



Effect of Implementing an Educational Program on Lifestyle Practices among Patients with Coronary Artery Disease

Nagwa Mohamed HelmyEmam(1), Islam Mokhtar Mokhtar(2), Mariam Sabry Shehab(3),

Aida Faried Abdelwanees Ali (4)

(1) Lecturer, Medical- Surgical Nursing, Faculty of Nursing, Suez Canal University, Egypt.

(2) Assistant Professor, Medical- Surgical Nursing, Faculty of Nursing, BeniSuef University, Egypt.

(3) Assistant Professor, Critical Care and Emergency Nursing, Faculty of Nursing, Damietta University, Egypt.

(4) Lecturer, Critical Care and Emergency Nursing, Faculty of Nursing, Mansoura University, Egypt.

Abstract

Background: Coronary artery disease (CAD) is major global concerns. CAD can cause more than 23 million deaths in 2030 around the world. Improvement of patients` life style practices are achieved by effective utilization of an educational program. **Aim:** This study aimed to evaluate the effect of implementing an educational program on life style practices among patients with CAD. **Subjects and method:** A Quasi-experimental design was utilized in this study. **Setting:** the study was conducted at the Intensive Care Units and Cardiac Outpatient Units in Suez Canal University Hospital, at Ismailia city. **Subjects:** A purposive sample of 70 patients was classified into two groups, the study (n=35) and the control (n=35). **Tools:** Data was collected through two tools, knowledge assessment regard CAD and clinical data tool and CAD patient practices and Life style tools. **Results:** It was observed that the total mean score of lifestyle practices among the study group was improved higher post implementation of educational program more than control group (230.29±5.81 compared to 199.77±9.49) Additionally, there was a negative statistical correlation $p=0.0$. **Conclusion:** the study results concluded that implementation of the educational program was associated with improvement in life style and practices for CAD patients. **Recommendation:** Promotion of self-care management to the CAD patients through simple exercise, monitoring nutrition habits, management of stress and follow up should be continued to improve life style.

Keywords: Coronary artery disease, educational program, Lifestyle practices.

Introduction

Coronary artery disease (CAD) is the most common type of heart diseases. CAD happens when the arteries that supply blood to heart muscle become hardened and narrowed. This is due to the

buildup of cholesterol and plaque, on their inner walls. Then little blood flow through the arteries leading to the heart muscle can't obtain the blood or oxygen it needs. This can lead to chest pain (angina) or a heart attack causing permanent heart damage (**National Library of Medicine, 2016**). Eventually, CAD can also weaken the heart muscle and contribute to heart failure and arrhythmias. Despite recent progress in coronary artery disease treatment, myocardial infarction (MI) remains a very high-risk medical condition (**Kheifets et al., 2022**).

Coronary artery disease (CAD) is the leading cause of death globally. An estimated 17.9 million people died from CADs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CAD deaths take place in low- and middle-income countries. Out of the 17 million premature deaths (under the age of 70) due to noncommunicable diseases in 2019, 38% were caused by CAD (**World Health Organization, 2021 & Aragaw, Esfahan, Derseh, & Mamo, 2020**).

Advances in the field of medicine over the past few decades enabled the identification of the risk factors that may contribute toward the development of CAD. The risk factors that can be modified are elevated blood cholesterol,

hypertension, cigarette smoking, obesity, diabetes mellitus, alcohol consumption, stress and physical inactivity. Non-modifiable risk factors of CAD include age, gender and family history (**Panwar et al., 2011 and Karaolis et al., 2010**)

Different experiments have reported that there are successfully effects of lifestyle intervention programs on high-risk patients with CAD. Therefore, lifestyle modification, long considered the cornerstone of interventions and is extremely important to reduce the burden of chronic diseases. In the light of this epidemic scenario, government health policies in many countries are focusing on programs that modify cardiovascular risk factors. So, smoking bans to protect citizens from the effects of second-hand smoke have been successfully implemented in these countries, showing positive effects even in this short period of time (**Chaves, et. al 2015**).

Significance of the study:

Coronary artery disease is the major cause of morbidity and premature mortality worldwide. During the past 2 decades, the prevalence of CAD and stroke has increased and accelerated in low and middle income countries that currently bear the major burden of these chronic conditions (**Zoghbi et al., 2014**). Lifestyle is a significant factor contributing to CAD. An unhealthy lifestyle such as low levels of physical activity, cigarette smoking, unhealthy eating, and weight gain can cause stress and anxiety, significantly increase the risk of CAD, and slow down patient recovery (**Jafari, & Shahriari, 2021**).

Clinical studies suggest that lifestyle modification programs for CAD patients reduces

subsequent cardiac events but there are very few reports of the effect of these programs in patients living with CAD. Also lifestyle modifications such as exercise and diet interventions in patients with CAD are very important, but little is known about their effect on CAD in clinical practice. Many patients with CAD are not managed effectively, and we often fail to reach management targets. So, there was a necessary need to implement an educational program for patients with coronary artery disease on their life style practices.

Aim of the study

The aim of the current study was to evaluate the effect of implementing an educational program on life style practices among patients with coronary artery disease.

Research Hypothesis:

The following research hypothesis will be formulated to accomplish the aims of the research:-

- Patients with coronary artery disease who will attend the educational program will have improvement in their lifestyle practices.

Subject and methods:

Study Design

A quasi-experimental research design was used in this study.

Setting

This study was conducted at the Cardiac Care Units (CCU) and Cardiac outpatients, Suez Canal university hospital, Ismailia city. CCU equipped with 10 beds which provided optimal critical care for coronary artery patients. CCU well equipped

with advanced devices and equipments for caring coronary artery patients. Cardiac outpatients contained 5 beds and provided care and necessary follow up for coronary artery patients.

Subject

Patients diagnosed with coronary artery disease and admitted to CCU then followed up in the cardiac outpatients.

Sample

A purposive sample of 70 patients with coronary artery disease from the previously mentioned setting with both sexes was included in the study and classified randomly into study and control group, 35 patients in each group. The study group who received the educational program sessions about life style practices while, the control group who received the routine care.

The study and control group classified according to the following formula:

Normal approximation using the Z statistic, $A = (1/q_1 + 1/q_0) = 4.0000$, $B = (Z\alpha + Z\beta)^2 = 7.8489$, Total group size = $N = AB/(E/S)^2 = 69.939$ With 1 Standard deviation and 67% effect size of the outcome in the population. Study group equal 35 and Control group equal 35. q_1 means Proportion of subjects that are in Group 1 (study). q_0 means Proportion of subjects that are in Group 0 (control); $1 - q_1$ with a 95% level of confidence (β error = 5%), and a study power of 80% (β error=20%).

Inclusion criteria

Patients had a confirmed diagnosis of coronary artery disease (angina and myocardial infarction) for at least 6 months.

Exclusion criteria:

- Patients` inability to communicate due to poor general conditions.
- Any major co-morbid conditions as "renal failure, chronic "COPD" and cancer)

Tools of Data Collection:

Interview schedule questionnaire was used as tool for data collection at this research; this questionnaire comprised of these main parts:

Tool (I): Patient's assessment questionnaire:

This tool was developed by the researcher after review of the relevant literature to assess patient's socio demographic data, medical data and their needs. This tool included three parts as following:

Part 1: Patients' Socio-demographic characteristics

Socio-demographic characteristics included (age, gender, marital status, level of education, job, job type, housing and monthly income.

Part (2): Patients' medical data

It included patients' clinical data: diagnosis, onset of illness, time since start (years), concomitant disease, number of hospitals admission in the last year, signs and symptoms, edema, complication.

Part 3: Patients' needs questions

It included patients' information assessment questions. It involved 17 questions about shortness of breath, physical activity, position, rest, dangers of staying in bed too long, sleeping problems,

sexual dysfunction, general health status and complications of the disease.

Tool (II): Coronary artery disease patient life style practices

This tool was adopted from (Ueno et al., 2018) to assess the compliance assessment scale. It was used to assess daily lifestyle and practices of coronary artery diseases. This scale was modified and translated into Arabic form by the researcher to suit the nature of the study. It included five domains:

Part I: Patients' compliance toward physical activity: it included 12 items about physical activities, religious activities, breaks with physical activity, care of self, engage in sports, practice hobbies, illness affect and work related questions.

Part II: Patients' compliance toward food and weight: it included 11 items about eating habits, meals questions, using table salt, using high fat in diet, diet problems, nutritional advice from the medical team, weight related questions.

Part III: Patients' compliance toward medicine: it included 10 items about medications names, dosages and times, efficacy of the medicine, medication positive effect on physical fitness, the treatment any side effects, medication symptoms, presence of higher dose of the drug, stop taking the drug, continue taking the drug , use medicines without a doctor's order and consult a doctor before taking medicines.

Part IV: Patients' compliance toward smoking: it included 7 items about smoking history, stop smoking, consequences and drinking any kind of alcohol.

Part V: Patients' compliance toward stress management: it included 16 items about coronary artery disease experiences, nervous tension increased as a result of the disease, worry, behavior affection and outlook on life, has the disease caused you positive, changes in your life, the disease affect personal relationship with others, lifestyle changed in general, support, social isolation, sadness, afraid of complications, the disease affected the quality of life, satisfy with life, religious activities and goal or mission for survival.

The scoring system:

Yes take points (2), sometime take points (1) and no take points (0).

Methods:

Administrative design

Official letters directed from the dean of faculty of nursing, Suez Canal University to the selected area of the study. The director of each setting will be contacted and informed in order to obtain permission to include the patients on the present research.

Ethical Consideration:

The aim of the study was explained to directors, physicians and staff nurses at the participating hospitals who are caring for patients with coronary artery disease, patients verbal consent was obtained before asking them to participate in the study after explanation the aim, and ensuring the confidentiality of the information collected. The study will not cause any harm to the studied patients. The patient had the right to withdraw at any time during the study. Permission from the

ethical research committee affiliated to faculty of nursing, Suez Canal University was obtained (No 57, approved date 5/2019).

Content validity

Content validity was ascertained by a panel of 7 experts who was revise the clarity, relevance, applicability, comprehensiveness, easy understanding of the questionnaire. According to their opinions the required changes was applied.

Reliability:

Cronbach's alpha test was used to test the two tools for reliability; the overall reliability of knowledge assessment regard coronary artery disease and clinical data: was 0.956, and the overall reliability of coronary artery disease patient practices and life style was 0.827.

Pilot study

A pilot study was carried out on 7 patients (10% of the sample) with coronary artery disease to test the clarity, applicability and efficiency of tools. Items correction, modification, omission and addition were followed as needed. Patients included in the pilot study were excluded from the study sample.

Field work:

Field study was conducted from the beginning of January 2022 until June 2022. The study was conducted in Suez Canal University hospital at Ismailia city.

This study has been conducted on the following phases:

Phase I: Assessment phase

Data were collected using a written questionnaire for each patient that was interviewed

individually to fill in the questionnaire using tool I included three parts which was designed to assess socio-demographic, clinical data and patients' needs and tool II included five parts which was designed to assess coronary artery disease patient practice and life style.

The researchers introduced tool (I & II) to each patient. The researchers gathered the data about personal characteristics using tool 1, part I after explained the purpose and aim of the study. Data were collected by using the study tools. Each patient was interviewed individually to fill the questionnaire. The researchers read the questionnaire to illiterate patients.

This phase involved review of literature related to the current research topic, different studies and theoretical knowledge of various aspects of the problems using books, articles, internet, periodicals and scientific websites as Pub Med, midline, Cochrane library, Scopus and Ovid. The tools of data collection was translated by the researcher into Arabic, and then retranslated from Arabic to English, tested for its validity & reliability and accordingly the necessary.

Expected Outcomes

- Improvement of patient's life style practices post implementation of an educational program.

Phase II: Planning phase

Based on the data collected from various sources during the assessment phase, and with the help of the literature review, the researchers designed a training program responding to the needs identified from these data. These needs were translated into a general objective; the general objectives

formulated into specific objectives, which were set in sequential order.

The researchers designed and prepared an educational program regarding patients with coronary artery disease and their life style practices. The educational program which included objectives of the training, anatomy and physiology of the heart, definition of coronary artery disease, risk factors, signs and symptoms, medications and its side effects, management and control of complication, control of hypertension, oxygen therapy, cassation of smoking, personal exercise, weight reduction, serum lipids and salt reduction, nutrition control, limitation of physical activity, sleep disturbance, sexual problems, stress management, medical checkup or follow up.

Researchers visited intensive care units and cardiac outpatient clinics four days a week on an average 4 hours. The researchers applied the program in five sessions. The session lasted for 15 to 20 minutes

In addition, the researchers assessed obtainable place, duration, tools, supplies, and instructive materials to use it for conduction of patient ' knowledge and practice regard coronary artery disease.

In this phase, the researcher designed a plan for educational program of care implementation.

Phase III: (Implementation phase)

The researchers provided an educational program for patients with coronary artery disease as regards to life style practices. The educational program was applied to the patients participated in the study (individually or small group ranged from 3 to 4 patients) in a clear and concise manner. The researchers visited intensive care units and cardiac

outpatient clinics four days a week on an average 4 hours. The researchers applied the program in five sessions that session was repeated for each individual patient or small group. The one session lasted for 15 to 20 minutes.

Before starting of each session, pretest regarding to the session content was given to patients, followed by using the hands out and power point. During the session, the researchers educated content in a clear, easy talk using lectures, interpretative pictures and giving feedback using positive statement. At the end of all sessions the researchers made summary for the main points.

Phase IV: Evaluation of Program:

Patient assessment questionnaire was used after implementation of the educational program through a comparison of post-test results with the baseline findings obtained in the pre-test assessment. The same tools were used in the post test assessment. Post test assessment done immediately after implementation of an educational program. Total mean score of lifestyle practices among studied patients are measured before and after educational program regarding maintaining physical activity, monitoring nutrition habit and weight control, medication administration, effect and side effect, smoking cessation and stress management.

Statistical Analysis:

Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Shapiro-Wilktest and Kolmogorov-Smirnov test were used

to determine whether or not a variable follows a normal distribution, when normal distribution of the data could not be assumed, the non-parametric Mann-Whitney U Test and Spearman correlation coefficient were used instead. Qualitative variables were compared using chi-square test, Whenever the expected values in one or more of the cells larger than 2x2 cross-tables, Mont Carlo test was applied whenever the expected value in 2 or more of the cells was less than 5. Statistical significance was considered at p-value <0.05.

Results:

Table (1): displayed socio-demographic characteristics of studied groups and it was noticed that 40% of the control group age was between from 20 to 40 years old while in the study group 77% of their age was more than 40 years old. Regarding level of education, 42.9 % and 60 % of the control group and the study group were illiterate respectively.

Table (2): showed the medical history of studied groups and it was noticed that 48.6% of the control group had diagnosed with myocardial infarction while in the study group 51.4% of them had diagnosed with myocardial infarction.

Table (3): concluded that there was no statistical significant difference between both groups regarding of the patients' health needs of coronary artery disease patients $p > 0.05$, except the symptoms of difficult to sleep at night, wake up at night, presents of sexual dysfunction, rapid heart rate and breath during sexual intercourse and improving in general health status were statistical significant, $p < 0.05$.

Figure 1: illustrated that the 17.43 mean score of physical problems in study group and control group,

6.77 the mean score of sleep disturbance in study group compared to 5.63 in control group. Finally, 10 mean score of sexual dysfunction in study group compared to 8.64 in control group.

Table 4: Regarding total score of life style and practices for coronary artery disease patients, this table showed that life style improved higher in the study group more than control group in post educational program (230.29 ± 5.81 compared 199.77 ± 9.49) the difference was statistically significant negative $p=0.000$.

Table 5: demonstrated that no statistically significant correlation between health needs and life style including physical problems and sleep disturbance in the study group where p-value 0.124, and 0.407 respectively. On the other hand, there was a statistically significant correlation between sexual dysfunction and life style in the study group (p-value= .000)

Table (1): Percentage distribution of studied patients of both groups according to socio- demographic characteristics (n=70)

Parameter	Control group		Study group		Statistical test	
	N(35)	%	N(35)	%	Test	P value
<u>Age</u>					MC	.060
< 20 Y	4	11.4	2	5.7		
20:40 Y	14	40.0	6	17.1		
>40 Y	17	48.6	27	77.1		
<u>Gender</u>						
Male	17	48.6	12	34.3	1.472	.225
Female	18	51.4	23	65.7		
<u>Social status</u>						
Single	1	2.9	0	0	MC	.319
Married	27	77.1	30	85.7		
A widower	3	8.6	5	14.3		
Absolute	4	11.4	0	0		
<u>Educational level</u>						
Illiterate	15	42.9	21	60.0	MC	.257
Reads and writes	3	8.6	0	0		
Basic education	7	20.0	5	14.3		
Secondary education	9	25.7	9	25.7		
University education	1	2.9	0	0		
<u>Job</u>						
Long time working	6	17.1	4	11.4	MC	.080
Works part time	9	25.7	9	25.7		
private job	5	14.3	0	0		
Not working	15	42.9	22	62.9		
<u>Work type</u>						
requires mental effort	15	44.1	17	48.6	0.230	.631
requires muscles effort	20	55.9	18	51.4		
<u>Floor inhabitant</u>						
First	10	28.6	13	37.1	MC	.861
Second	10	28.6	8	22.9		
Third	10	28.6	10	28.6		
Fourth	5	14.3	4	11.4		
<u>elevator in the house</u>						
Yes	12	34.3	5	14.3	3.807	.051
No	23	65.7	30	85.7		
<u>the sun enter the house</u>						
Yes	17	48.6	13	37.1	.933	.334
No	18	51.4	22	62.9		
<u>Ventilation</u>						
Yes	22	62.9	18	51.4	.933	.334
No	13	37.1	17	48.6		

<u>Income</u>						
Enough	9	25.7	9	25.7	NA	NA
Not enough	26	74.3	26	74.3		
<u>Health insurance</u>						
Yes	8	22.9	8	22.9	NA	NA
No	27	77.1	27	77.1		

MC: Monte Carlo test: 2 cells have expected cell count <5.

Table (2): Percentage distribution of studied patients of both groups according medical history (n=70)

Parameter	Control group		Study group		Statistical test	
	N(35)	%	N(35)	%		P value
<u>current diagnosis</u>						
myocardial infarction	17	48.6	18	51.4	.295	.863
angina	11	31.4	9	25.7		
Stroke	7	20.0	8	22.9		
<u>Number of hospital admissions in the last year</u>						
< one week	20	57.1	21	60.0	.059	.808
One week to four	15	42.9	14	40.0		
<u>Patient knows the diagnosis of disease</u>						
Yes	10	28.6	8	22.9	MC	.943
No	20	57.1	22	62.9		
know somewhat	5	14.3	5	14.3		
<u>History of previous diseases</u>						
Hypertension	5	14.3	5	14.3	MC	.957
Diabetes	1	2.9	4	11.4		
Rheumatic heart disease	1	2.9	26	74.3		
Irregular heartbeat	4	11.4	0	0		
Heart valve stenosis	24	68.6	0	0		
<u>Onset of disease</u>						
Suddenly	26	74.3	26	74.3	NA	NA
Gradually	9	25.7	9	25.7		
<u>symptoms of the disease start to appear</u>						
A year ago	6	17.1	22	62.9	6.567	.038*
More than a year	18	51.4	13	37.1		
Less than a year	11	31.4	0	0		
<u>reasons for hospital admission</u>						
Heart disease	20	57.1	18	51.4	MC	.267
Pulmonary diseases	2	5.7	17	48.6		
Heart disease and other diseases	13	37.1	0	0		
<u>symptoms and signs associated with disease</u>						
Difficulty breathing	31	88.6	31	88.6	NA	NA
Severe chest pain	4	11.4	4	11.4		
<u>patient went to see a doctor after feeling the symptoms</u>						
in the same week	22	62.9	22	62.9	2.520	.112

in the same month	4	11.4	8	22.9	13.027	.000**
after 3 months	0	0	0	0		
after 6 months	5	14.3	0	0	24.231	.000**
after more than a year	4	11.4	5	14.3	14.000	.000**
<u>Suffer from sever symptoms</u>						
Yes	19	54.3	31	88.6	14.570	.000**
No	16	45.7	4	11.4		

*Significant ($p \leq 0.05$)

Table (3): Percentage distribution of studied patients of both groups according patients' health needs (n=70)

Parameter	Control group		Study group		Statistical test	
	N(35)	%	N(35)	%		P value
<u>Shortness of breath with exertion</u>						
Yes	31	88.6	31	88.6	--	--
No	4	11.4	4	11.4		
<u>Shortness of breath without exerting</u>						
Yes	8	22.9	8	22.9	--	--
No	27	77.1	27	77.1		
<u>Shortness of breath with supine position</u>						
Yes	9	25.7	9	25.7	--	--
No	26	74.3	26	74.3		
<u>Shortness of breath during sleeping</u>						
Yes	17	48.6	17	48.6	--	--
No	18	51.4	18	51.4		
<u>Shortness of breath during getting up stairs</u>						
Yes	35	100.0	35	100.0	--	--
<u>Taking breaks while doing physical activity</u>						
Yes	26	74.3	26	74.3	--	--
No	9	25.7	9	25.7		
<u>staying in one position as result of illness</u>						
Yes	26	74.3	26	74.3	--	--
No	9	25.7	9	25.7		
<u>Resting in a certain position for breathing</u>						
Yes	13	37.1	13	37.1	--	--
No	22	62.9	22	62.9		
<u>Know about the dangers of staying in bed too long</u>						
Muscle weakness	4	11.4	4	11.4	MC	.202
Bed sore	1	2.9	17	48.6		
Pulmonary infections	1	2.9	10	28.6		
Deep venous thrombosis	2	5.7	4	11.4		
Joint stiffness	17	48.6	4	11.4		
Constipation	10	28.6	0	0		
<u>Present of sleep problems</u>						
Yes	13	37.1	21	60.0	3.660	.056
No	22	62.9	14	40.0		
<u>Changing sleep hours</u>						
Yes	13	37.1	21	60.0	3.660	.056

No	22	62.9	14	40.0		
<u>If the answer is yes(n=13)</u>						
increased	5	38.5	5	23.8	Fisher	.451
decreased	8	61.5	16	76.2		
<u>Difficulty to sleep at night</u>						
Yes	9	25.7	17	48.6	3.916	.048*
No	26	74.3	18	51.4		
<u>Wake up at night</u>						
Yes	9	25.7	17	48.6	3.916	.048*
No	26	74.3	18	51.4		
<u>Presents of sexual dysfunction:</u>						
Not at all	23	65.7	9	25.7	MC	.020*
To some extent	3	8.6	13	37.1		
Completely change	9	25.7	11	31.4		
<u>a. Presents of cardiac symptoms during and after sexual intercourse</u>						
a1. Rapid heart rate and breathing for a period of 20-30 minutes during sexual intercourse						
Yes	3	8.6	13	37.1	MC	.002**
No	27	77.1	13	37.1		
sometimes	5	14.3	9	25.7		
a2. Rapid heart rate and breathing for a period of 20-30 minutes after sexual intercourse						
Yes	2	5.7	9	25.7	MC	.094
No	29	82.9	22	62.9		
sometimes	4	11.4	4	11.4		
a3. Feeling the heartbeat for 15 minutes						
Yes	4	11.4	9	25.7	Fisher	.218
No	31	88.6	26	74.3		
a4. Chest pain						
Yes	2	5.7	9	25.7	5.285	.022
No	33	94.3	26	74.3		
a5. Difficulty falling asleep afterwards						
yes	0	0	5	14.3	Fisher	.054
No	35	100.0	30	85.7		
a6. Very tired the next day						
No	35	100.0	35	100.0	--	--
<u>improving in general health status</u>						
satisfactory	33	94.3	22	62.9	10.267	.001**
Unsatisfactory	2	5.7	13	37.1		
<u>Complication of the disease</u>						
Yes	11	31.4	17	48.6	2.143	.143
No	24	68.6	18	51.4		

MC: Monte Carlo test: 2 cells have expected cell count <5.

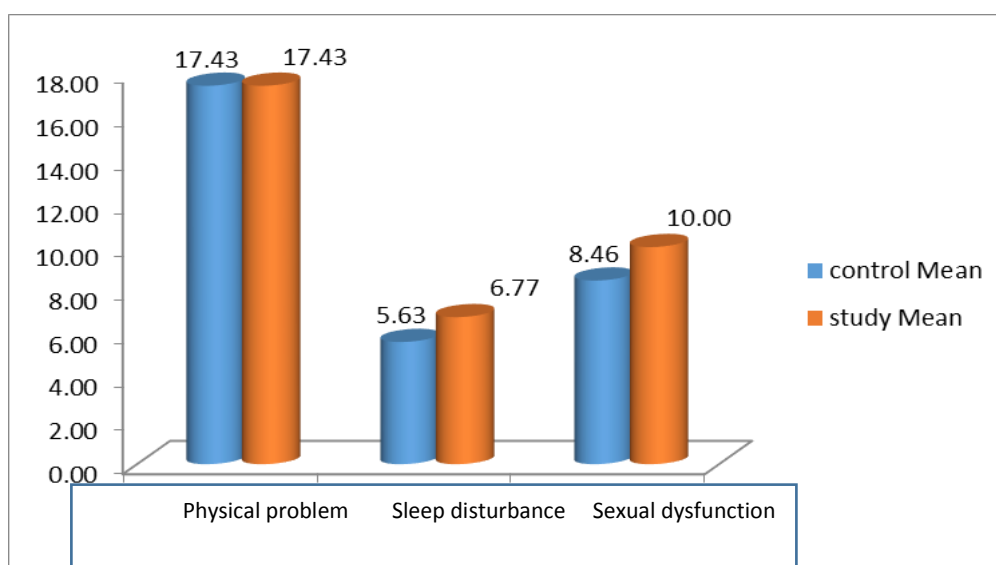


Figure 1: Mean score of health needs of study group and control group (n=70)

Table 4: Total mean score of life style practices among studied patients of both groups pre post implementation of educational program (n=70)

Parameter	Pre		Z (P value)	Post		Z (P value)
	Control	Study		Control	Study	
	$\bar{x}\pm SD$	$\bar{x}\pm SD$		$\bar{x}\pm SD$	$\bar{x}\pm SD$	
Maintaining physical activity	3.45 26.80	3.45 26.60	-.390 .697	3.45 26.74	1.60 32.17	-5.485 .000**
Monitoring nutrition habit and weight control	5.08 39.14	5.17 39.34	-.198 .843	5.02 38.23	2.17 50.77	-7.169 .000**
Medication administration, effect and side effect	4.03 71.57	4.08 71.97	-.300 .764	3.43 72.66	1.95 76.54	-4.864 .000**
Smoking cessation	1.69 29.80	1.40 29.91	-.102 .919	1.69 29.80	1.24 30.66	-2.510 .012*
Stress management	3.68 32.34	3.60 32.46	-.174 .862	3.68 32.34	4.53 40.14	-5.853 .000**
Total mean score of lifestyle and practices all patient needs	10.84 199.66	10.73 200.29	-.249 .804	9.49 199.77	5.81 230.29	-7.154 .000**

*Significant ($p\leq 0.05$)

Table 5: Correlation between health needs and lifestyle among studied patients (n=70)

Parameters		lifestyle	
		Control	Study
Physical problems.	r	.203	.265
	P value	.243	.124
Sleep disturbance	r	-.304	-.145
	P value	.076	.407
Sexual dysfunction	r	-.111	-.671**
	P value	.525	.000

Discussion:

Lifestyle plays an important role in staying healthy and a healthy lifestyle is renowned as a main contributor to the protection and control of CADs. In this study, implementing a healthy lifestyle education program for patients with coronary artery disease improved the lifestyle practices. Therefore, the current study aimed to evaluate the effect of implementing an educational program on life style practices among patients with coronary artery disease.

Regarding socio-demographic characteristics of studied patients, the present study showed that it was noticed that nearly the half of the control group age was between from 20 to 40 years old while three quarter of the study group their age was more than 40 years old. These results are consistent with **Rad, Ghanbari-Afra, Hoseini, Afra, and Asayesh, (2021), Mahmoud and Elderiny (2018) and Salameh, Gomaa, El-Senousy, and Salameh, (2012)** who reported that The average age of intervention and control

participants were 58.1 ± 5.8 and 57.66 ± 4.5 , respectively. Also most of the participants had a low level of education in both groups.

Regarding patient medical history showed about half of studied patients in both groups had myocardial infarction. In study group, one quarter had angina compared to one third of control group also, three fifths in both groups had number of hospital admissions in the last year less than one week. Both studied groups did not know the diagnosis. This may be due to lack of patient knowledge regarding CAD. These findings were supported by **Wen, et.al (2021) and Liu et.al. (2022)** who reported the studied patients were diagnosed with coronary artery disease and myocardial infarction.

Moreover, Three-quarters of both groups had onset of disease suddenly, majority of both groups had signs and symptoms of difficulty breathing with coronary artery disease and three fifths of the both groups went to see a doctor after feeling the

symptoms in same week. This may be due to consequences of CAD on breathing that made patients see their doctors in same week. These findings were supported by **Taha and Sakr, (2017)** who reported that same result about sudden onset of the disease and had signs and symptoms such as difficulty breathing.

Furthermore, minority of studied patients had hypertension, three quarter of the study group had rheumatic heart disease compared to two thirds of the control group had heart valve stenosis. These findings were disagree by **Mohammadi, (2018)** who found that, two fifths of the studied patients had diabetes mellitus and hypertension, while two thirds hyperlipidemia.

As regards patients' health needs, the finding of the present study showed that was statistical significant difference between both groups about the difficult to sleep at night, wake up at night, presence of sexual dysfunction, rapid heart rate and breathe during sexual intercourse and improving general health status. This finding was in accordance with **St-Onge et al.,(2016)** and **Madsen, Huang, Zangger, Zwisler and Gögenur (2019)** study confirmed the patients with increasing intensity of CAD, sleep disturbances were more clear. Moreover, **Memnon, Adil, Khan, Ullah, Rehmat (2022)** declared that the found a statistically significant connection between CAD and sexual dysfunction.

Regarding mean score of health needs of both studied patients the results of the current study revealed that the estimated mean score of physical

problems in study and control group was (17.43). Also the mean score of sleep disturbance was higher in study group comparing to control group. In addition, the mean score of sexual dysfunction was higher in study group comparing to control group. These may be due to that patients failed to maintain their health-promoting behaviors as physical, sleep and sexual functions which lead to occurrence of CAD. Therefore, this result is agreed with **Chiou, Hsu, and Hung (2016)** who found that, there was lowest mean score on the physical activity subscale that indication in this study patients had physical problems, also **Al-Aqtam, Darawad, Alshraideh, Nabolsi, Shoqirat and Ayed (2022)** the physical activity subscale had the lowest score (M=15.2, SD=4.4).

Furthermore, this result agreed with **Schumann, Zellweger, Di Valentino, Piazzalonga and Hoffmann (2010)** who found that, there studied patients showed an increase in sexual dysfunction with highly statistical significant difference. While **Ghane, GhanbariFiroozabadi, Madadzadeh, and Nasiriani, (2022)** reported that patients had a poor scores of sleep quality and no significant difference.

Regarding, Total mean score of lifestyle and practices all patient needs for coronary artery disease patients, the finding of the present study showed that were higher improved in the study group more than control group in post educational program the difference statistically significant negative. This finding is consistent with the findings of other studies **Tawalbeh& Ahmad**

(2014) , Rad, Ghanbari-Afra, Hoseini, Afra, &Asayesh, (2021), Bohn et al., (2016) , Ya-Ling Y, et al. (2021), Irmak &Fesci, (2010) , Koelewijn-van Loon et al., (2010) and Muniz et al., (2010) who showed that the cardiac educational program significantly improved the commitment to healthy life-style. And also, De Bacquer, et al., (2022) stated that the lifestyle modifications were more successful in those having participated in a cardiac rehabilitation and prevention program.

Furthermore, total mean score of lifestyle and practices according to maintain physical activity, the finding of the present study showed improvement in the study group more than control group in post educational program with a negative statistically significant difference. This results agreed with Irmak and Fesci (2010), Yavarikia, Shahamfar, Amidfar (2011) , Neubeck , et al., (2018) and Khodabandehlooie, Estebarsari, Rohani, and ShaarbafEidgahi, (2019) who conducted a study reported a significant increase in the score of exercise and physical activity in the intervention group after the educational program.

Regarding total score of life style practices according to monitor nutrition habit and weight control, the finding of the present study showed that there was higher improvement in the study group more than control group in post educational program the difference was statistically significant and negative. This may be due to patients` commitment to healthier lifestyles after researchers designed and applied more specific interventions to them that are directed toward

improving factors that are not significantly improved through traditional programs. This finding was in line with the results of many studies with Eshah, Bond, and Froelicher, (2010), Yavarikia, et al. (2011), and Khodabandehlooie, et al. (2018) who found that after the educational program, there was a significant increase in the mean score of healthy nutrition in the intervention group.

In addition, total mean score of lifestyle and practices according to the smoking cessation, the finding of the present study showed that there was a slightly improvement in the study group more than control group in post educational. The difference was statistically significant and negative. This may be due to that researchers instructed the patients in the implemented educational program about smoking cessation for improving their life style practices. This result was disagreed with Khodabandehlooie, et al. (2018) who found that after the educational program there was a significant increase in the scores of smoking cessation.

Moreover, total mean score of lifestyle and practices according to the stress management the finding of the present study showed that were slightly improvement in the study group more than control group in post educational program and the difference was statistically significant and negative. This is may be due to instructions of stress management given to study group in the implemented educational program .This disagreed with Khodabandehlooie, et al. (2018) who found that after the educational program, the score in

both groups did not increase significantly. And also, **Farquhar, Stonerock, and Blumenthal (2018)** who found that in a systematic review on the treatment of stress in patients with coronary heart disease showed that stress was a secondary outcome.

Regarding, correlation between health needs and lifestyle for patients with coronary artery disease, the finding of the present study showed that were a statistically significant negative correlation between health needs and life style including that sleep disturbance and sexual dysfunction, While there was no a statistically significant correlation between physical problem and life style in the study group compared to control group. It could be related to patients` interests about lifestyle modification to keep physical wellbeing during living with the disease to reduce physical, sleep, and sexual problems associated with the disease which achieved by implementing of our educational program. Moreover, the patient`s health needs are the result of factors that affects the lifestyle, such as maintaining the weight, healthy eating, physical activity, smoking, and regular medication administration.

Conclusion

Based on findings of the present study, it can be concluded that:

The educational program implemented in the present study showed higher improvement in the lifestyle practices in the study group more than control group in post educational program about

maintaining physical activity, monitoring nutrition habit and weight control, medication administration, effect and higher side effect, smoking cessation and stress management.

The results of the study concluded that, there was a statistically significant correlation between sexual dysfunction and life style in the study group. While there was no statistically significant correlation between health needs and life style which including physical problems and sleep disturbance in the study group.

Recommendation

- Promotion and enhancement of the self-care management to the patient with CAD is important through showing picture about do simple exercise, monitoring nutrition habit, management of stress and follow up should be continued after termination of the treatment to improve life style.
- Simple written guidelines for patients with CAD should be available in units that provide care, to be provided to newly admitted patients.
- Establishing of cardiac rehabilitation unit for patients with CAD is very essential.

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