

## **Lifestyle Pattern for Cardiac Patients regarding Recurrence of Cardiac Stents**

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### **Abstract**

**Background:** Modifications to lifestyle and healthy behavior are essential to better clinical outcomes in patients with cardiac stents to prevent recurrence of cardiac stents. **Aim of the study:** Was to assess lifestyle pattern for cardiac patients regarding recurrence of cardiac stents. **Design:** A descriptive research design was used in carrying out this study. **Setting:** This study was carried out at the Cardiology Outpatient Clinic in Benha University Hospital. **Sample:** A purposive sample including 100 patients with cardiac stents was used. **Tools:** Two tools were utilized. **Tool I:** An interviewing questionnaire composed of three parts, which are demographic characteristics of the cardiac stent patients, medical history of studied patients and knowledge of studied patients regarding cardiac stents. **Tool II:** Lifestyle questionnaire used to assess cardiac patients' lifestyle pattern. **Results:** 32.0% of studied patients aged from 40 < 50 years, 68% were suffering from hypertension, 60% of studied patients performed the cardiac stent three times, 33% of them had good total knowledge level regarding cardiac stents and 36.0% had healthy total lifestyle pattern. **Conclusion:** A statistically significant relation between studied patients' total lifestyle pattern and recurrence of cardiac stents was present. **Recommendations:** Health education program should be provided for patients with cardiac stents to improve their knowledge and practices related to lifestyle modification.

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**Key words:** Cardiac patients, Lifestyle pattern, Recurrence of cardiac stents.

### **Introduction**

Cardiovascular Diseases (CVDs) are a group of disorders of the heart and blood vessels, which include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and other conditions. CVDs are the leading cause of death worldwide, ends around 17.9 million lives each year. More than four out of five CVD deaths are caused by heart attacks and strokes, and one third of these deaths happen prematurely in people under the age of 70 (**World Health Organization (WHO), 2022**).

Heart disease can result from disorders with the heart's muscles, valves, or coronary arteries, all of which decrease the heart's efficiency. The body undergoes a crisis when the heart is unable to pump enough blood

through the arteries and veins, as blood carries nutrients and oxygen with it. The development of plaque on the arteries inner surface causes Coronary Artery Disease (CAD), which is a prevalent cardiac condition among people with heart disease. Atherosclerosis refers to the arterial blockage caused by the buildup of plaque (**Borhani et al., 2018**).

Nowadays, stent implantation and angioplasty are frequently used to treat atherosclerosis, which represent the majority of cardiovascular disorders worldwide. A stent is a tiny metal tube or coil that is inserted into a blocked artery to keep it open. The main function of a cardiac stent is to widen the passage when it is implanted in the artery using a balloon catheter. This helps stop the artery from re-narrowing and improves blood flow to

the heart (Alexander, 2021). In this regard, stenting technique has progressed over the past 50 years; In this regard, stenting technique has progressed over the past 50 years; in specifically, the last three decades have noticed a transition from bare metal stents to drug delivery systems to bioresorbable devices (Montaño-Machado et al., 2019).

Types of coronary stents: Drug-Eluting Stents (DES) are the most type of stents used in the coronary arteries. Bare metal stents are straightforward tubes composed of metal mesh without medicines that can be utilized in the coronary arteries. There are many varieties of DES coated with medicines, which are released into the artery over time to stop the artery from narrowing again. Another kind of stent that dissolves after a few months is a Biodegradable Stent (BDS); this kind of stent is helpful when the need is temporary. Patients do not require additional procedures to pullout these stents because BDS dissolve (National Heart, Lung and Blood Institute (NHLBI), 2020).

The implementation of a healthy lifestyle, which includes regular physical activity, a balanced diet, regular sleep, stress management, quitting smoking, and limited alcohol intake, is also suggested by the existing guidelines. However, the truth is that patients frequently lack understanding of Coronary Heart Disease (CHD) and not adequately adopt suggested modifications. Self-management of the condition and modifying unhealthy lifestyle choices are crucial for patients who have had coronary artery stents installed to make better health outcomes and lower the risk of CHD recurrence (Wang et al., 2021).

The community health nurse has an essential role for cardiac stent patients through evaluating patients' lifestyle and cardiovascular issues after suffering from a coronary event and providing them with health

education about independence, maintaining physical activity, consuming a healthy diet, adhering to medication, regular follow-up and giving psychological support. Additionally, community health nurse participates in enhancing the patients' lifestyle and level of satisfaction, which reduces hospital costs associated with readmissions and may minimize cardiac patients' mortality (Zhang et al., 2021).

#### **Significance of the study:**

Egypt is the most country in the Middle East and North Africa that have one of the greatest numbers of cardiovascular fatalities (Reda et al., 2019). According to the most recent WHO data, coronary heart disease deaths in Egypt was 173,871 in 2020, or 32.40% of all fatalities. Egypt is ranked number 15 in the world with an age-adjusted death rate of 268.11 per 100,000 people (WHO, 2020).

Surgical procedures have been carried out under Egyptian presidential initiative addressed the crucial waiting lists for surgical procedures which were over 443,787; the operations carried out including 174,941 heart catheterization operations, 26,760 open heart surgeries, diagnostic catheterization accounting for 62% of total catheterization and 38% cardiac stents (Egyptian Ministry of Health, 2020).

#### **Aim of the study:**

The current study aimed to assess lifestyle pattern for cardiac patients regarding recurrence of cardiac stents.

#### **Research questions**

1. What is the cardiac patient's knowledge about cardiac stents?
2. What is the cardiac patient's life style pattern about recurrence of cardiac stent?
3. Is there a relation between the cardiac patient's lifestyle pattern and recurrence of cardiac stent?

## **Subjects and Method**

### **Design:**

A descriptive research design was used in carrying out this study.

### **Setting:**

The present study was performed at the Cardiology Outpatient Clinic in Benha University Hospital in Egypt. This clinic is composed of one room lies in the first floor in the hospital. This setting was chosen because of high attendance rate of cardiac patients.

### **Sampling:**

#### **Sample type and criteria:**

A purposive sample of 100 cardiac patients with cardiac stents recurrence attended to the previous setting was included throughout a six month period. The following inclusion criteria were used to take the patients:

- Had cardiac stent recurrence
- Aged 40 years and more.

#### **Sample Size**

The sample size was calculated according the following formula: (**Fearon et al., 2017**):

$$n = \frac{N \times p (1-p)}{\left( (N-1) \times (d^2 + z^2) \right) + p (1-p)} = 100$$

**N** = Population size is 1043 patients with cardiac stents during the year 2021, **p** = Ratio provides a neutral property is equal to 0.12, **d** = the error rate is equal to 0.05 and **z** = Class standard responding to the level of significance equal to 1.96. the sample size = 100 patients with cardiac stents recurrence.

#### **Tools of data collection:**

Two tools were used:

**Tool I: An interviewing questionnaire:** It was designed by the researchers depending on reviewing concerned literatures and it was translated into simple clear Arabic language and composed of three parts to assess the following:

**Part I: Cardiac patients demographic data** including 6 closed ended questions such as age,

gender, educational level, marital status, occupation and residence.

**Part II: Medical history** of studied patients composed of 5 closed ended question covering areas of chronic diseases, surgical operations, recurrence of cardiac stent operation, time the last stent implanted and number of visits to cardiovascular outpatient clinic for follow up.

**Part III: Studied patients' knowledge** about cardiac stents included 14 closed ended questions (multiple choice type) covering items of (meaning, types of cardiac stents, risk factors affecting the cardiac stent implantation, reasons for stent implantation, side effects during the implantation of a cardiac stent, therapeutic regimen followed after placement of cardiac stent, reasons for not adhering to the prescribed treatment, treatment side effects, complications resulting from cardiac stent implantation, precautions before cardiac stent implantation, precautions after stent implantation, activities avoided with the arm stents, activities avoided with the thigh stents, and prevention of recurrence of the cardiac stent.

#### **Scoring system**

Each response received one of the following scores: (2) for a correct and complete answer, (1) for a correct and incomplete answer, and (0) for don't know. Total knowledge score = 28 degree

Three categories were used to classify the total knowledge score: good if the total score  $\geq 75\%$  ( $\geq 21$  degree), average if the score 50-75% (14-21 degree) and poor if the score  $< 50\%$  ( $< 14$  degree).

**Tool II: life style questionnaire** adopted from (**Mohamed et al., 2017**) and would be modified to evaluate the cardiac patients with cardiac stent life style pattern which included 39 items divided into daily physical activity (seven items), health status (four items), rest and sleep (six items), nutrition (twelve items), stress management (six items) and social support (four items).

### **Scoring system**

The total score for the lifestyle patterns is the sum of total items of the questionnaire. Every response was given a score ranged from 0 to 2 based on three-point Likert scale, the scores given as follows: always=2, sometimes= 1 and never= 0. High score means healthy lifestyle patten.

The total lifestyle pattern score was regarded as healthy if the total score  $\geq 60\%$  and regarded as unhealthy if the score  $< 60\%$ .

### **Tools validity:**

Three experts of Faculty of Nursing Staff from the Community Health Nursing field examined the tools for completeness, appropriateness and legibility. The experts declared the content validity of the tools.

### **Tools reliability:**

Cornbrash's Alpha coefficient test was used to determine the tools' reliability, it was found that the tools consisted of homogeneous items, as identified by the moderate to high reliability of each tool. Knowledge's internal consistency was 0.647, while the lifestyle questionnaire was 0.725.

### **Administrative approval:**

A formal letter from the Dean of the Nursing faculty at Benha University was submitted to the director of Benha University Hospital to obtain permission to accomplish the study. The purpose and importance of the study were fully explained, and patients' consent was obtained before beginning data collection.

### **Ethical considerations:**

The Benha University Faculty of Nursing's Scientific Research Ethical Committee accepted this study. Before initiating the interview, each patient's consent was taken, and they were also provided with a brief description to the aim of the study. They were additionally informed that data collected would be confidential and utilized just for the research. The patients had the freedom to leave

the study at any time and without giving any explanations.

### **Pilot study:**

10% of the total sample (10 patients) were included in a pilot study to evaluate the tool's content for applicability, and simplicity to use. Depending on the pilot study, rephrasing of the tool and rearrangement of some questions were done. Since no modifications were made the pilot study was included.

### **Field of work:**

The actual fieldwork took place over a period of six months, from the beginning of February 2022 and ending in July 2022. The study was carried out in Benha University Hospital at the Cardiology Outpatient Clinic. During the patients' follow-up visits, interviews were done with them. The researchers were present at the previous setting three days weekly (Saturdays, Mondays, and Tuesdays) from 9 am to 1 pm. The patients' consent was obtained when the researchers clarified the study's importance and objectives. Depending on cardiac patients' attendance, the average daily number of patients interviewed was (1-2) patients. 30 to 40 minutes were required to complete the questionnaire based on the patients' response and understanding.

### **Statistical analysis:**

All data were arranged and analyzed using the proper statistical tests. SPSS software version 21 was applied for data analysis, which allowed for the calculation of numbers and percentages for qualitative data, means and standard deviations for quantitative data, and tests for statistical significance and relations between the variables using the chi-square test and Pearson correlation test. A p-value  $< 0.05$  was considered significant, and  $< 0.001$  was considered highly significant, and  $> 0.05$  was not significant.

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### **Results:**

**Table (1):** Shows that 32.0% of studied patients aged from 40 to less than 50 years with mean age  $65.21 \pm 4.35$  years, while 56.0% were males, 40.0% of them had secondary education, 74.0% of studied patients were married, 42.0% of the patients were governmental employees and 58.0% were from rural areas.

**Table (2):** Shows that 68%, 44%, 22% of studied patients were suffering from hypertension, diabetes, and performed appendectomy respectively. While 42% of studied patients didn't have any surgical operations, 28% of them performed the last stent two years ago and 58% of them visited cardiovascular outpatient clinics for follow up once a month.

**Figure (1):** Clarifies that 60% of studied patients performed the cardiac stent three times and more and 40% of them performed the cardiac stent two times.

**Figure (2):** Illustrates that 33% of studied patients had good total knowledge level, while 45% of them had average total knowledge level and 22% had poor total knowledge level regarding cardiac stents.

**Table (3):** Shows that 38% and 37% of studied patients had healthy total lifestyle pattern regarding to physical activity and nutrition respectively, while 71% and 74% of them had unhealthy total lifestyle pattern regarding to rest and sleep and stress respectively.

**Figure (3):** Illustrates that 36.0% of studied patients had healthy total lifestyle pattern and 64.0% of them had unhealthy total lifestyle pattern regarding to recurrence of cardiac stents.

**Table (4):** Shows a highly statistically significant relations between total lifestyle pattern of studied patients and age and educational level ( $p < 0.001$ ), and statistically significant relations between total lifestyle

pattern and gender ( $p < 0.05$ ), but there were no statistically significant relations between total lifestyle pattern and marital status, occupation and residence.

**Table (5):** Shows that there was a statistically significant relation between studied patients total lifestyle pattern and recurrence of cardiac stents ( $p < 0.05$ ).

**Table (6):** Shows a highly statistically significant relation between studied patients total lifestyle pattern and total knowledge level ( $p < 0.001$ ).

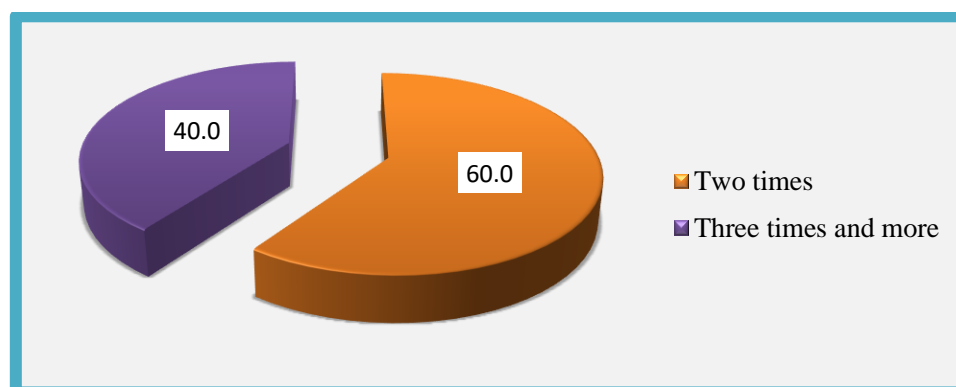
**Table (1): Frequency distribution of studied patients regarding their demographic data (n=100).**

<b>Demographic data</b>	<b>No.</b>	<b>%</b>
<b>Age in years</b>		
40<50	32	32.0
50<60	30	30.0
60<70	26	26.0
≥70	12	12.0
<b>Mean ±SD 65.21±4.35</b>		
<b>Sex</b>		
Male	56	56.0
Female	44	44.0
<b>Educational level</b>		
Don't read and write	12	12.0
Basic education	10	10.0
Secondary education	40	40.0
High education	38	38.0
<b>Marital status</b>		
Single	2	2.0
Married	74	74.0
Widowed	14	14.0
Divorced	10	10.0
<b>Occupation</b>		
Governmental employee	42	42.0
Private work	8	8.0
Craft work	10	10.0
Retired	24	24.0
Unemployed	16	16.0
<b>Residence</b>		
Rural	58	58.0
Urban	42	42.0

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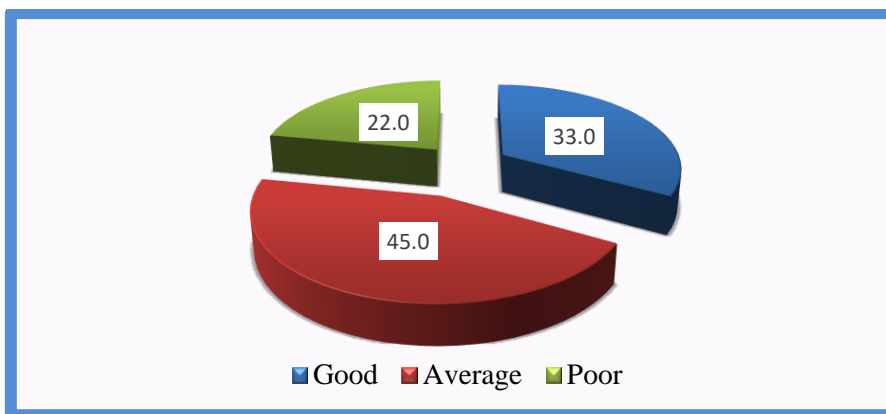
**Table (2): Frequency distribution of studied patients regarding their medical history (n=100).**

Medical history	No.	%
<b>Chronic diseases</b>		
Diabetes	44	44.0
Hypertension	68	68.0
Hepatitis	6	6.0
Kidney failure	4	4.0
Asthma	16	16.0
No diseases	4	4.0
<b>Surgical operations :</b>		
Open heart	4	4.0
Cholecystectomy	14	14.0
Appendectomy	22	22.0
Tonsillectomy	20	20.0
Thyroidectomy	6	6.0
Another surgical operation	6	6.0
No surgical operations	42	42.0
<b>Numbers of cardiac stents surgeries:</b>		
Twice	60	<b>60.0</b>
Three times or more	40	40.0
<b>Time the last stent implanted/ yrs</b>		
< 1 year	22	22.0
1 year	24	24.0
2 years	28	28.0
3 years	10	10.0
≥4 year	16	16.0
<b>No. of visits to cardiovascular outpatient clinic of for follow up:</b>		
Once a month	58	58.0
Twice a month	30	30.0
Three times a month	12	12.0



**Figure (1): Percentage distribution of studied patients regarding recurrence of cardiac stent operation (n=100).**

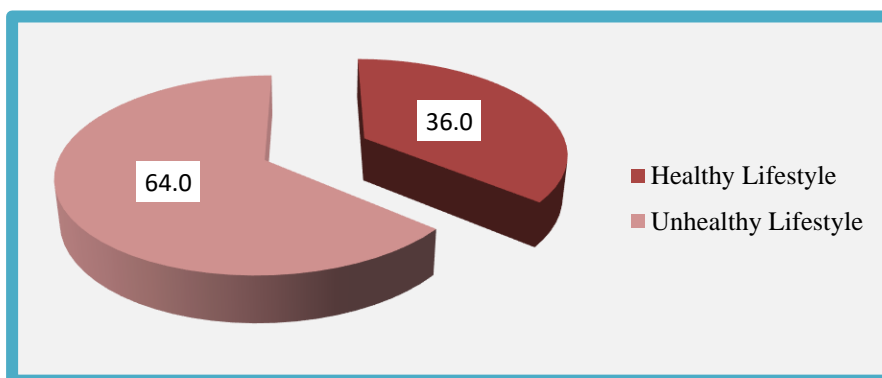




**Figure (2): Percentage distribution of studied patients regarding their total knowledge level about cardiac stent (n=100).**

**Table (3): Frequency distribution of studied patients regarding their total lifestyle pattern items (n=100).**

Total lifestyle patterns	Healthy		Unhealthy	
	No.	%	No.	%
Physical activity	38	38.0	62	62.0
Health status	34	34.0	66	66.0
Rest and sleep	29	29.0	71	71.0
Nutrition	37	37.0	63	63.0
Stress	26	26.0	74	74.0
Social support	35	35.0	65	65.0



**Figure (3): Percentage distribution of studied patients regarding their total lifestyle pattern about recurrence of cardiac stents (n=100).**



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**Table (4): Relation between studied patients demographic data and their total lifestyle pattern (n=100).**

Demographic data	Total lifestyle pattern				X2	p-value
	Unhealthy (n=64)		Healthy (n=36)			
	No.	%	No.	%		
<b>Age/yrs</b>						
40<50	28	43.8	4	11.1	24.04	<b>0.000*</b> *
50<60	18	28.1	12	33.3		
60<70	17	26.6	9	25.0		
≥ 70	1	1.6	11	30.6		
<b>Gender</b>						
Male	29	45.3	27	75.0	8.241	<b>0.004*</b>
Female	35	54.7	9	25.0		
<b>Level of education</b>						
Don't read and write	10	15.6	2	5.6	18.747	<b>.000**</b>
Basic education	10	15.6	0	0.0		
Secondary education	29	45.3	11	30.6		
High education	15	23.4	23	63.9		
<b>Marital status</b>						
Single	2	3.1	0	0.0	3.984	<b>0.263</b>
Married	48	75.0	26	72.2		
Widowed	10	15.6	4	11.1		
Divorced	4	6.3	6	16.7		
<b>Occupation</b>						
Governmental employee	22	34.4	20	55.6	7.493	<b>0.112</b>
Private work	4	6.3	4	11.1		
Craft work	9	14.1	1	2.8		
Retired	18	28.1	6	16.7		
Unemployed	11	17.2	5	13.9		
<b>Residence</b>						
Rural	40	62.5	18	50.0	1.478	<b>0.224</b>
Urban	24	37.5	18	50.0		

\*\* High statistically significant p< 0.001    \*Statistically significant p <0.05    Not statistically significant p> 0.05

**Table (5): Statistically relation between studied patients’ total lifestyle pattern and recurrence of cardiac stents.**

Recurrence of cardiac stents	Total lifestyle pattern				X <sup>2</sup>	p-value
	Unhealthy (n=64)		Healthy (n=36)			
	No.	%	No.	%		
Twice	44	68.8	34	94.4	8.864	<b>0.003*</b>
Three times or more	20	31.3	2	5.6		

\*Statistically significant p <0.05

**Table (6): Statistically relation between studied patients’ total lifestyle pattern and total knowledge level.**

Total knowledge level	Total lifestyle pattern				X <sup>2</sup>	p-value
	Unhealthy (n=64)		Healthy (n=36)			
	No.	%	No.	%		
<b>Poor (n=22)</b>	21	32.8	1	2.8	51.78	<b>0.000**</b>
<b>Average (n=45)</b>	38	59.4	7	19.4		
<b>Good (n=33)</b>	5	7.8	28	77.8		

\*\* High statistically significant p< 0.001

**Discussion:**

Cardiovascular disease is one of the most prevalent conditions in the world and the leading cause of mortality as well as disability. The need for heart surgery has been significantly reduced as a result of the use of coronary stents in cardiovascular patients (Mehrpoya et al., 2018). In order to enhance clinical outcomes in individuals with CVD, lifestyle modifications and healthy behavior must be maintained. Consequently, it's essential to remain in contact with the patient. Studies have utilized a variety of approaches to help people modify their lifestyles and adopt healthier lives, including individual counseling, alerting patients about risks, engaging family members in decision-making, setting goals for treatment adherence, as well as minimizing cardiovascular risk factors (Bernal-Jimenez et al., 2021).

Regarding studied patients demographic data, the existing study showed that nearly one third of studied patients aged from 40 < 50 years with mean age 65.21±4.35 years, in

addition, more than half were males. These findings were supported with Ayman et al. (2022), who performed a study on 163 cardiac patient s about Percutaneous coronary artery intervention in unprotected left main coronary artery disease in Egypt and found that mean age ± SD 58.61 ± 9.5 years of study participants and 54.93% were males. Additionally, these results were in harmony with Kähkönen et al. (2018), who carried out a study in Finland on patients with coronary heart disease after percutaneous coronary intervention and reported that the mean± SD of age of the participants was 63.2 ± 8 years and 75.5% of the study sample were males.

Regarding level of education, the current study indicated that two fifths of studied patients had secondary education. This finding disagreed with Mohammed & Mohammed, (2016) who conducted a study in Egypt on 60 patients undergoing coronary artery stent and developed nursing educational protocol on health promotion outcome and

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stated that 10% of study sample and 20% of control sample had secondary education. Moreover, this result agreed with **Du et al. (2020)**, who conducted a study on 326 patients with myocardial infarction about health-related quality of life and associated factors after returning to work in Zhengzhou, China and noticed that (31.6%) of patients have junior school.

This study detected that less than three quarters of studied patients were married and more than two fifths were governmental employees. These findings agreed with **Xia et al. (2022)**, who accomplished a study in Shanghai on 168 coronary heart disease patients with heart stent implantation regarding illness uncertainty and its associated factors, and reported that 85.1% of the studied patients were married. Also this finding was contradicted with **Abdul-Ameer et al. (2022)**, who handled a study in Iraq on 35 patients to prevent coronary artery disease progression after percutaneous coronary intervention and found that (20%) of studied patients were governmental employees.

Concerning residence, the existing research illustrated that nearly three fifths of studied patients were from rural areas. This finding was in line with **Mohamed et al. (2017)**, who carried out a study on 56 patients on Egypt regarding instructional guidelines on lifestyle modification for patients after coronary angioplasty and stent and found that 72.3% of studied patients came from rural places.

Regarding the medical history of studied patients, this study presented that more than two thirds of studied patients had hypertension and more than two fifths had diabetes. This might be due to a decrease in healthy behaviors such as physical activity, healthy eating and adherence to medications. These findings were in contrast with **Kasturi et al. (2017)**, who performed a study on 251

patients with coronary artery disease in India concerning one-year clinical outcomes of biodegradable polymer-coated sirolimus-eluting coronary stent system and found that 53.4% of patients had hypertension and 37.8% had diabetes.

The present study showed that less than three fifths of studied patients visited cardiovascular outpatient clinics for follow up once a month. This might be attributed to fear from recurrence of cardiac stent and also come to follow up to get their monthly medications. This result supported with **Chang et al. (2020)**, who accomplished a study on 81 patients in China and found that patients came for follow up after the procedures every month for twelve months. Also, this finding was incongruent with **Liang et al. (2021)**, who performed a study on 153 stent patients in Shanghai, China regarding readiness for discharge and 30-day compliance with treatment after coronary stent implantation and denoted that 78% of the patients had regular visits to the hospital for follow up.

Regarding recurrence of cardiac stent implantation, this study approved that three fifths of studied patients performed the cardiac stent three times and more and two fifths of them performed the cardiac stent two times. These findings supported with **Kotseva et al. (2019)**, who studied “Lifestyle and impact on cardiovascular risk factor control in coronary patients across 27 countries” and revealed that 45.3% of studied patients performed cardiac stent from 2 to 3 times. Whenever, these results were in contrast with **Liang et al. (2021)**, who stated that 39.2 % of patients performed one stent, 32.2% performed two stents and 28.8% performed three stents and more.

As regard to studied patients’ total knowledge level about cardiac stents, the existing study revealed that nearly one third of studied patients had good total knowledge level about cardiac stents, while more than two

fifths had average total knowledge level and more than one quarter had poor total knowledge level about the cardiac stents. This might be attributed to decreased health teaching about cardiac stent and its management and prevention of recurrence. These results were incongruent with **Shar et al. (2021)**, who performed a study in Pakistan on 102 patients undergoing percutaneous coronary intervention (PCI) about knowledge about the stents and post PCI pharmacotherapy and observed that 16.7% had adequate knowledge ( $\geq 70\%$ ) whereas 83.3% of patients had inadequate knowledge. Moreover, these results were in contrast with **Kamal et al. (2019)**, who performed a study on 150 Egyptian myocardial infarction patients, using educational program for patients after primary percutaneous coronary intervention and observed that of patients' knowledge was 58.0% poor, 32.7% fair and 9.3% good about primary percutaneous coronary intervention (PPCI).

Regarding total lifestyle pattern items, the present study revealed that only more than one third of studied patients had healthy total lifestyle pattern concerning to daily physical activity and nutrition. This might be related to lack of proper education and knowledge about the importance and benefits of healthy life style adherence. These results were in the line with **Perk et al. (2015)**, who conducted a study on Swedish patient information after percutaneous coronary intervention and found that 49.2% engage in regular physical activity, 71% received nutritional counseling, while just 40% modify their eating habits, and stress management programs are infrequently offered. As well, this finding disagreed with **Kotseva et al. (2019)**, who found that 66% of studied patients were physically active and walk for 30 min 5 times/week.

This study exhibited that less than three quarters of studied patients had unhealthy total

lifestyle pattern about rest and sleep and stress management. These findings were in disagreement with **Liang et al. (2021)**, who found that 90% of patients had adequate compliance with exercising, balanced diet, managing anxiety and depression.

Regarding to studied patients total lifestyle pattern about recurrence of cardiac stents, the present study clarified that less than two fifths of studied patients had healthy total lifestyle pattern and more than three fifths of them had unhealthy total lifestyle pattern regarding to recurrence of cardiac stents. This might be due to low educational level, insufficient instructions from medical team about healthy life style and importance of compliance to physical, social, nutritional and psychological life style practices. These results were in agreement with **Xiao et al. (2018)**, who discovered that 74% of those studied have an average level of health-promoting lifestyle and 24.2% have a high level of lifestyle.

The current study showed a highly statistically significant relations between total lifestyle pattern of studied patients and their age and level of education. As well, statistically significant relations between total lifestyle pattern and sex. These results were in consistence with **Jianhui et al. (2020)**, who performed a study in China about factors affecting appropriate post-discharge lifestyle in coronary stent implantation and found that the recommended post-discharge lifestyle varies considerably among patients depending on their education, gender, age, and return to work following coronary stent implantation.

The existing study denoted a statistically significant relation among studied patients' total lifestyle pattern and recurrence of cardiac stents. This might be due to following a healthy lifestyle pattern prevent the recurrence of cardiac stents. This was in accordance with **Ahn, (2018)** who performed

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a study in Korea about health promoting life style after coronary stenting, and stated that a healthy lifestyle and commitment to recommended medical care are essential prognostically for preventing the recurrence of cardiac events following PCI. In addition to this **Xiao et al. (2018)**, found that the burden of CAD is considerably decreased by leading a healthy lifestyle. Also this finding was in compliance with **Wang et al. (2020)**, who conducted a study in China Effect of lifestyle changes after percutaneous coronary intervention on revascularization and noticed that patients who performed percutaneous coronary intervention and attained more "ideal Cardiovascular Health metrics (CVH)", modifications in their lifestyle indicated a reduced likelihood of subsequent revascularization events.

Regarding the relation between studied patients' total lifestyle pattern and total knowledge level, this study approved that there was high statistically significant relation between studied patients' total lifestyle pattern and total knowledge level. This might be due to patients' knowledge about stent management and complications of recurrence results in following healthy lifestyle pattern and adherence to proper physical, nutritional and psychological practices. This result was in consistent with **Yang et al. (2021)**, who carried out a study on 716 coronary artery disease patients in China about adherence to healthy lifestyle improved clinical outcomes after coronary intervention and found that there was highly significant correlation between studied patients' total knowledge level and their total lifestyle adherence.

### **Conclusion:**

Nearly one third of studied patients had good total knowledge level about cardiac stents, while more than three fifths of them had unhealthy total lifestyle pattern regarding to

recurrence of cardiac stents. Additionally, a statistically significant relation between studied patients' total lifestyle pattern and recurrence of cardiac stents was present.

### **Recommendations:**

Based on the study findings the following is recommended:

- Health education programs should be provided for patients with cardiac stents to improve their knowledge and practices related to lifestyle modification.
- Future studies are required to assess role of other related risk factors to help in improving the outcomes of patients after having cardiac stents.
- Online training programs for cardiac patients to modify lifestyle pattern.

### **Acknowledgement**

The researchers provide their thanks and appreciations to the studied patients for their participation and completion of the research.

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## نمط الحياة لمرضى القلب تجاه تكرار الدعامات القلبية

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يعد تغيير نمط الحياة وإتباع سلوك صحي هو الطريق للحصول على نتائج مرضية لمرضى الدعامات القلبية و الوقاية من تكرارها. تهدف الدراسة إلى تقييم نمط الحياة لمرضى القلب تجاه تكرار الدعامات القلبية. وقد أجريت هذه الدراسة في العيادة الخارجية لأمراض القلب بمستشفى بنها الجامعي . وأيضاً استخدمت عينة غرضية وشملت ١٠٠ مريض لديهم دعامات قلبية. وقد أسفرت نتائج الدراسة إلي أن حوالي ٣٢٪ من المرضى تتراوح أعمارهم من ٤٠ إلى أقل من ٥٠ سنة و ٦٨٪ من المرضى يعانون من ارتفاع ضغط الدم. كما توجد علاقة ذات دلالة إحصائية بين نمط الحياة لمرضى الدعامات القلبية و تكرار الدعامات القلبية. واوصت الدراسة بتنفيذ برنامج تثقيفي صحي لمرضى الدعامات القلبية لتحسين معلوماتهم وممارساتهم المتعلقة بتغيير نمط الحياة.