuries or illnesses at home effectively (Fereidouni et al., 2019).

The process of patient education involves providing individuals with detailed information about their condition, including symptoms, warning signs, available treatment options, potential outcomes, side effects, and preventive measures. Ideally, this education begins as soon as a diagnosis is made, or even earlier, to help patients better understand their disease and the range of treatment choices available. The goal of patient education is to enhance both physical and mental health by fostering greater patient engagement and participation in their care. This education can be delivered in various settings and formats. Standardized patient education provides the same information to all patients, while individualized patient education tailors the instruction to meet the specific learning needs of each patient. Without a structured plan, the delivery of such education can become inconsistent and less effective (Aktas, Uğur, & Orak, 2020).

Self-care refers to the actions individuals and their families take to maintain health, manage illness, and engage in behaviors that promote well-being. It consists of three core components: self-care maintenance, self-care monitoring, and self-care management. Defined as a natural decision-making process, self-care focuses on preventing and managing chronic conditions. Individuals who practice effective self-care are better equipped to maintain their physical and mental health, thereby managing or preventing cardiovascular disease. Key self-care practices include breathing exercises (such as splinted coughing, deep breathing, and using an incentive spirometer), mobility exercises, foot movements, hand hygiene, getting out of bed safely, sternal precautions, personal hygiene, and pain management techniques (Shahmoradi, Rezaei, Rezayi, Zolfaghari, & Manafi, 2022).

Adopting effective self-care practices can significantly reduce the risk of developing cardiovascular disease (CVD) by addressing its major risk factors, such as hypertension, high cholesterol, obesity, and unhealthy lifestyle habits. Regular physical

activities like walking, swimming, or cycling strengthen the heart, improve circulation, and help maintain healthy blood pressure and cholesterol levels. A balanced, heart-healthy diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats can lower inflammation and support weight management, further reducing CVD risk. Additionally, adequate sleep, avoiding tobacco use, and limiting alcohol intake contribute to better heart health. Research indicates that individuals who consistently engage in these self-care activities have a markedly lower likelihood of developing cardiovascular disease and often enjoy longer, healthier lives (Benjamin et al., 2019).

Significance of the study

According to the most recent World Health Organization (WHO) statistics from 2020, coronary heart disease accounted for 173,871 deaths in Egypt, representing 32.40% of all fatalities. The age-adjusted death rate was 268.11 deaths per 100,000 people. Cardiac surgery is a critical intervention for addressing heart-related conditions and is often recommended when other treatments, such as medications or lifestyle changes, are no longer effective. It may also be performed in emergencies such as during a heart attack. Globally, over two million open-heart surgeries are performed annually to treat a wide range of cardiac conditions.

Postoperative complications following cardiac surgery are common and can significantly impact patient outcomes. These complications, which may affect the kidneys, central nervous system, and cardiovascular and respiratory systems, have been linked to increased mortality rates, prolonged hospital and intensive care unit (ICU) stays, and higher healthcare costs. Identifying the most frequent postoperative issues can help improve patient outcomes and support the delivery of cost-effective care (Pahwa et al., 2021).

Planned preoperative education has the potential to enhance preoperative health outcomes, influencing patients' daily activities, reducing hospital stays, and shortening ICU durations. Studies have shown that such education can improve patients' attitudes, emotional well-being, and ability to tolerate surgery (Ng, Wang, Shen, Toh, & He, 2022). Therefore, this study aims to evaluate the effectiveness of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery.

OperationalDefinition:

Planned preoperative teaching refers to the structured process of educating patients scheduled for cardiac surgery, typically delivered two days before the procedure during hospitalization. This teaching is implemented through educational programs designed to increase patients' knowledge and enhance their self-care activities.

AIM OF THE STUDY

This study aimed t

investigate the effectiveness of planned preoperative teaching about activities of self-care for patients scheduled to undergo cardiac surgery

Research Objectives of the study:

1. Assess the knowledge of patients undergoing cardiac surgery about self-care activities.
2. Design a preoperative teaching plan on activities of self-care for cardiac surgery patients.
3. Implement a preoperative teaching plan about activities of self-care for cardiac surgery patients.
4. Evaluate the effectiveness of a preoperative teaching plan about activities of self-care for cardiac surgery patients.

Research Hypothesis:

- Patients' knowledge of self-care activities improve following the implementation of the planned preoperative teaching.
- Patients' performance of self-care activities improve following the implementation of the planned preoperative teaching.

Subjects and method

Research design: A quasi-experimental design with a single-group pre- and post-assessment approach was employed in this study.

Research Setting:

The study was carried out in the adult cardiac surgical ward of El-Nasr Specialized Hospital at El-manakh district which is affiliated to the Egypt of Health Care Authority in the Port Said Government.

Sample size

The study included a sample of 80 patients, selected from a total of 115 patients who visited the aforementioned facility, with a confidence level of 95% (Thompson, 2012).

$$n = \frac{N}{^2\square p \left(z1^2 - \right) \square + p\right) p(1-p)\square} \; \square\square_{N-1\square}(d\square)$$

$$115*(0.5*0.5) = 28.75$$

The sample size (n) was determined based on the total population size (N), with a standard value (Z) corresponding to a 90% confidence level (1.64), an error margin (d) of 5%, and a probability (p) of 0.50. The final calculated sample size was 80 patients.

The final sample size was 80 patients.

Sampling Technique:

A non-probability purposive sampling method was employed to select patients who met the following inclusion criteria:

Inclusion Criteria:

1. Adult cardiac surgery patients (males and females).

2. Patients undergoing cardiac surgery were admitted to hospital before surgery.

3. Adult cardiac surgery patients who were able to perform self-care activities such as (deep breathing , mobility exercises , sternal precautions).

Tools of Data Collection

The researcher utilized two tools for data collection:

Tool (I): Patients' knowledge questionnaire about self-care activities: -

This tool was developed by (Kaur, Verma, Rana &Singh,2007). It was in English language and translated into Arabic and modified by the researcher. It assessed patients' knowledge of self-care activities and consisted of three parts:

Part 1: Cardiac patient socio-personal characteristic:

This part included (7 items) that were used to collect data about the socio-personal characteristics of the patient including; age, marital status, sex, educational level, residence occupation, and economic status.

Part 2: Patient Profile

This part contained 11 items that were used to gather relevant health data including; previous illness, duration of the disease, diagnosis, type of operation, previous hospitalization for surgery, number of preoperative days of hospitalization, treatment disciplinary prescribed, medications, smoking, family history of heart disease, Prohibitions that the doctor ordered to avoid.

Part 3: Cardiac patients' knowledge related to self-care activities:

A structured questionnaire included (10 items) that were used to assess pre/ post patients' knowledge of self-care activities, including breathing exercises (splinted cough, deep breathing, and incentive spirometer), mobility exercises (foot, and leg exercise), sternal precaution, hand washing, personal hygiene, ambulation and measures for coping with pain. Additionally, Additionally, 11 items evaluated patients' knowledge of dietary recommendations, such as foods to eat regularly, avoid, or limit**.**

Scoring system

- The answers of patients undergoing open-heart surgery were evaluated against a model answer key. Correct answers were assigned a score of 1, while incorrect answers received a score of 0. For each knowledge category, the scores were totaled and divided by the number of items to calculate a mean score, which was then converted into a percentage. Means, standard deviations, and medians were calculated for analysis.

- For the dietary knowledge section, answers were also compared to a model answer key. Healthy foods recommended for regular consumption were scored as 2, foods to be limited were scored as 1, and foods to avoid were scored as 0. Conversely, unhealthy foods to avoid were scored as 2, foods to limit were scored as 1, and foods eaten regularly were scored as 0. The scores for each dietary category were summed, averaged, and converted into percentages. Means, standard deviations, and medians were computed.

- Patients' knowledge was classified as satisfactory if their percentage score was 65% or higher, and unsatisfactory if the score was below 65%, based on statistical analysis.

TOOL (II): Observation checklist regarding self-care activities:

This tool was developed by (Kaur, Verma, Rana &Singh,2007). It was translated from English into Arabic and modified by the researcher. It was designed to evaluate the preoperative and postoperative self-care activities, including (splinted cough, deep breathing, and incentive spirometer), mobility exercise (foot exercise, getting out of bed, return to bed, getting up from the chair, sitting on the chair, chin, leg exercise, chin tuck, shoulder shrugs and circles, hand across shoulders, head movement, arm exercise), hand washing.

Scoring system

Each self-care activity observed to be performed correctly was scored as "2,"

activities requiring correction were scored as "1," and activities not performed were scored as "0." For each category, the scores were totaled and divided by the number of items to calculate a mean score, which was then converted into a percentage. Higher percentage scores indicated better self-care practice (104 grades).

Tool Validity

Both Tool I and Tool II were assessed for content validity by a panel of nine experts in medical-surgical nursing from the Faculty of Nursing at Port Said University. Their feedback on the tool's format, layout, and consistency was incorporated, and necessary modifications were made, such as refining sections on deep breathing, coughing, and incentive spirometer use.

Reliability:

Tools tested for reliability using test-retest methods; tools were applied on five patients who undergoing to cardiac surgery selected from the cardiac surgical ward of study setting. Reliability was confirmed using Pearson's correlation coefficient, with Tool I scoring 0.85 and Tool II scoring 0.87.

Pilot Study:

A pilot study was conducted on 10% (8 patients) of the sample, selected randomly, over a two-week period prior to the main data collection. The pilot study aimed to evaluate the tools' applicability, feasibility, and clarity, as well as estimate the time required to complete the questionnaire. It also identified potential challenges in data collection. No modifications were needed, and the patients who participated in the pilot study were excluded from the main study sample.

Field Work:

The study was conducted in four phases: Assessment, Planning, Implementation,

and Evaluation.

Phase I: Assessment (Pre-test phase):

After preparing the data collection tools, the study sample was recruited. A pre-test questionnaire was administered to assess patients' medical history, knowledge of self-care activities, and dietary habits. The researcher visited the study setting, introduced themselves to eligible patients, explained the study's purpose and procedures, and obtained their consent to participate.

Patients were interviewed individually and privately. Each question on the questionnaire was read aloud, and patients were asked to write their responses if they were able. This process took approximately 30 minutes. For illiterate patients, the researcher asked the questions and recorded their answers, which took about 45 minutes. Confidentiality of all collected information was strictly maintained. The data collected served as a baseline for comparison and helped design the preoperative teaching program based on identified needs.

Phase II: Planning

Using the information gathered during the assessment phase, along with a review of relevant literature, the researcher designed a preoperative teaching program under the guidance of supervisors. The program was developed in Arabic and included illustrated color pictures to enhance understanding and facilitate learning. The program was reviewed by a panel of nine medical-surgical nursing experts from the Faculty of Nursing at Port Said University.

The primary goal of the program was to increase patients' knowledge of self-care activities and improve their pre- and post-operative self-care practices to prevent complications after cardiac surgery. The program covered topics such as definitions of heart disease and cardiac surgery, types of cardiac surgery, risk factors for heart disease, and self-care instructions. These instructions included breathing exercises (splinted cough, deep breathing, and incentive spirometer use), mobility exercises (foot exercises, getting out of bed, returning to bed, chair movements, chin tucks, shoulder shrugs, head

movements, and arm exercises), hand hygiene, sternal precautions, personal hygiene, ambulation, and pain management techniques.

Phase (III): Implementation

The preoperative teaching program was implemented for adult patients scheduled for open-heart surgery at El-Nasr Specialized Hospital in Port Said. The researcher obtained informed consent from the director of the Egypt Health Care Authority and the hospital director, as well as oral consent from participating patients.

Patients were divided into eight groups of 10 each. The program was delivered over three days per week (Saturday, Thursday, and Friday) for three consecutive weeks, totaling nine sessions per group. The entire program spanned 24 weeks (6 months), with 72 sessions conducted across all groups. At the start of the first session, patients were briefed on the study's objectives, program goals, and session schedules. The researcher emphasized the importance of regular attendance and active participation. Each session began with a summary of the previous session and an outline of the new session's objectives. The program used simple language, motivational techniques, and reinforcement strategies to ensure comprehension.

The educational content was presented clearly and concisely, using various teaching methods such as lectures, discussions, and multimedia tools like brochures, colored posters, and laptop presentations. Patients received a copy of the educational booklet as a reference to reinforce learning and improve self-care practices. They were encouraged to ask questions and seek clarification on any topic covered in the sessions.

Phase IV: Evaluation

The same questionnaire used in the pre-test phase was administered immediately after the program's completion (post-test). The program's effectiveness was evaluated by comparing pre-and post-test results to assess improvements in patients' knowledge and self-care practices. The evaluation focused on patients' ability to integrate the taught self-care practices into their daily routines to prevent post-surgical complications.

III. Administrative Design:

Official permission to conduct the study was obtained from the relevant authorities. Prior to the study, an official letter outlining the study's objectives was issued by the Dean of the Faculty of Nursing at Port Said University to the Director of the Egypt Health Care Authority to secure approval. This letter was then forwarded to the directors of the respective study settings. Before initiating the interviews, informed oral consent was obtained from each participant.

Ethical Consideration:

Approval for the study was granted by the Scientific Research Ethics Committee at the Faculty of Nursing, Port Said University NUR (4/6/2023) (26). Ethical principles were adhered to throughout all phases of the study, including: Explaining the study's purpose to the hospital directors to obtain their permission, providing participants with a brief overview of the study, ensuring them that all collected information would remain confidential and used solely for research purposes. Informing participants of their right to withdraw from the study at any time without consequences.

Statistical analysis

Data were entered and analyzed using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011). Qualitative data were summarized using frequencies and percentages. The Kolmogorov-Smirnov test was employed to assess the normality of data distribution. Quantitative data were described using range (minimum and maximum), mean, standard deviation, and median. The significance level was set at 5%.

The following statistical tests were used:

- **McNemar test:** To analyze differences between different stages.
- **Mann-Whitney test:** For comparing two groups with non-normally distributed quantitative variables.

- **Kruskal-Wallis test:** For comparing more than two groups with non-normally distributed quantitative variables.

- **Wilcoxon signed-rank test:** For comparing two time periods with non-normally distributed quantitative variables.

- **Friedman test:** For comparing more than two time periods with non-normally distributed quantitative variables.

RESULTS

Table (1): The table revealed that 61.3% of the studied cardiac surgery patients were male, and 48.8% were aged between 55 and 60 years, with a mean age of 52.91 ± 5.79 years. Additionally, 68.8% of the patients were married. In terms of education, 38.8% had a university degree, while 18.75% were illiterate.

Table (2): his table highlighted statistically significant differences in patients' knowledge regarding all aspects of self-care activities before and after the program, except for walking.

Table (3): demonstrated a statistically significant difference in the dietary regimen of cardiac surgery patients before and after the program ($p < 0.001^*$).

Table (4): This table described statistically significant differences in the self-care practices of cardiac surgery patients across the study phases ($p < 0.001$).

Table (5): In the pre-intervention phase, no statistically significant differences were found between socio-demographic characteristics and the total knowledge score, except for marital status ($p = 0.014^*$) and educational level ($p = 0.046^*$). In the post-intervention phase, age and income emerged as the only factors with statistically significant differences.

Table (6): The table indicated no statistically significant differences between socio-demographic characteristics and the total dietary regimen score, except for marital status

and educational level, which showed significant differences in the pre-intervention phase (p = 0.002* and p = 0.012*, respectively).

Table (7): This table revealed no statistically significant differences between socio-demographic characteristics and the total practice score across the three phases (pre-intervention, post-intervention, and postoperative), except for marital status, which emerged as the only significant factor.

Table (1):   Distribution of the studied cardiac surgery patients according to their socio-demographic characteristics.

Items	No.	%
Sex		
Male	49	61.3
Female	31	38.8
Age (years)		
< 45	7	8.8
45 - <55	34	42.5
55 – 60	39	48.8
Min. – Max.	37.0 – 60.0	
Mean ± SD.	52.91 ± 5.79	
Median	54.0	
Marital status		
Single	13	16.3
Married	55	68.8
Divorced	5	6.3
Widowed	7	8.8
Residence		
Rural	7	8.8
Urban	73	91.3
Educational Level		
Illiterate	15	18.75
Read and write	14	17.5
Secondary School	20	25
University	31	38.8
Occupation		
Work	62	77.5
Not Work	18	22.5
Income		
Enough	43	53.8
Not enough	37	46.3

Table (2): Comparison between cardiac surgery patients' knowledge about self-care activities throughout program phases.

Patients Knowledge About Self-Care Activities	Pre intervention		Post intervention		P
	No.	%	No.	%	
Deep breathing exercise	**Total score (0 – 4)**				
Un Satisfactory (<65%)	76	95.0	0	0.0	<0.001*
Satisfactory (≥65)	4	5.0	80	100	
Coughing exercise	**Total score (0 – 3)**				
Un Satisfactory (<65%)	80	100	3	3.8	<0.001*
Satisfactory (≥65)	0	0.0	77	96.3	
Usage of incentive spirometer	**Total score (0 – 3)**				
Un Satisfactory (<65%)	80	100	0	0.0	<0.001*
Satisfactory (≥65)	0	0.0	80	100	
Hand washing	**Total score (0 – 3)**				
Un Satisfactory (<65%)	55	68.8	0	0.0	<0.001*
Satisfactory (≥65)	25	31.3	80	100	
Maintaining the integrity of the breastbone	**Total score (0 – 4)**				
Un Satisfactory (<65%)	69	86.3	57	71.3	0.045*
Satisfactory (≥65)	11	13.8	23	28.8	
Personal hygiene	**Total score (0 – 2)**				
Un Satisfactory (<65%)	18	22.5	0	0.0	<0.001*
Satisfactory (≥65)	62	77.5	80	100	
Pain management techniques	**Total score (0 – 5)**				
Un Satisfactory (<65%)	69	86.3	7	8.8	<0.001*
Satisfactory (≥65)	11	13.8	73	91.3	
Wound care	**Total score (0 – 5)**				
Un Satisfactory (<65%)	57	71.3	1	1.3	<0.001*
Satisfactory (≥65)	23	28.8	79	98.8	
Foot and leg exercises	**Total score (0 – 4)**				
Un Satisfactory (<65%)	74	92.5	10	12.5	<0.001*
Satisfactory (≥65)	6	7.5	70	87.5	
Walking	**Total score (0 – 2)**				
Un Satisfactory (<65%)	61	76.3	66	82.5	0.383
Satisfactory (≥65)	19	23.8	14	17.5	
Total					
Un Satisfactory (<65%)	80	100	0	0.0	<0.001*
Satisfactory (≥65)	0	0.0	80	100	

SD: Standard deviation   *: Statistically significant at $p \leq 0.05$

p: p value for comparing between the two periods

Table (3): Comparison between dietary regimen of the studied cardiac surgery Patients throughout the program phases.

Items	Pre-intervention		Post-intervention		p
	No.	%	No.	%	
Dairy products			Total score (0 – 20)		
Un Satisfactory (<65%)	65	81.3	0	0.0	<0.001[*]
Satisfactory (≥65)	15	18.8	80	100.0	
Red meat			Total score (0 – 2)		
Un Satisfactory (<65%)	33	41.3	28	35.0	0.441
Satisfactory (≥65)	47	58.8	52	65.0	
Fatty meat			Total score (0 – 2)		
Un Satisfactory (<65%)	52	65.0	2	2.5	<0.001[*]
Satisfactory (≥65)	28	35.0	78	97.5	
White meat			Total score (0 – 2)		
Un Satisfactory (<65%)	23	28.8	2	2.5	<0.001[*]
Satisfactory (≥65)	57	71.3	78	97.5	
Canned and frozen meat			Total score (0 – 2)		
Un Satisfactory (<65%)	62	77.5	3	3.8	<0.001[*]
Satisfactory (≥65)	18	22.5	77	96.3	
Fish			Total score (0 – 2)		
Un Satisfactory (<65%)	42	52.5	3	3.8	<0.001[*]
Satisfactory (≥65)	38	47.5	77	96.3	
Pickles			Total score (0 – 2)		
Un Satisfactory (<65%)	74	92.5	9	11.3	<0.001[*]
Satisfactory (≥65)	6	7.5	71	88.8	
Salt					
Un Satisfactory (<65%)	78	97.5	1	1.3	<0.001[*]
Satisfactory (≥65)	2	2.5	79	98.8	

SD: Standard deviation   p: p value for comparing between the two periods

*: Statistically significant at p ≤ 0.05

Table (4): Comparison between self-care activities of studied cardiac surgery patients practice throughout the program phases.

Cardiac surgery patient practices about self-care activities	Pre-intervention	Post-intervention	Post-operative	p
Correct procedures for deep breathing	**Total score (0 – 8)**			
Min. – Max.	0.0 – 8.0	6.0 – 8.0	7.0 – 8.0	<0.001*
Mean ± SD.	1.94 ± 2.73	7.40 ± 0.82	7.78 ± 0.42	
Median	0.0	8.0	8.0	
Average score (0 - 2) [Mean ± SD.]	0.48 ± 0.68	1. 85 ± 0.21	1.94 ± 0.11	
Correct procedures for doing coughing exercises	**Total score (0 – 12)**			
Min. – Max.	0.0 – 12.0	8.0 – 12.0	10.0 – 12.0	<0.001*
Mean ± SD.	1.43 ± 3.26	11.20 ± 1.02	11.18 ± 0.67	
Median	0.0	11.0	11.0	
Average score (0 - 2)[Mean ± SD.]	0.24 ± 0.54	1.87 ± 0.17	1.86 ± 0.11	
Correct procedures for using incentive spirometer	**Total score (0 – 10)**			
Min. – Max.	0.0 – 10.0	6.0 – 10.0	8.0 – 10.0	<0.001*
Mean ± SD.	1.03 ± 2.72	9.18 ± 0.88	9.06 ± 0.37	
Median	0.0	9.0	9.0	
Average score (0 - 2) [Mean ± SD.]	0.21 ± 0.54	1.84 ± 0.18	1.81 ± 0.07	
Total score for Breathing Exercise	**Total score (0 – 30)**			
Min. – Max.	0.0 – 30.0	23.0 – 30.0	25.0 – 30.0	<0.001*
Mean ± SD.	4.39 ± 7.82	27.78 ± 1.81	28.01 ± 1.10	
Median	0.0	28.0	28.0	
Average score (0 - 2) [Mean ± SD.]	0.29 ± 0.52	1.85 ± 0.12	1.87 ± 0.07	
Correct steps for hand washing	**Total score (0 – 12)**			
Min. – Max.	0.0 – 12.0	8.0 – 12.0	8.0 – 12.0	<0.001*
Mean ± SD.	5.19 ± 3.70	10.69 ± 1.59	11.60 ± 1.21	
Median	6.0	12.0	12.0	
Average score (0 - 2) [Mean ± SD.]	0.86 ± 0.62	1.78 ± 0.26	1.93 ± 0.20	
Correct technique for rising from bed	**Total score (0 – 6)**			
Min. – Max.	0.0 – 6.0	4.0 – 6.0	4.0 – 6.0	<0.001*
Mean ± SD.	0.96 ± 2.07	5.85 ± 0.45	5.93 ± 0.38	
Median	0.0	6.0	6.0	
Average score (0 - 2) [Mean ± SD.]	0.32 ± 0.69	1.95 ± 0.15	1.97 ± 0.13	
Correct technique for return to bed	**Total score (0 – 8)**			
Min. – Max.	0.0 – 8.0	6.0 – 8.0	6.0 – 8.0	<0.001*
Mean ± SD.	1.28 ± 2.81	7.86 ± 0.47	7.90 ± 0.41	
Median	0.0	8.0	8.0	
Average score (0 - 2) [Mean ± SD.]	0.32 ± 0.70	1.97 ± 0.12	1.98 ± 0.10	
Correct technique for getting up from the chair	**Total score (0 – 4)**			
Min. – Max.	0.0 – 4.0	0.0 – 4.0	4.0 – 4.0	<0.001*
Mean ± SD.	0.44 ± 1.24	3.81 ± 0.71	4.0 ± 0.0	
Median	0.0	4.0	4.0	
Average score (0 - 2) [Mean ± SD.]	0.22 ± 0.62	1.91 ± 0.36	2.0 ± 0.0	
Correct technique for sitting on the chair	**Total score (0 – 4)**			
Min. – Max.	0.0 – 4.0	3.0 – 4.0	4.0 – 4.0	<0.001*
Mean ± SD.	0.39 ± 1.17	3.96 ± 0.19	4.0 ± 0.0	
Median	0.0	4.0	4.0	
Average score (0 - 2) [Mean ± SD.]	0.19 ± 0.59	1.98 ± 0.10	2.0 ± 0.0	

SD: Standard deviation   p: p-value for comparing between the three periods *: Statistically significant at $p \leq 0.05$

Table (4): Comparison between self-care activities of studied cardiac surgery patients practice throughout the program phases (cont.,).

Cardiac surgery patient practices about self-care activities	Pre-intervention	Post-intervention	Post-operative	p
Correct technique for Foot exercises	**Total score (0 – 10)**			
Min. – Max.	0.0 – 10.0	7.0 – 10.0	6.0 – 10.0	
Mean ± SD.	1.58 ± 3.07	8.96 ± 1.0	8.39 ± 1.13	
Median	0.0	9.0	8.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.32 ± 0.61	1.79 ± 0.20	1.68 ± 0.23	
Correct technique for bend and lift the leg	**Total score (0 – 8)**			
Min. – Max.	0.0 – 8.0	4.0 – 8.0	7.0 – 8.0	
Mean ± SD.	1.51 ± 2.80	7.56 ± 0.63	7.63 ± 0.49	
Median	0.0	8.0	8.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.38 ± 0.70	1.89 ± 0.16	1.91 ± 0.12	
Correct technique for Chin Tuck	**Total score (0 – 4)**			
Min. – Max.	0.0 – 4.0	0.0 – 4.0	0.0 – 4.0	
Mean ± SD.	0.59 ± 1.29	3.75 ± 0.89	3.95 ± 0.45	
Median	0.0	4.0	4.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.29 ± 0.64	1.88 ± 0.45	1.98 ± 0.22	
Correct technique for Shoulder Shrugs and Circles	**Total score (0 – 4)**			
Min. – Max.	0.0 – 4.0	0.0 – 4.0	3.0 – 4.0	
Mean ± SD.	0.55 ± 1.31	3.81 ± 0.64	3.98 ± 0.16	
Median	0.0	4.0	4.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.28 ± 0.66	1.91 ± 0.32	1.99 ± 0.08	
Correct technique for Hands across shoulders	**Total score (0 – 2)**			
Min. – Max.	0.0 – 2.0	0.0 – 2.0	2.0 – 2.0	
Mean ± SD.	0.18 ± 0.57	1.90 ± 0.44	2.0 ± 0.0	
Median	0.0	2.0	2.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.18 ± 0.57	1.90 ± 0.44	2.0 ± 0.0	
Correct technique for Head movement	**Total score (0 – 4)**			
Min. – Max.	0.0 – 4.0	2.0 – 4.0	0.0 – 4.0	
Mean ± SD.	0.41 ± 1.14	3.88 ± 0.43	3.80 ± 0.79	
Median	0.0	4.0	4.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.21 ± 0.57	1.94 ± 0.22	1.90 ± 0.39	
Correct technique for Arm Exercises.	**Total score (0 – 8)**			
Min. – Max.	0.0 – 8.0	4.0 – 8.0	7.0 – 8.0	
Mean ± SD.	1.0 ± 2.35	7.45 ± 0.88	7.96 ± 0.19	
Median	0.0	8.0	8.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.25 ± 0.59	1.86 ± 0.22	1.99 ± 0.05	
Total score of Mobility Exercises	**Total score (0 – 62)**			
Min. – Max.	0.0 – 62.0	54.0 – 62.0	54.0 – 62.0	
Mean ± SD.	8.88 ± 17.48	58.80 ± 2.32	59.53 ± 2.01	
Median	0.0	59.0	60.0	<0.001*
Average score (0 - 2) [Mean ± SD.]	0.29 ± 0.56	1.90 ± 0.07	1.92 ± 0.06	
Total score (0 – 104)				
Min. – Max.	0.0 – 104.0	91.0 – 104.0	93.0 – 103.0	
Mean ± SD.	18.45 ± 25.77	97.26 ± 3.95	99.14 ± 2.95	
Median	9.0	98.0	100.0	<0.001*
Average score (0 - 2)	0.35 ± 0.50	1.87 ± 0.08	1.91 ± 0.06	

SD: Standard deviation

p: p value for comparing between the three periods   *: Statistically significant at p ≤ 0.05

Table (5):   Relation between Socio-demographic characteristics and total score of studied cardiac surgery patients' knowledge about self-care activities.

Socio-demographic characteristics	N	mean score for Cardiac patients' knowledge related to self-care activities	
		Pre intervention	Post intervention
		Mean ± SD.	Mean ± SD.
Sex			
Male	**49**	9.67 ± 4.14	29.49 ± 1.71
Female	**31**	9.48 ± 3.73	29.45 ± 2.14
(p)		**(0.933)**	**(0.896)**
Age (years)			
< 45	**7**	8.00 ± 2.65	27.57 ± 1.27
45 - <55	**34**	9.82 ± 4.62	30.00 ± 1.35
55 – 60	**39**	9.69 ± 3.53	29.36 ± 2.13
(p)		**(0.437)**	**(0.003*)**
Marital status			
Single	**13**	8.08 ± 2.10	29.77 ± 1.30
Married	**55**	9.40 ± 3.20	29.51 ± 1.97
Divorced	**5**	17.60 ± 5.37	29.60 ± 0.89
Widowed	**7**	8.29 ± 5.06	28.57 ± 2.51
(p)		**(0.014*)**	**(0.872)**
Residence			
Rural	**7**	8.71 ± 3.04	29.00 ± 2.16
Urban	**73**	9.68 ± 4.04	29.52 ± 1.86
(p)		**(0.548)**	**(0.633)**
Educational Level			
Illiterate	**0**	–	–
Read and write	**26**	10.23 ± 3.43	29.92 ± 1.52
Secondary School	**23**	7.87 ± 2.58	29.39 ± 2.06
University	**31**	10.35 ± 4.83	29.16 ± 1.98
(p)		**(0.046*)**	**(0.343)**
Occupation			
Work	**62**	9.76 ± 4.24	29.68 ± 1.79
Not Work	**18**	9.06 ± 2.82	28.78 ± 2.05
(p)		**(0.750)**	**(0.104)**
Income			
Enough	**43**	9.98 ± 4.47	30.12 ± 1.52
Not enough	**37**	9.16 ± 3.27	28.73 ± 2.00
(p)		**(0.457)**	**(0.002*)**

SD: Standard deviation   p: p value for comparison between the studied categories

*: Statistically significant at p ≤ 0.05

Table (6):   Relation between Socio-demographic characteristics of studied cardiac surgery patients   and their dietary regimen .

Socio-demographic characteristics	N	Total score for dietary regimen	
		Pre intervention	**Post intervention**
		Mean ± SD.	**Mean ± SD.**
Sex			
Male	**49**	36.02 ± 11.66	63.14 ± 2.63
Female	**31**	33.65 ± 10.62	63.06 ± 2.72
(p)		**(0.482)**	**(0.909)**
Age (years)			
< 45	**7**	31.57 ± 5.94	64.71 ± 2.21
45 - <55	**34**	39.26 ± 13.82	63.18 ± 2.34
55 - 60	**39**	32.10 ± 8.06	62.77 ± 2.91
(p)		**(0.241)**	**(0.291)**
Marital status			
Single	**13**	37.46 ± 14.26	63.08 ± 4.54
Married	**55**	33.95 ± 9.72	62.91 ± 2.20
Divorced	**5**	24.40 ± 3.13	64.60 ± 0.89
Widowed	**7**	47.43 ± 10.36	63.71 ± 2.14
(p)		**(0.002*)**	**(0.086)**
Residence			
Rural	**7**	30.71 ± 6.60	63.14 ± 3.34
Urban	**73**	35.52 ± 11.55	63.11 ± 2.60
(p)		**(0.235)**	**(0.979)**
Educational Level			
Illiterate	**0**	–	–
Read and write	**26**	29.73 ± 6.27	63.42 ± 2.47
Secondary School	**23**	34.83 ± 9.19	62.13 ± 3.33
University	**31**	39.81 ± 13.82	63.58 ± 2.05
(p)		**(0.012*)**	**(0.151)**
Occupation			
Work	**62**	35.31 ± 12.38	63.19 ± 2.63
Not Work	**18**	34.39 ± 6.21	62.83 ± 2.77
(p)		**(0.442)**	**(0.422)**
Income			
Enough	**43**	36.12 ± 13.52	63.14 ± 2.96
Not enough	**37**	33.92 ± 7.88	63.08 ± 2.27
(p)		**(0.927)**	**(0.495)**

SD: Standard deviation   p: p value for comparison between the studied
    categories

*: Statistically significant at p ≤ 0.05

Table (7): Relation between Socio-demographic characteristics and mean score of studied cardiac surgery patients practice about self-care activities through study phases.

Socio-demographic characteristics	N	mean score for cardiac surgery patient practices about self-care activities		
		Pre intervention	Post intervention	Post-operative
		Mean ± SD.	Mean ± SD.	Mean ± SD.
Sex				
Male	**49**	20.06 ± 28.29	97.57 ± 4.05	99.06 ± 3.06
Female	**31**	15.90 ± 21.40	96.77 ± 3.80	99.26 ± 2.83
(p)		(0.687)	(0.913)	(0.408)
Age (years)				
< 45	**7**	12.0 ± 13.39	97.86 ± 3.48	99.29 ± 2.63
45 - <55	**34**	22.21 ± 30.12	97.82 ± 3.97	99.44 ± 3.27
55 – 60	**39**	16.33 ± 23.23	96.67 ± 4.01	98.85 ± 2.76
(p)		(0.946)	(0.392)	(0.580)
Marital status				
Single	**13**	3.54 ± 3.43	94.77 ± 2.98	98.23 ± 3.59
Married	**55**	20.40 ± 28.57	97.89 ± 3.53	99.58 ± 2.73
Divorced	**5**	32.40 ± 14.76	102.0 ± 4.47	101.20 ± 0.45
Widowed	**7**	20.86 ± 23.35	93.57 ± 3.21	95.86 ± 1.46
(p)		(0.009^*)	$(<0.001^*)$	(0.006^*)
Residence				
Rural	**7**	12.0 ± 16.51	98.14 ± 3.58	99.0 ± 3.16
Urban	**73**	19.07 ± 26.49	97.18 ± 3.99	99.15 ± 2.96
(p)		(0.791)	(0.979)	(0.527)
Educational Level				
Illiterate	**0**	–	–	–
Read and write	**26**	10.58 ± 10.92	96.27 ± 3.03	98.92 ± 3.07
Secondary School	**23**	25.43 ± 36.46	97.78 ± 4.04	98.74 ± 2.65
University	**31**	19.87 ± 24.11	97.71 ± 4.49	99.61 ± 3.09
(p)		(0.771)	(0.309)	(0.403)
Occupation				
Work	**62**	20.29 ± 28.27	97.21 ± 4.11	98.95 ± 3.02
Not Work	**18**	12.11 ± 12.75	97.44 ± 3.45	99.78 ± 2.71
(p)		(0.862)	(0.370)	(0.707)
Income				
Enough	**43**	18.72 ± 23.66	97.98 ± 3.99	99.21 ± 3.08
Not enough	**37**	18.14 ± 28.35	96.43 ± 3.78	99.05 ± 2.84
(p)		(0.719)	(0.629)	(0.096)

SD: Standard deviation   p: p value for comparison between the studied categories

*: Statistically significant at $p \le 0.05$

DISCUSSION

Cardiovascular diseases (CVDs) are the leading cause of death worldwide, contributing significantly to global mortality and disability. In 2021, CVDs were responsible for 20.5 million deaths, accounting for nearly one-third of all global

deaths. Contrary to the traditional view of CVDs as diseases of affluence, over three-quarters of CVD-related deaths now occur in low- and middle-income countries (Di Cesare et al., 2024).

To enhance self-care practices among cardiac surgery patients, it is crucial to focus on improving their knowledge and practices related to self-care activities. This study aimed to evaluate the effectiveness of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery. The findings highlighted significant insights into patients' knowledge and practices regarding self-care activities.

Regarding knowledge of studied cardiac surgery patients in pre-intervention phase, the study revealed that all cardiac surgery patients had unsatisfactory knowledge about coughing exercises and the use of an incentive spirometer. Additionally, slightly more than one-tenth of the patients had correct knowledge about maintaining the integrity of the breastbone, while more than one-quarter demonstrated correct knowledge about wound care. Less than one-tenth of the patients had accurate knowledge regarding foot and leg exercises.

Regarding walking, slightly more than one-fifth of the patients had correct knowledge. In terms of dietary knowledge, slightly more than one-quarter of the patients had unsatisfactory knowledge about healthy sources of white meat. However, slightly less than three-quarters had satisfactory knowledge about healthy sources of fruits, and more than two-fifths had satisfactory knowledge about vegetables. Most patients had unsatisfactory knowledge about the consumption of pickles and salt.

These findings align with previous studies. For instance, a study by El-gaiety, Khalil, Hassan, & Soliman (2019) in Egypt found that only one-tenth of patients had correct knowledge about self-care activities like leg and foot exercises. Similarly, Eldin, Wehaida, Basal, Elatafy, & Ibrahim (2021) reported that the majority of patients had unsatisfactory knowledge about deep breathing, while one-third had correct knowledge about walking. Most patients also lacked knowledge about healthy dietary choices, such as fatty meals and beverages, and all participants had unsatisfactory knowledge about salt and fat usage.

The current study's findings are consistent with Fredericks, Lo, Ibrahim, & Leung (2010), conducted in Toronto, which found that less than one-tenth of patients had correct knowledge about wound care, and all had unsatisfactory knowledge about maintaining the integrity of the breastbone. Similarly, Aziz et al., (2017) in Egypt reported that more than one-tenth of patients had correct knowledge about wound care.et al., (2017) which reported that more than one-tenth of studied cardiac surgery patients had correct knowledge regarding wound care.

From the researcher's perspective, the lack of satisfactory knowledge in the pre-intervention phase may stem from insufficient access to accurate health education about self-care activities and dietary recommendations for cardiac surgery patients. Additionally, the advanced age of the study participants (nearly half were over 55 years old) may have limited their ability to acquire and retain information about self-care practices.

According to the total score of studied cardiac surgery patients' knowledge about self-care activities, the study found that all patients had unsatisfactory knowledge in the pre-intervention phase. However, there was a statistically significant improvement in total knowledge scores from the pre- to post-intervention phases.

The results of the current study align with those of Baghel & Solomon (2023a), who conducted research in India. Their study found that two-fifths of cardiac surgery patients had unsatisfactory total knowledge about self-care activities during the pre-intervention phase. Additionally, their study demonstrated a statistically significant improvement in total knowledge scores from the pre- to post-intervention phases regarding self-care practices.

The findings of the current study are consistent with research conducted by El-ghiety et al., (2019) in Egypt, which revealed that the majority of cardiac surgery patients had unsatisfactory overall knowledge about self-care activities during the pre-intervention phase. However, their study also identified a statistically significant improvement in total knowledge scores between the pre- and post-intervention phases.

This finding contrasts with the results of a study conducted in Egypt by Elesawy, Abouzied, Ahmed, & Hamad (2019), which found no statistically significant

difference in total knowledge scores between the pre- and post-intervention phases regarding self-care activities

From the researcher's perspective, the lack of satisfactory knowledge among patients may be attributed to insufficient awareness programs, such as health sessions or medical convoys organized by medical teams, which could educate patients about heart disease, prevention methods, and self-care activities. Another contributing factor could be that more than three-quarters of the patients included in the study were employed and had adequate income, potentially leading to limited time or motivation to seek out or engage with health education resources.

Regarding the impact of the implemented planned preoperative teaching program on the knowledge of cardiac surgery patients (post-intervention phase), the findings of the current study revealed that slightly more than one-quarter of the patients had correct knowledge about maintaining the integrity of the breastbone. Furthermore, the most of the patients demonstrated correct knowledge about wound care. Additionally, majority of the patients had accurate knowledge regarding foot and leg exercises. However, only slightly more than one-tenth of the patients had correct knowledge about walking after the program intervention..

The findings of the current study revealed that the most of cardiac surgery patients had satisfactory knowledge about healthy sources of white meat, fatty meals, and fruits. In contrast, only one-third of the patients demonstrated satisfactory knowledge regarding vegetables. On the other hand, the majority of patients had satisfactory knowledge about the consumption of pickles and salt. Additionally, the study found that most of patients had satisfactory knowledge regarding the use of fats.

The findings of the current study align with research conducted by Eldin et al., (2021) in Egypt, which showed that all participating patients had satisfactory knowledge about fatty meals, and most of them demonstrated satisfactory knowledge regarding healthy sources of beverages. Additionally, two-thirds of the patients had satisfactory knowledge about salt consumption, and most of them exhibited satisfactory knowledge regarding the use of fats.

The findings of the current study are consistent with research conducted by Fredericks et al., (2010) in Toronto, which demonstrated that most of patients had correct knowledge about wound care, maintaining the integrity of the breastbone, and walking. Additionally, a study by El-ghiety et al., (2019) in Egypt found that the majority of patients had correct knowledge regarding leg and foot exercises.

The results of the current study align with research conducted by Fredericks & Sidani (2012) in Toronto, which found that the majority of cardiac surgery patients had satisfactory knowledge about wound care during the post-intervention phase. On the contrary the same study results disagreed which reported that only one-tenth of patients had satisfactory knowledge about maintaining the integrity of the breastbone in the post-intervention phase.

From the researcher's perspective, the significant improvement observed in the current study can likely be attributed to the effectiveness of the implemented planned preoperative teaching program. This program was specifically designed to address the unique needs of the patients and provided comprehensive information to enhance their understanding. The use of multimedia tools, such as videos, and the inclusion of re-demonstrations further reinforced learning. Additionally, the fact that less than two-fifths of the patients had a university education may have contributed to their ability to grasp and retain the information more effectively, thereby improving their overall knowledge.

In the light of examining the impact of the implemented planned preoperative teaching program on studied cardiac surgery patients' total knowledge, the results of current study elucidated a statistically significant improvement in participated patients' total knowledge in post-tests. Additionally, the results indicated that all studied cardiac surgery had total satisfactory knowledge about self-care activities.

This finding is supported by the results of a study that conducted in India by Baghel & Solomon, (2023a) which found that most of studied patients had total satisfactory knowledge regarding self-care activities. Furthermore, the same study reported a statistically significant difference in the level of patients' knowledge between the pre- and post-intervention phases..

The findings of the current study align with research conducted by El-ghiety et al., (2019) in Egypt, which found that the majority of cardiac surgery patients achieved total satisfactory knowledge about self-care activities during the post-intervention phase. Additionally, their study reported a statistically significant difference in total knowledge scores between the pre- and post-intervention phases. Similarly, Musa et al., (2023) conducted a study in Sudan and revealed a significant improvement in total knowledge about self-care activities from the pre- to post-intervention phases. Furthermore, a study by Torknejad, Babaei, & Mirmohammadsadeghi (2020) in Isfahan also demonstrated a statistically significant difference in total knowledge about self-care activities between the pre- and post-intervention phases.

From the researcher's perspective, the significant improvement observed in the current study results can likely be attributed to the effectiveness of the implemented planned preoperative teaching program, which was presented in an engaging and patient-centered manner tailored to meet the specific needs of the participants. Additionally, the fact that the majority of the studied patients resided in urban areas may have played a role, as urban settings typically offer greater access to health resources and various healthcare facilities. These resources likely provided patients with the necessary information on self-care activities, facilitating learning, enhancing knowledge, and ultimately helping patients maintain their health.

Concerning the practices related to activities of self-care among cardiac surgery patients across the program phases, the findings of the current study demonstrated a statistically significant positive improvement in the pre-intervention phase for practices such as deep breathing, coughing exercises, the use of an incentive spirometer, and rising from bed. This improvement further increased in the post-intervention phase and continued into the postoperative phase.

The findings of the current study also illustrated a statistical significant positive improvement at pre intervention phase at return to bed, arm exercises and sitting on the chair while it increased in post post-intervention phase in comparison to postoperative.

These results align with findings from El-ghiety et al., (2019), conducted in Egypt, which reported a statistically significant improvement in arm exercises during the pre- and post-intervention phases regarding self-care practices. Similarly, Fredericks & Sidani (2012) in Toronto found a statistically significant improvement in the post-intervention phase for self-care activities, including deep breathing, coughing exercises, and the use of an incentive spirometer.

These results are consistent with the findings of a study conducted by Eldin et al., (2021), which revealed a statistically significant improvement in the practice of self-care activities related to rising from bed. However, the findings of the current study contrast with research conducted by Vitomskyi, Al-Hawamdeh, Vitomska, Lazarieva, & Haidai (2021) in Okrania, which found no statistically significant improvement in the practice of self-care activities regarding the use of an incentive spirometer and coughing exercises.

From the researcher's perspective, the unsatisfactory scores in self-care practices may be attributed to a lack of health education and programs focused on teaching these activities. Another possible explanation is the advanced age of the studied patients, as nearly half of them were over 55 years old. Aging can significantly impact patients' ability to acquire and perform self-care activities effectively. Additionally, pain resulting from surgery may further hinder the learning and application of self-care skills during the postoperative period. These factors collectively contribute to the challenges patients face in mastering self-care practices.

In the light of examining the impact of the implemented planned preoperative teaching program on the practices of cardiac surgery patients, the findings of the current study revealed a statistically significant improvement in their total self-care practices across the three study phases (pre-intervention, post-intervention, and postoperative). These results strongly support the hypothesis that "Self-care activities of patients undergoing cardiac surgery will improve after implementing the preoperative teaching plan." This demonstrates the effectiveness of the program in enhancing patients' ability to perform self-care activities and manage their recovery more effectively.

Regarding to the patients practice after the planned preoperative teaching program implementation, the present results revealed that the most of patients had adequate practice with marked and obvious significant improvements after the intervention. This may be due to the usage of teaching aids such as videos, re-demonstrations and the distributed educational hand out that contains more information about disease in attractive way.

The results of the current study are consistent with the findings of Musa et al., (2023) in Sudan, which highlighted a significant improvement in the practice of self-care activities, particularly in functional capacity, across the program phases. Additionally, these findings are supported by Elgazzar, Qalawa, & Ali Hassan (2023), who observed a statistically significant enhancement in self-care practices throughout the program's implementation.

This finding aligns with the results of a study conducted in India by Baghel & Solomon (2023b), which reported a statistically significant improvement in patients' self-care practices across the program phases. Similarly, research by Kinas & Bilgic (2024) in Turkey demonstrated a statistically significant enhancement in patients' self-care practices throughout the pre-intervention, post-intervention, and postoperative phases. Additionally, a study by Nourali, Hosseini, Ghasemi, & Nasiri (2023) in Iran found a statistically significant improvement in self-care practices between the pre- and post-intervention phases.

Regarding the relationship between socio-demographic characteristics and the total knowledge score of cardiac surgery patients about self-care activities, the results revealed a statistically significant association with marital status and educational level during the pre-intervention phase. However, in the post-intervention phase, age and income emerged as the only socio-demographic factors showing statistically significant differences in relation to the total knowledge score about self-care activities.

This finding was supported by the study by Baghel & Solomon, (2023), that conducted in India which revealed a statistically significant difference between Socio-demographic characteristics and the total score of knowledge about self-care activities regarding marital status in pre- intervention phase and age, income in post-

intervention phase. This finding was in contrast with Al-Qalah, Shereif Salam, & Hassanein, (2015) in a study conducted in Egypt which suggested that there was no statistical significant difference between knowledge of studied cardiac surgery patients about self-care activities and their socio-demographic characteristics.

Regarding the relationship between socio-demographic characteristics and the total practice score of cardiac surgery patients concerning self-care activities, the results indicated no statistically significant differences except for marital status, which emerged as the only significant factor across the three phases (pre-intervention, post-intervention, and postoperative).

This finding is supported by a study conducted by Assmann et al., (2023) in Germany, which also found no statistically significant differences between socio-demographic characteristics and the total practice score of self-care activities, with marital status being the sole exception.

The findings of the current study align with those of of Kaur, Verma, Rana, & Singh (2007) conducted in Jordan, which also found no statistically significant relationship between demographic characteristics such as age, sex, and education' and the performance of patients' self-care activities.

CONCLUSION

Based on the results of the present study, the following can be concluded:

The findings of this study revealed that all participating cardiac surgery patients initially had unsatisfactory knowledge and practices regarding self-care activities prior to the implementation of the planned preoperative teaching program. However, following the program's implementation, there was a notable improvement in both knowledge and practices related to self-care activities. Additionally, statistically significant differences were observed between the pre-intervention, post-intervention, and postoperative phases concerning knowledge and practices of self-care activities. These results demonstrate that the planned preoperative teaching program was successful in achieving its objectives, thereby supporting the study's

hypothesis that such a program can significantly enhance the knowledge and practices of cardiac surgery patients regarding self-care activities**.**

RECOMMENDATIONS

Based on the findings of the current study, the following recommendations are suggested:

Education and Awareness

- Regular training sessions on preoperative education for cardiac surgery patients should be conducted using a variety of multimedia tools, such as television programs, videos, booklets, audio tapes, and brochures to reinforce health behaviors and improve patients' adherence to recommended self-care practices.
- Planned preoperative teaching should be extended to patients, families, and caregivers of infants and children scheduled for thoracic surgeries. This education should be integrated into standard hospital care preoperatively to equip families and caregivers with the knowledge and skills needed to support and encourage patients in managing their condition effectively
- Establish a support group that address any problem of self care practice after surgery that alter their quality of life.

Further research

- It is recommended to conduct a similar study using a larger probability sample to improve the generalizability of the findings and allow for broader application of the designed preoperative teaching program across diverse populations and settings.
- Further research is necessary to assess the long-term effectiveness of preoperative teaching on health outcomes, including its impact on recovery, adherence to self-care practices, and overall patient well-being.

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فاعلية التدريس المخطط قبل الجراحة علي انشطة الرعاية الذاتية للمرضي الخاضعين لجراحة القلب

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الخلاصة

أمراض القلب والأوعية الدموية هي السبب الرئيسي للوفاة على مستوى العالم ، حيث يقدر عدد الأرواح ب 17.9 مليون شخص كل عام. وتهدف هذه الدراسة إلى استكشاف فعالية التدريس المخطط له قبل الجراحة حول أنشطة الرعاية الذاتية للمرضى الذين يخضعون لجراحة القلب. تم تضمين عينة هادفة من 80 مريضا يخضعون لجراحة القلب في الدراسة الحالية.وتم استخدام تصميم شبه تجريبي مع تقييم قبلي وبعدي. وأجريت الدراسة الحالية في جناح جراحة القلب للبالغين بمستشفى النصر التخصصي التابع لهيئة الرعاية الصحية المصرية بمدينة بورسعيد حيث تم استخدام أداتين: الأداة الأولى: استبيان معرفة المرضى حول أنشطة الرعاية الذاتية. الأداة الثانية: قائمة مرجعية للمراقبة فيما يتعلق بأنشطة الرعاية الذاتية. النتائج: 61.3٪ من مرضى جراحة القلب الذين تمت دراستهم كانوا من الذكور و 48.8٪ منهم تتراوح أعمارهم بين 55 و 60 عاما ، ولم يكن لدى أي من مرضى جراحة القلب الذين تمت دراستهم معرفة مرضية ب لم يكن لدى أي من مرضى جراحة القلب معرفة مرضية بأنشطة الرعاية الذاتية في مرحلة ما قبل التدخل بينما وصلت إلى 100٪ في مرحلة ما بعد التدخل.كانت هناك فروق إحصائية ذات دلالة إحصائية بين ممارسات مرضى جراحة القلب المدروسة بأنشطة الرعاية الذاتية خلال مراحل الدراسة. الخلاصة: خلصت الدراسة الحالية إلى تحسن في المعرفة والممارسة فيما يتعلق بأنشطة الرعاية الذاتية بين مرضى جراحة القلب. وأيضا كان هناك فرق معتد به إحصائيا بين مرحلة ما قبل التدخل وما بعد الجراحة فيما يتعلق بالمعرفة والممارسة حول أنشطة الرعاية الذاتية. التوصيات: يجب توفير تدريب منتظم على التدريس قبل الجراحة لمرضى جراحة القلب باستخدام الوسائط المتعددة مثل التلفزيون والفيديو والكتيبات والأشرطة والكتيبات لتعزيز الالتزام بالسلوك الصحي وأنشطة الرعاية الذاتية.