



## Patients' Perception Regarding Healthy Lifestyle Practices after Coronary Artery Bypass Graft Surgery

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### Abstract

**Background:** Coronary artery bypass graft surgery is the most demanding treatment for Coronary Artery Disease. Cardiac rehabilitation helps to alleviate the intensity of post-operative complications and enhance awareness in coping with lifestyle changes. **The study aimed to** assess patients' perception regarding healthy lifestyle practices after coronary artery bypass graft surgery. **Design:** A descriptive research design was used to achieve the aim of the study. **Setting:** This study was conducted in cardiothoracic outpatients' clinic at Naser Institute Hospital. **Sample:** A convenience sample was used in this study include 218 patients. **Tools:** A structured interview questionnaire was used. contained four parts: Patients' demographic characteristics, patients' medical history, patients' knowledge regarding coronary artery bypass graft surgery, and patients' perception regarding healthy lifestyle reported practices. **Results:** 23.4% of them had good total knowledge level regarding coronary artery bypass graft surgery; while 47.7% of them had inadequate total healthy lifestyle reported practices level regarding coronary artery bypass graft surgery. **Conclusion:** There was a highly statistically significant positive correlation between the studied patient's total knowledge level and perception regarding healthy lifestyle reported practices. **Recommendations:** Design and implement educational programs for patients to increase their knowledge and healthy lifestyle practices after coronary artery bypass graft surgery.

**Key words:** *Coronary artery bypass graft surgery, Healthy lifestyle practices, Patients perception.*

### I. Introduction

Coronary artery disease (CAD) is the leading cause of death worldwide. According to the World Health Organization (WHO), CAD accounts for 16% of deaths globally. CAD is a disorder or blockage of heart blood flow caused by coronary atherosclerosis, leading to inflammation and pain. CAD can be treated with medical therapy or surgery. When other treatments are ineffective, Coronary Artery Bypass Graft (CABG) surgery may be needed (*Irma & Andi, 2023*).

The primary goal of CABG surgery is to improve the patients' health status, including symptoms, functional status, and health (*Schaal et al., 2020*). While medications and lifestyle modifications can effectively manage CAD in its early stages, advanced cases may necessitate more invasive interventions such as coronary artery bypass graft (CABG) surgery (*Cacciatore et al., 2023*).

This surgical procedure, often referred to simply as bypass surgery, involves creating alternative pathways for blood flow to bypass blocked or narrowed segments of the coronary arteries, thus restoring adequate blood supply to the heart muscle (*Mir et al., 2024*).

Before delving into the intricacies of CABG surgery, it's essential to grasp the nature of CAD itself. CAD develops gradually over time due to the buildup of plaque a combination of fat, cholesterol, and other substances within the coronary arteries. As plaque accumulates the arteries narrow, restricting blood flow to the heart. This diminished blood supply can lead to various symptoms, including chest pain (angina), shortness of breath, fatigue, and, in severe cases, heart attacks (*Rath & Singh, 2024*).



Healthy lifestyle practices encompass a range of behaviors aimed at promoting overall well-being and reducing the risk of cardiovascular diseases, including CAD. These practices typically include regular exercise, balanced nutrition, smoking cessation, stress management, and adherence to prescribed medications. Embracing a healthy lifestyle not only mitigates the progression of CAD but also enhances the effectiveness of medical interventions such as CABG surgery (*Al-Mayahi et al., 2023*).

Patients' perception of healthy lifestyle practices significantly impacts their willingness and ability to incorporate these behaviors into their daily routines. Exploring patients' beliefs, attitudes, and knowledge regarding lifestyle modifications post-CABG surgery can inform healthcare providers in developing patient-centered interventions that are both feasible and sustainable (*Zafari et al., 2021*).

Community health nurses play a crucial role in supporting patients undergoing CABG surgery in their transition to adopting healthier lifestyle practices. By providing education, counseling, and ongoing support, community health nurses empower patients to make informed decisions about their health and facilitate adherence to recommended lifestyle modifications, ultimately promoting long-term cardiovascular health and well-being (*Jiang et al., 2020*).

## II. Significance of the study:

Patients' perception regarding healthy lifestyle practices after coronary artery bypass graft surgery is crucial due to the alarming prevalence and impact of coronary artery disease (CAD). CAD stands as the leading cause of death globally, projected to account for 14.2% of all deaths by 2030 (*Sheng-Shou, 2023*). Worldwide, each year more than 300,000 patients are undergoing coronary artery bypass surgery. Approximately one-fifth of them will have recurrence of coronary heart disease symptoms within the first 5 years. This risk increases with age and is higher among women. Up to 30% will have angina in the first postoperative year, increased risk for myocardial infarction, and greater need for re-operation (*Yousef et al., 2022*).

According to the most recent World Health Organization statistics, Coronary Artery Disease Deaths in Egypt reached 163,171 (29.38 %) of total deaths in 2018. Egypt ranks 15th in the world with a death rate. Coronary artery bypass graft has 3% overall mortality rate, while elective primary coronary bypass has 1.7% mortality rate (*Mansor et al., 2021*).

In Egypt adhering to a healthy lifestyle post coronary artery bypass grafting surgery is associated with a lower risk for complications. Cardiovascular surgery and progression of atherosclerosis will still cause patients to be admitted to hospital again as a post-operative complication affects lifestyle for patients after surgery (*Yousef et al., 2022*) and (*Palm et al., 2022*). So, it is important to assess patient perception regarding healthy lifestyle practices after coronary artery bypass graft surgery to prevent readmission and improve health status.

## III. Aim of the Study:

The study aimed to assess patients' perception regarding healthy lifestyle practices after coronary artery bypass graft surgery. This was achieved through:

1. Assessing patient's knowledge regarding coronary artery bypass graft surgery.
2. Appraising patients' perception regarding healthy lifestyle reported practices regarding coronary artery bypass graft surgery.

## Research questions:

1. What are patient's knowledge regarding coronary artery bypass graft surgery?
2. What are patients' perception regarding healthy lifestyle reported practices after coronary artery bypass graft surgery?
3. What are the relation between patients' demographic characteristics, knowledge and healthy lifestyle reported practices regarding coronary artery bypass graft surgery?
4. Is there correlation between knowledge and healthy lifestyle reported practices?

## IV. Subject and Methods

The subject and methods of this study was portrayed under items as following:

- I- Technical item.
- II- Operational item.
- III- Administrative item.
- IV- Statistical item.



## I- Technical Item:-

The technical item included research design, setting, subject and tools for data collection.

### Research design:-

A descriptive research design was used to achieve the aim of the study.

### Setting:

The study was conducted in cardiothoracic outpatients' clinic at Naser Institute Hospital.

### Sampling:

A convenience sample included 218 patients was used in this study.

### Sample size:

Total patients attended to cardiothoracic outpatient clinic at Naser Institute Hospital in the previous year (2022) were 500 patients.

The sample size was calculated by following equation:

$$n = \frac{N}{1 + N(e)^2} = \frac{500}{1 + 500(0.05)^2} = 218$$

Where,

n = Sample size

N = Population size = 500

e = level of perception = 0.05 (*Adam, 2020*).

Based on the equation the actual size of sample was 218 patients.

## Tools for data collection:

### Data was collected through the following one tool:

**A structured interview questionnaire** was developed by the investigator after reviewing the national and international related literature to collect data for the study. It was contained four parts:

**Part 1: Patients' demographic characteristics** was concerned with age, sex, educational level, marital status and occupation, and monthly income.

**Part 2: Patients' medical history.** It included patient present history 6 questions as: Suffering from diabetes mellitus, hypertension, coronary artery disease,...etc. And past medical history 6 questions as: Hospitalized due heart disease, do a stent for the heart before, any family member suffer from heart disease,...etc.

### **Part 3: Patients' knowledge regarding coronary artery bypass graft surgery containing 16 item**

This part was included meaning of coronary artery disease, meaning of coronary artery bypass graft, causes of coronary artery disease, symptoms after coronary artery bypass graft surgery, complication of coronary artery bypass graft surgery, treatment followed after coronary artery bypass grafting surgery,.... etc.

### Scoring system:

Scoring system for knowledge items, complete correct answer was scored 2 grades, incomplete correct answer was scored 1 grade and don't know or wrong answer was scored zero. Total score were 32 grades from 16 questions. The total scores of each item summed up and then converted into percent score it ranged from 0-32 grades **as the following:**

- **Good knowledge**  $\geq 75\%$  ( $\geq 24$  grades).
- **Average knowledge**  $50 - < 75\%$  ( $16 - < 24$  grades).
- **Poor knowledge**  $< 50\%$  ( $< 16$  grades).

### **Part 4: Patients' perception regarding healthy lifestyle reported practices.**

It contained of 5 dimensions such as: **Drug compliance (8 items) as:** Committed for taking the treatment regularly as doctor order, when forgot to take a dose of medicine at the specified time, take double dose from the missed one, avoided taking medication on that day, skipped the missed one and started from the next dose ...etc. **Dietary practices (11 items) included:** Food that minimized after coronary artery bypass graft surgery, salty food, sugar



containing food, oil rich food, spicy food,...etc, diet followed to reduce constipation, Increase the intake of vegetables, fruits and water, take large quantity of food, take medicines to relieve constipation, ...etc. **Activities contained (11 items) as:** Doing daily exercise regularly, the physical activities that are practiced , house hold activities, agricultural work, care of children gradually, increase activities according to your endurance level, stop performing the exercise when feel shortness of breath or chest discomfort,...etc. **Stress management included:** (5 items) Try to avoid stress daily, and methods used to relive daily stress, care of children, sit alone, practice relaxation techniques / meditation, ...etc. **Follow up as:** (5 items) Check the percentage of fat in the blood regularly, and follow medical examinations at the doctor regularly...etc.

### Scoring system:

The scale measures patient perception regarding reported practices related to coronary artery bypass graft surgery is patients satisfied or not satisfied Each statement was assigned score according to patients' reported practices were done always was scored 2, done sometimes was scored 1, and never done was scored 0. Total score were 80 grades for 40 items. The scores of items summed up and then converted into percentage score it ranged from 0-80 grades **as the following:**

- **Adequate**  $\geq 60$  ( $\geq 48$  grades).
- **Inadequate**  $<60$  ( $< 48$  grades).

### Validity:-

The developed tool was formulated and submitted to three experts in Community Health Nursing to assess the content validity, needed modifications was be done.

### Reliability:

Reliability was tested statistically using the appropriate statistical tests to assure that the tools are reliable before data collection. Answers from the repeated testing were compared Test- re- test reliability Cronbach's Alpha reliability was 0.82 for knowledge, and Cronbach's Alpha reliability was 0.890 for reported practices.

### V.Ethical considerations:

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Helwan University. Participation in the study is voluntary and subjects was given complete full information about the study and their role before signing the informed consent. The ethical considerations were included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs were respected.

## II- Operational Item:

### Preparatoy phase:

It was included reviewing of past, current, national and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

### Pilot study:

The pilot study was done on 10% (22) patients of the sample to examine the clarity of questions and time needed to complete the study tools. Based on the results, of pilot study no modifications were done. So subjects of the pilot study were included in the main study sample.

### VII.Field work:

- Data collection of the study was started at the beginning of January to end of March 2024.
- The investigator introduced herself to patients, explained the aim of the study and its implications and how to fill questionnaire, and ensure cooperation.
- Informed consent was obtained from participants. Interviewing the patients was carried out in waiting area of cardiothoracic outpatient clinic at Naser Institute Hospital.
- The questionnaire sheet take about 15-20 minutes to completed.
- Data was collected 3 days / week (Sunday, Monday and Tuesday) from 9am to 1pm within 3 months
- The investigator taken about 6-7 patients every day, to collect data.
- The interviewing questionnaire sheet was completed by the investigator from each patients.



### III- Administrative Item:

After explanation of the study aim and objective, an official permission was obtained from the Dean of Faculty of Nursing and directed to the General Manger of Naser Institute Hospital asking for cooperation and permission to conduct the study

### IV- Statistical Item:

Upon completion of data collection, data was computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value was set at 0.05. Descriptive statistics tests as numbers, percentage, mean  $\pm$  standard deviation ( $\pm$  SD), was used to describe the results. Appropriate inferential statistics such as “F” test or “t” test was used as well. The level of significance was considered as follows:

- Highly statistically significant at  $P < 0.001$
- Statistically significant at  $p < 0.05$
- No significant at  $p > 0.05$ .

### IX. Results

**Table (1):** Shows that; 34.9% of the studied patients aged from 50 <60 years with Mean age  $53.72 \pm 9.35$ , 59.2% of them were male, 31.2% of them had secondary education and 74.3 % of them were married. Also, 71.6 % of the studied patients were worked, and 54.1% of them had enough monthly income.

**Table (2):** Clarifies that, 100% % of studied patients suffered from coronary artery disease. While 84.9 % of them suffered from hypertension disease.

**Table (3):** Clarifies that, 100.0 % of studied patients did cardiac catheterization before, while 52.7% of them hospitalized due to heart disease.

**Table (4):** Shows that, 22.4% of the studied patients had complete correct knowledge regarding meaning of coronary artery bypass graft surgery, and 32.5% of them had didn't know or had wrong regarding meaning of coronary artery disease, while 31.6% of them didn't know or had wrong answer regarding symptoms after coronary artery bypass graft surgery.

**Figure (1)** shows that; 41.7% of studied patients had poor total knowledge level, and 34.9% of them had average total knowledge level and 23.4% of them had good total knowledge level regarding coronary artery bypass graft surgery.

**Table (5):** Shows that; 48.2% of studied patients always done dietary practices, and 29.4% of them sometimes complied by drug, while 34.4 % of them never done activities.

**Figure (2)** Illustrates 52.3% of studied patients had adequate total healthy lifestyle reported practices level, while 47.7% of them had inadequate total healthy lifestyle reported practices level regarding coronary artery bypass graft surgery.

**Table (6):** Shows that; there were highly statistically significant relation between total knowledge level of the studied patients educational level, while there were statistically significant relation between total knowledge level of the studied patients and their age and occupation, while there were no statistically significant relation between total knowledge level of the studied patients and their sex, marital status and monthly income.

**Table (7):** Shows that; there was a highly statistically significant relation between total reported practices level of the studied patients and educational level, while there were statistically significant relation between total reported practices level of the studied patients and their age and marital status, while there were no statistically significant relation between total reported practices level of the studied patients and sex, occupation and monthly income.

**Table (8):** Clarifies that, there were highly statistically significant positive correlation between the studied patient's total knowledge level and perception regarding healthy lifestyle reported practices.

### Table (1): Frequency Distribution of the Studied Patients regarding their Demographic Characteristics (n=218).

Demographic characteristics	No.	%
<b>Age (years)</b>		
30 <40	36	16.5
40 <50	52	23.9
50 <60	76	<b>34.9</b>
$\geq 60$	54	24.7

<b>Min –Max</b>	<b>36-76</b>	
<b>Mean ±SD</b>	<b>53.72±9.35</b>	
<b>Sex</b>		
Male	129	<b>59.2</b>
Female	89	40.8
<b>Educational level</b>		
No read and write	16	7.3
Read and write	36	16.5
Basic education	60	27.5
Secondary education	68	<b>31.2</b>
University or more	38	17.5
<b>Marital status</b>		
Single	12	5.5
Married	162	<b>74.3</b>
Divorced	24	11.0
Widowed	20	9.2
<b>Occupation</b>		
Worked	156	<b>71.6</b>
Not worked	62	28.4
<b>Monthly Income</b>		
Enough	118	<b>54.1</b>
Not enough	64	29.4
Enough and save	36	16.5

**Table (2):** Frequency Distribution of the Studied Patients regarding their Present Medical History (n=218).

Present medical history	Yes		No	
	No.	%	No.	%
Suffer from diabetes mellitus disease	99	45.4	119	54.6
Suffer from hypertension disease	185	<b>84.9</b>	33	15.1
Suffer from coronary artery disease	218	<b>100.0</b>	0	0.0
Suffer from hyperlipidemia	187	85.8	31	14.2
Smoking	142	65.1	76	34.9
Use incentive spirometer	174	79.8	44	20.2



**Table (3):** Frequency Distribution of the Studied Patients regarding their Past Medical History (n=218).

Past medical history	Yes		No	
	No.	%	No.	%
Hospitalized due to heart disease	115	52.7	103	47.3
Do stent for the heart before	187	85.8	31	14.2
Any one of family member suffer from heart disease	163	74.8	55	25.2
Did cardiac catheterization before	218	100.0	0	0.0
Did thyroidectomy	81	37.2	137	62.8
Did coronary artery disease surgery before	12	5.5	206	94.5

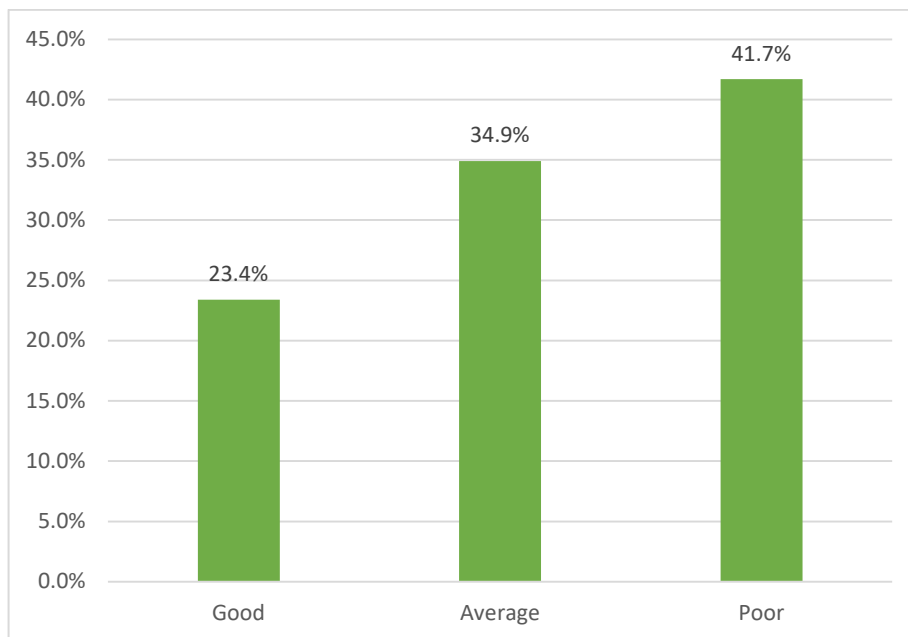
**Part II: Patients' knowledge regarding coronary artery bypass graft surgery.**

Answerd of research question number (1): What are patients' knowledge regarding coronary artery bypass graft surgery? In Table 4 & Figure 1.

**Table (4):** Frequency Distribution of the Studied Patients Knowledge regarding Coronary Artery Bypass Graft Surgery (n=218).

Knowledge items	Complete correct		Incomplete correct		Don't know or wrong	
	No.	%	No.	%	No.	%
Meaning of coronary artery disease	52	23.9	95	43.6	71	32.5
Meaning of coronary artery bypass graft surgery	49	22.4	88	40.4	81	37.2
Causes of coronary artery disease	61	28.0	71	32.6	86	39.4
Symptoms after coronary artery bypass graft surgery	102	46.8	69	31.6	47	21.6
Complications after coronary artery bypass grafting surgery	42	19.3	75	34.4	101	46.3
Treatment followed after coronary artery bypass grafting surgery	39	17.9	87	39.9	92	42.2
The food followed after coronary artery bypass grafting surgery	47	21.6	119	54.6	52	23.8
Amount of water that drink daily after coronary artery bypass grafting surgery	50	22.9	93	42.7	75	34.4
The important of using incentive spirometer after	150	68.8	50	22.9	18	8.3

coronary artery bypass grafting surgery						
Measures used for dressing the wound after coronary artery bypass grafting surgery	38	17.4	66	30.3	114	52.3
Precautions to prevent the patient falling after coronary artery bypass grafting surgery	71	32.6	58	26.6	89	40.8
The rest period require for the patient after coronary artery bypass grafting before returning to work	62	28.4	74	33.9	82	37.7
The things they avoided after coronary artery bypass grafting surgery	59	27.1	97	44.5	62	28.4
The importance of wearing a compression stocking after coronary artery bypass grafting surgery	41	18.8	67	30.7	110	50.5
Protect the rib cage after coronary artery bypass grafting surgery	36	16.5	78	35.8	104	47.7
The precautions to prevent coronary artery disease	74	33.9	79	36.2	65	29.9



**Figure (1):** Percentage Distribution of the Studied Patients Total Knowledge Level regarding Coronary Artery Bypass Graft Surgery (n=218).

**Part III: Patients’ perception regarding healthy lifestyle reported practices after coronary artery bypass graft surgery.**

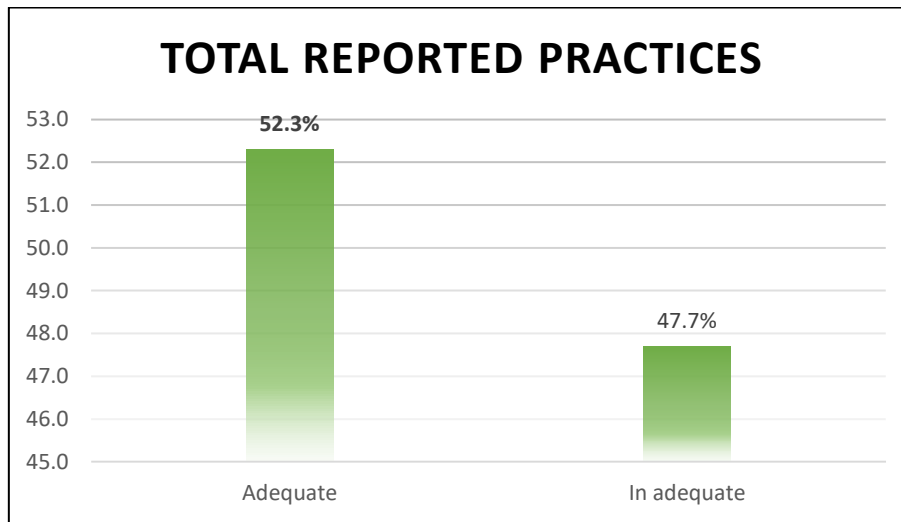
Answered of research question number (2): What are patients’ perception regarding healthy lifestyle reported practices after coronary artery bypass graft surgery? In Table 5 & Figure 2.

**Table (5):** Frequency Distribution of the Studied Patients Total Healthy Lifestyle Reported Practices after Coronary Artery Bypass Graft Surgery (n=218).

Items	Done always	Done sometime	Never done
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	No.	%	No.	%	No.	%
Drug compliance	96	44.0	64	<b>29.4</b>	58	26.6
Dietary practices	105	<b>48.2</b>	57	26.1	56	25.7
Activities	87	39.9	56	25.7	75	<b>34.4</b>
Stress management	75	34.4	51	23.4	92	42.2
Follow up	94	43.1	60	27.5	64	29.4



**Figure (2):** Percentage Distribution of the Studied Patients regarding Healthy Lifestyle Total Reported Practices after Coronary Artery Bypass Graft Surgery (n=218).

**Part IV: Relation between demographic characteristics of studied patients, and their total knowledge and total reported practices.**

Answered of research question number (3): What are the relation between patients’ demographic characteristics, knowledge and healthy lifestyle reported practices regarding coronary artery bypass graft surgery? In Table 6,7.

**Table (6): Relation between Total Knowledge Level and Demographic Characteristics of the Studied Patients (n=218).**

Demographic characteristics Items	Total knowledge level						X <sup>2</sup>	p-value
	Good (n=51)		Average (n=76)		Poor (n=91)			
	No.	%	No.	%	No.	%		
<b>Age (years)</b>								
30 <40	5	9.8	16	21.1	15	16.5	18.471	0.005*
40 <50	11	21.6	22	28.9	19	20.9		
50 <60	12	23.5	25	32.9	39	42.9		
60 and more	23	45.1	13	17.1	18	19.7		
<b>Sex</b>								
Male	29	56.9	45	59.2	55	60.4	.173	0.917
Female	22	43.1	31	40.8	36	39.6		
<b>Educational level</b>								

Demographic characteristics Items	Total knowledge level						X <sup>2</sup>	p-value
	Good (n=51)		Average (n=76)		Poor (n=91)			
	No.	%	No.	%	No.	%		
No read and write	2	3.9	2	2.6	12	13.2	92.888	0.000**
Read and write	3	5.9	17	22.4	16	17.6		
Basic education	6	11.8	32	42.1	22	24.1		
Secondary education	10	19.6	23	30.3	35	38.5		
University or more	30	58.8	2	2.6	6	6.6		
<b>Marital status</b>								
Single	1	2.0	6	7.9	5	5.5	3.864	0.695
Married	38	74.5	57	75.0	67	73.6		
Divorced	8	15.7	7	9.2	9	9.9		
Widowed	4	7.8	6	7.9	10	11.0		
<b>Occupation</b>								
Worked	27	52.9	59	77.6	70	76.9	11.350	0.003*
Not worked	24	47.1	17	22.4	21	23.1		
<b>Monthly Income</b>								
Enough	31	60.8	37	48.7	50	54.9	2.024	0.731
Not enough	13	25.5	24	31.6	27	29.7		
Enough and saved	7	13.7	15	19.7	14	15.4		

\*\*Highly statistically significant at P<0.001 \* Statistically significance at p<0.05

Not significance at p >0.05

**Table (7):** Relation between Total Reported Practices Level and Demographic Characteristics of the Studied Patients (n=218).

Items	Total Reported Practices level				X <sup>2</sup>	p-value
	Adequate (n=114)		Inadequate (n=104)			
	No.	%	No.	%		
<b>Age (years)</b>						
30 <40	12	10.5	24	23.1	11.025	0.012*
40 <50	26	22.8	26	25.0		
50 <60	39	34.2	37	35.6		
60 and more	37	32.5	17	16.3		
<b>Sex</b>						
Male	63	55.3	66	63.5	1.513	0.219
Female	51	44.7	38	36.5		
<b>Educational level</b>						
No read and write	3	2.6	13	12.5	48.784	0.000**
Read and write	8	7.0	28	26.9		
Basic education	26	22.8	34	32.7		
Secondary education	42	36.9	26	25.0		
University or more	35	30.7	3	2.9		

Marital status						
Single	2	1.8	10	9.6	7.586	0.045*
Married	85	74.6	77	74.0		
Divorced	15	13.2	9	8.7		
Widowed	12	10.4	8	7.7		
Occupation						
Worked	76	66.7	80	76.9	2.811	0.094
Not worked	38	33.3	24	23.1		
Monthly Income						
Enough	64	56.2	54	51.9	0.563	0.755
Not enough	33	28.9	31	29.8		
Enough and saved	17	14.9	19	18.3		

\*\*Highly significance at  $P < 0.001$  \* Statistically significance at  $p < 0.05$

No significance at  $p > 0.05$

### Part V: Correlation patient between knowledge and perception regarding healthy lifestyle reported practices.

Answered of research question number (4): Is there correlation between Patient knowledge and perception regarding healthy lifestyle reported practices? In Table 8.

**Table (8):** Correlation between Patients Knowledge and Perception regarding Healthy Lifestyle Reported Practices

Total practices	Total knowledge	
	R	P-value
	0.795	0.000**

\*\* Highly statistically significance at  $p < 0.001$

### X. Discussion

Coronary artery disease is the leading cause of death globally. CAD has been associated with multiple risk factors that can be broadly categorized into non-modifiable and modifiable factors. Non-modifiable factors. CAD is generally managed with medical treatment but in some cases may require surgical intervention and more precisely, coronary artery bypass graft surgery (*Kavikulrani et al., 2023*).

Coronary artery bypass grafting (CABG) is a common surgery to treat coronary artery disease. Coronary artery bypass surgery is a surgical method which may be uses arteries or veins as a graft to convey blood to an area of the coronary artery distal to the blockage. A coronary artery bypass surgery (marked" cabbage). Coronary artery bypass graft surgery has a positive effect on mortality in several cases (*Azezz et al., 2021*). After undergoing CABG surgery, It's essential to consider various lifestyle modification to promote healing and reduce the risk of future heart problem. There are some common recommendation, physical activity, healthy diet, medications adhere, smoking cessation, stress management, weight management, regular follow up (*Gaudel et al., 2022*).

#### Part I: Demographic characteristics and medical history of the studied patients:

Regarding demographic characteristics of the studied patients the finding of the current study revealed that, more than one third of the studied patients aged from 50 <60 years with Mean age  $53.72 \pm 9.35$  ( **table 1**). This result was inconsistent with the results of study performed by **Mariana et al., (2022)** In Assuit University, Egypt (n=60) in their recent study titled " Exploring complications after coronary artery bypass graft in cardiothoracic Intensive Care Unit at Assuit University." and found that 71 % of studied patients' their age more than 50 years old.

Regarding sex, the finding of the current study illustrated that, more than half of the patients' were male. These finding were disagree with **Ozen et al., (2020)** Whose conducted study in Istanbul University, Turkey (n=58). titled "Clinical characteristics of patients undergoing coronary artery bypass surgery Focus on gender differences" and clarified that 71 % of patients' were male.



Regarding educational level, the results of the present study revealed that, less than half of the studies patients' had secondary education. This result disagree with **Noor et al., (2022)** Whose conducted study in Malaysia (n=22) in their recent study titled "A pilot study on development and feasibility of the education CABG application for patients undergoing coronary artery bypass graft (CABG) surgery" and clarified that 63.6% of the studied patients had secondary education.

Regarding marital status the results of the present study revealed that, thirty four of studies patients' were married. These results in the same line with **Sayed et al., (2022)** In Egypt (n=210) in their recent study titled "Dietary habits in patients undergoing coronary artery bypass graft surgery (CABG)". and clarified that 83.3% of the studied patients were married.

Regarding occupation the results of the present study revealed that, less than three quarter of studies patients' were worked. These results disagree with **Nemneilam et al., (2023)** In Telangana (n=50) in their recent study titled "A study to assess the effectiveness of self-instructional module on knowledge regarding lifestyle modifications among post-operative coronary artery bypass graft patients at selected hospital". And found that 52% of the studied patients' were worked.

Regarding monthly income the results of the present study revealed that, more than half of studies patients' had enough monthly income. These results in the same line with **Hulya et al., (2023)** In Turkey (n=240) in their recent study titled "The comfort level of patients who underwent coronary artery bypass graft surgery". and stated that 57, 5% of the studied patients enough monthly income.

Regarding present history revealed that 100 % of studied patients' had coronary artery disease (**table 2**). These results disagreed with **Lim et al., (2022)** whose conducted study in China (n=330). In their study titled "Influence of cholesterol level on long-term survival and cardiac events after surgical coronary revascularization" And found that 60 % had coronary artery disease.

Regarding present history revealed that majority of studied patients' suffer from hypertension disease. These results agree with **Larsson et al., (2023)** whose conducted a study in Swedan (n=16). In their recent study titled "Patients' experiences regarding severe leg wound infection associated with coronary artery bypass grafting a qualitative study". And found that 93.7% of studies patients' suffer from hypertension disease.

Regarding past medical history the current study revealed that 100% of studied patients' did cardiac catheterization before (**table 3**). These results disagreed with **Gabr et al., (2021)** whose conducted study in Zagazige, Egypt (n=50). In their study "Vascular complications and risk factors regarding patient undergoing cardiac catheterization" .and found that 50 % did cardiac catheterization before.

The current study revealed that more than half of studied patients' hospitalized due to heart disease. These results in same line with **Matysek et al., (2022)** In Poland (n=155). In their recent study titled "Knowledge and prevalence of risk factors for coronary artery disease in patients after percutaneous coronary intervention and coronary artery bypass grafting". And stated that 66% of studied patients' were hospitalized due to heart disease.

## **Part II: Patients' knowledge regarding coronary artery bypass graft surgery: Answered of research question number (1): What are patients' knowledge regarding coronary artery bypass graft surgery?**

The current study showed that less than one third of the studied patients didn't know or had wrong answer regarding meaning of coronary artery disease (**table 4**). This result disagree with **Alruways et al., (2020)** In Saudi Arabia (n=311). In their recent study titled "Awareness and prevalence of coronary artery disease risk factors among Saudi adults in Dawadmi, Riyadh province A cross sectional study". And found that 82 % did not know about coronary artery disease. From investigator point of view this might be due to lack patients' knowledge about coronary artery disease and patients need education through better communication from health care provider.

The current study showed that more than fifth of the studied patients had complete correct knowledge regarding meaning of coronary artery bypass graft surgery. This result disagree with **Tüfekçi et al., (2022)** In Turkey (n=65). In their recent study titled "Pain interference with daily living activities and dependency level of patients undergoing CABG surgery ". And found that 54 % didn't had knowledge about meaning of coronary artery bypass graft surgery. From investigator point of view this might be due to patient's need more knowledge about coronary artery bypass graft surgery and understanding which can affect their ability to make informed decision about their health.

The current study that showed that nearly one third of the studied patients had incomplete correct answer regarding symptoms after coronary artery bypass graft surgery .This result disagree with **Sallam et al., (2022)** In Egypt



(n=150). In their recent study titled “Relation between compliance of patients post coronary artery bypass surgery towards symptoms management strategies and experienced discomforts”. And found that 53.3% of the studied patients had high level of perception regarding symptoms.

From investigator point of view this might be due to lack of awareness among patients about post-operative symptoms.

The current study that showed that more than two fifths of studied patients had poor total knowledge level regarding coronary artery bypass graft surgery (**figure 1**). This result disagree with **Angali et al., (2020)** In India (n=60). In their recent study titled “Effectiveness of adaptive prehabilitation package on knowledge, skill, stress cardiac surgery”. And found that 51, 48% of studied patients had poor total knowledge level regarding coronary artery bypass graft surgery. From investigator point of view this might be due to lack knowledge among considerable portion of the patient's population, highlighting the important of effective communication and education effort in health care setting to ensure patients are well informed about their followed instruction and treatment.

The current study that showed that more than one third of studied patients had average total knowledge level regarding coronary artery bypass graft surgery. This result disagree with **Nanna et al., (2020)** in Durham (n=164). In their recent study titled “Age, knowledge, preferences, and risk tolerance for invasive cardiac care”. And found that 79 % of studied patients had average total knowledge level regarding coronary artery bypass graft surgery.

From investigator point of view this might be due to moderate level of patients understanding of knowledge level may still leave gaps that effect their ability to fully comprehend the surgery.

The current study that showed that more than one fifth of studied patients had good total knowledge level regarding coronary artery bypass graft surgery. This result disagree with **Isam & Hassan, (2023)** in Iraq (n=50). In their recent study titled “Effectiveness of cardiac rehabilitation instructional program on knowledge and health-related quality of life for patients undergone coronary artery bypass graft surgery”. And found that 92% of studied patients had good total knowledge level regarding coronary artery bypass graft surgery.

From investigator point of view this might be due to patients need more knowledge level regarding coronary artery bypass graft surgery.

### **Part III: Patients' perception regarding healthy lifestyle reported practices after coronary artery bypass graft surgery.**

#### **Answered of research question number (2): What are patients' perception regarding healthy lifestyle reported practices after coronary artery bypass graft surgery?**

According to total reported practices: The finding of current study revealed that nearly half of the studied patients always do dietary practices (**table 5**). This finding disagrees with **Islam et al., (2022)** In Pakistan (n=91). In their study titled “Awareness level and practices of heart healthy diet of patients undergoing coronary artery bypass grafting”. And clarified that 37 % of the studied patients always does dietary practices.

From investigator point of view this might be due to defect of patients understanding and the factors that influence healthy dietary practices.

The finding of current study revealed that more than one quarter of the studied patients sometimes compliance by drug. This finding agree with **Pietrzykowski et al., (2020)** In Austria. (n=225). In their study titled “Medication adherence and its determinants in patients after myocardial infarction”. And clarified that 29% of the studied patients sometimes compliance by drug.

From investigator point of view this might be due to several factors such as health literacy, side effect, cost medication, might contribute to this issue and lack understanding of their importance.

The finding of current study revealed that more than one third of the studied patients never done activities. This disagree with **De Bacquer et al., (2022)** In Belgium (n=7,998). In their study titled “Poor adherence to lifestyle recommendations in patients with coronary heart disease results from the eueoaspire surveys”. And found that 47% never or rarely engaged in activity.

From investigator point of view this might be due to several reasons such as lack motivation, not having enough time, busy schedule, might contribute to this lack of activity.

The finding of current study revealed that more than half of the studied patients had adequate total reported practices level regarding coronary artery bypass graft surgery (**Figure 2**). This disagree with **Takroni et al., (2022)** In Saudi Arabia (n=82). In their study titled “Home-based versus outpatient-based cardiac rehabilitation post-coronary artery bypass graft surgery A randomized controlled trial”. And clarified that 58% of studied patients had adequate total reported practices level regarding coronary artery bypass graft surgery.





From investigator point of view this might be due to nearly about half patients might not be adherence to all recommended practices.

The finding of current study revealed that nearly half of the studied patients had inadequate total reported practices level regarding coronary artery bypass graft surgery. This disagree with **Hideki et al., (2020)** In Gapan (n=346). In their study titled "Active participation in outpatient cardiac rehabilitation is associated with better prognosis after coronary artery bypass graft surgery". And presented that 70% of the studied patients had inadequate total reported practices level regarding coronary artery bypass graft surgery.

From investigator point of view this might be due to lack education patients might not fully understand the importance of post CABG surgery practices.

#### **Part IV: Relations and correlations between the studied variables:**

##### **Answered of research question number (3): What are the relation between patients' demographic characteristics, knowledge and healthy lifestyle reported practices regarding coronary artery bypass graft surgery?**

The finding of current study revealed that there highly statistically significant relation between total knowledge level of the studied patients educational level (**table 6**). This result consistent with the result of study performed by **Elsayed et al., (2023)** In Egypt (n= 64). In their study titled "Effect of an educational intervention on knowledge, and self-efficacy for post coronary artery bypass graft surgery patients". And revealed that there highly statistically significant relation between total knowledge level of the studied patients' educational level.

From investigator point of view this might be due to indicate that the educational background about patients disease lead them to manage their health.

The finding of current study revealed that there were statistically significant relation between total knowledge level of the studied patients and their age and occupation. This result consistent with the result of study performed by **Blokzjl et al., (2021)** In Hanzeplein (n= 15,000). In their study titled "Barriers that obstruct return to work after coronary bypass surgery a qualitative study". And revealed that there statistically significant relation between total knowledge level of the studied patients and their age and occupation.

From investigator point of view this might be due to some factor such as age and occupation may play role in influencing the knowledge level of patients.

The finding of current study revealed that there were no statistically significant relation between total knowledge level of the studied patients and their sex, marital status and monthly income. This result inconsistent with the result of study performed by **Mohsen et al., (2021)** In Iran (n=54). In their study titled "The effect of sexual counseling on depression, anxiety, stress, sexual knowledge and sexual quality of life in men who have undergone invasive coronary interventions". And revealed that were no statistically significant relation between total knowledge level of the studied patients and their sex, marital status and monthly income.

From investigator point of view this might be due to suggests that these factor such as sex, marital status, monthly income, don't play a crucial role in influencing how much patients know about their health condition and treatment.

The finding of current study revealed that there was a highly statistically significant relation between total reported practices level of the studied patients and educational level (**table 7**). This result inconsistent with the result of study performed by **Eldesoky et al., (2020)** In Egypt (n=40) in their study titled "Factors affecting nurses' performance regarding the care for patients underwent coronary artery bypass graft". And revealed that was a highly statistically significant relation between total reported practices level of the studied patients and educational level.

From investigator point of view this might be due to patients educational level enhance health and understanding medical instruction that they do.

The finding of current study revealed that there were statistically significant relation between total reported practices level of the studied patients and their age and marital status. This result consistent with the result of study performed by **Mathew et al., (2021)** In India (n=250) in their study titled "Effectiveness of awareness model on practice regarding maintenance of health and prevention of complication related to CABG among caregiver of CABG patients admitted in selected hospital of Gujarat". And revealed that were statistically significant relation between total reported practices level of the studied patients and their age and marital status.

From investigator point of view this might be due to the age and marital status may influence the practices of the patients in this study.





The finding of current study revealed that there were no statistically significant relation between total reported practices level of the studied patients and sex, occupation and monthly income. This result consistent with the result of study performed by **Ameer et al., (2022)** In Iraq (n=35) in their study titled "Effectiveness of a diet exercise educational program on patient's knowledge to prevent coronary artery disease progression after percutaneous coronary intervention". And revealed that there were no statistically significant relation between total reported practices level of the studied patients and sex, occupation and monthly income.

From investigator point of view this might be due to these factors such as sex and occupation, monthly income may not the practices reported by the patients in the study.

#### **Part V: Answered of research question number (4): Is there correlation between Patient knowledge and perception regarding healthy lifestyle reported practices?**

The finding of current study revealed that there were highly statistically significant positive correlation between the studied patient's total knowledge level and perception regarding healthy lifestyle reported practices (**table 8**). This result consistent with the result of study performed by **El-ghiety et al., (2019)** In Egypt (n=60). in their study titled "Effect of instructional guidelines on knowledge, practice, and fatigue level among post cardiac surgery patients". And revealed that there were highly statistically significant positive correlation between the studied patient's total knowledge level and perception regarding healthy lifestyle reported practices.

From investigator point of view this might be due to lack of knowledge influence health and practices. Also patient's knowledge about health affect their perception and likely their adherence to healthy lifestyle.

## **XI. Conclusion**

### **In the light of current study result and answered research questions, it could be concluded that:**

More than two fifths of studied patients had poor total knowledge level regarding coronary artery bypass graft surgery. More than half of studied patients had adequate total healthy lifestyle reported practices level, while nearly half of them had inadequate total healthy lifestyle reported practices level regarding coronary artery bypass graft surgery. There was highly statistically significant positive correlation between the studied patient's total knowledge level and perception regarding healthy lifestyle reported practices. There was highly statistically significant relation between total knowledge levels of the studied patients and their educational level. There was highly statistically significant relation between total reported practices level of the studied patients and educational level.

## **XII. Recommendations**

### **From the present findings, the following recommendations were suggested:**

- 1) Design and implement educational programs for patients to increase their knowledge and healthy lifestyle practices after CABG surgery.
- 2) Booklets and posters should be available in cardiothoracic out patients clinic to guide all patients about CABG surgery.
- 3) **Future research** on large sample of patients to assess their perception regarding healthy lifestyle practices after CABG surgery and in other settings is needed.

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