

## Effect of Designed Life Style Modification Program on Outcomes among patients' with Ischemic Heart Disease

Mona Shahat Mohamed<sup>1</sup>, Heba Abd- Elkader Ali <sup>2</sup>, Hayam Ahmed Mohamed <sup>3</sup> and Safaa Mohamed Hamed<sup>4</sup>

(1) Assistant Lecturer of Medical Surgical Nursing, Faculty of Nursing, Benha University, (2) Professor of Medical Surgical Nursing, Faculty of Nursing, Benha University, and (3,4) Assistant Professor of Medical Surgical Nursing, Faculty of Nursing, Benha University

### Abstract

**Background:** lifestyle modification is most important in the management of ischemic heart disease patients. **Aim:** The study aimed to evaluate the effect of implementing a designed lifestyle modification program on outcomes among patients' with ischemic heart disease. **Design:** Quasi-experimental research design was utilized in this study. **Setting:** The study was carried out at Coronary Care Unit and cardiology out-patient clinics at Benha University Hospital. **Subjects:** Purposive sample of ischemic heart disease (100) patients who was admitted in the mentioned setting of the study during six months. **Tools:** Two tools were used. **Tool (I):** Structured interviewing questionnaire included three parts; demographic characteristics, health history and assessment of patients' knowledge regarding ischemic heart disease. **Tool (II):** Patients' clinical outcomes to evaluate patients' outcomes regarding IHD. **Results:** (99%) of studied patients had poor total knowledge level regarding ischemic heart disease at pre lifestyle modification program implementation, while immediately post implementation (79%) of them had good level of knowledge and after three months there was slightly decline in their level of knowledge (55%), after three months with a highly statistically significant ( $p \leq 0.001$ ). Total (100%) of studied patients had unhealthy lifestyle behavior preprogram implementation, however, post one month implementation (90%) of them had healthy lifestyle behavior, while post three months slight increase in healthy lifestyle behavior was observed (96%). **Conclusion:** Lifestyle modification program effectively improved patients' knowledge and lifestyle practice among ischemic heart disease patients post lifestyle modification program implementation than pre. And there was highly statistically significant correlation between total patients' knowledge about lifestyle modification and their clinical outcomes. **Recommendation:** Continuous education and training program regarding lifestyle modification for IHD patients.

**Key words:** Lifestyle Modification, Ischemic Heart Disease Patients.

### Introduction

Cardiovascular disease is a group of diseases affecting the heart and blood vessels. These diseases can affect one or many parts of the heart and blood vessels. A person may be symptomatic (physically experiencing the disease) or asymptomatic (not feeling anything at all) (Veronese, 2020).

Ischemic heart disease is the term given to heart problems caused by an occluded

coronary artery lead to inadequate supply of blood to the heart and produces angina pectoris or a heart attack. For both men and women, coronary heart disease or ischemic heart disease is one of the leading causes of death in the world. It is usually asymptomatic and can be prevented (Shahjehan & Bhutta, 2022).

The nurse play important role in providing health education about life style modification

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for patients to improve health and prevent a heart attack. Like eating healthy food include: vegetables, fruits, nuts, beans, lean meat, fish, and whole grains. Limit saturated fat, sodium, stop smoking, getting regular exercise, adherence to medication as prescribed by doctor and the important of follow-up care is a key part of the treatment and safety (Taylor et al., 2021).

Patients' clinical outcomes are defined as the results of the life style modification program involving primary outcomes as complications of ischemic heart disease, Hospital readmissions, and cardiac mortality, Secondary outcomes as Physiological measurement (blood pressure, blood lipid levels). And Lifestyle behavior (diet, exercise, smoking behavior and medication adherence (Hassanin et al., 2020).

### **Significance of the study**

Ischemic heart disease (IHD), about 17.7 million people die each year from IHDs, an estimated 31% of all deaths all over the world. Adult are widely challenged by cardiovascular risk factors, including obesity (34.5%), smoking (26.5%), hypertension (23.2%), and elevated blood glucose (17.7%) (Noureddine & Massouh, 2019). In Egypt reached 107,232 or 23.14% of total deaths. The age adjusted death rate is 186.36 per 100,000 of population ranks Egypt as the 23 in the world. About 80% of these deaths occurred in low- and middle income countries and occur almost equally in men and women (World Health Organization, (WHO), 2017).

### **Aim of the study**

The study aimed to evaluate the effect of implementing designed life style modification program on outcomes among patients' with ischemic heart disease.

### **Study hypotheses:**

**H1:** There will be a significant improvement in patient's life style post life style modification program implementation than before.

**H2:** There will be a significant improvement of patients' clinical outcomes regarding ischemic heart disease post life style modification program implementation than before.

**H3:** There will be a significant correlation between patient's life style and patients' clinical outcomes post life style modification program implementation.

### **Subjects and method**

#### **Design:**

Quasi- experimental research design was used to achieve the aim of the study.

#### **Setting:**

The study was conducted in coronary care unit (CCU) and cardiology out-patient clinics at Benha University Hospital.

#### **Subjects:**

Purposive sample of ischemic heart disease patients who was admitted in the mentioned setting were recruited into the current study during six months. **Inclusion criteria:** Adult conscious, male and female patients, their ages between 20-50years old and haven't any complication. The total number of patients participated in the study were (100) patients.

#### **Tools for data collection:**

Two tools were used by the researcher to collect data of the study.

**Tool I: Structured interviewing questionnaire:** it was developed by the researcher through reviewing related literature and references aimed to assess patient's life style regarding (IHD), it was used pre, immediately post and after three months of lifestyle modification program implementation. Included three parts as follows:

**Demographic characteristics of the studied patients:** This part concerned with assessment of the studied patients' demographic characteristics related to age, gender, marital status, residence, educational level and occupation.

**Patients' health history:** Used to assess the studied patients past, present and family health history.

**Assessment of patients' knowledge regarding ischemic heart disease;** It was developed by the researchers after reviewing of related literature **Alwakeel, et al., (2019), Fernández, et al., (2019), and Gebremedhin & Gebrekirstos, (2021)**. It was modified by the researcher, it included 12 questions, related to: definition of IHD, causes, risk factor, signs and symptoms, aggravates factors of chest pain, diagnosis of IHD, complication and protective methods, benefits of physical exercise and medication used.

**Tool II:- Patients' clinical outcomes sheet:** This tool adapted from **(Cole et al., 2011)**. And modified by the researcher, it aimed to evaluate the patients' outcomes regarding ischemic heart disease. It was used three times: pre, after one month and three months of lifestyle modification program implementation. Patients' clinical outcomes are defined as the results of the lifestyle modification program which divided into two parts:

**Primary outcomes included:** complications of ischemic heart disease and hospital readmissions.

**Secondary outcomes included:**

**A. Physiological measurement** related to blood pressure, blood lipid levels.

**B. Lifestyle behavior** related to (diet, exercise, smoking behavior and medication adherence)

Reliability for the second tool **lifestyle behavior** was 0.820. This only proves that this tool is an instrument with good

reliability.

**Educational program booklet**

Containing major headlines of life style modification for ischemic heart disease was designed by the researcher, written in a very simple Arabic language, and supplemented by photos and illustrations to help the patients understanding of the content and divided in to two parts:

**Theoretical part included:** definition of ischemic heart disease, classification of ischemic heart disease, causes, signs and symptoms, risk factor, management (drug-surgical procedure), prevention and complications. It divided into four sessions.

**Practical part included:** Lifestyle modification related to diet, exercise, avoid smoking and medication adherence.

**Content validity:**

The tools and the program were revised and ascertained by a panel of five experts of medical surgical nursing, Benha Nursing Faculty. Their opinions were regarding the content, format, layout, consistency, accuracy and relevancy of the tools. According to their opinion minor modifications were applied.

**Reliability:**

Reliability test of the developed tool was done statistically through Cronbach's alpha test that was 0.835 for patient's knowledge questionnaire. Reliability for the second tool lifestyle behavior was 0.820. This only proves that this tool is an instrument with good reliability.

**Ethical considerations:**

Official permissions for data collection were generated from Hospital directors and head managers of the CCU department and cardiology out-patient clinics at Benha university hospital by the submission of a formal letter from the dean of Faculty of Nursing at Benha University. Also, the study approval was obtained from the ethical committee of Faculty of Nursing before

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initiating the study work. Oral approval from patients was taken after explaining the aim of the study; they were also informed that their participation is optionally, and that they have the right to withdraw at any time without any consequences. The researcher was assured maintaining anonymity and confidentiality of data and information gathered used only for patients benefit and for the purpose of the study.

### **Pilot study**

Pilot study was conducted on (10%) of all patients in CCU department at Benha University Hospital in order to test the clarity and applicability of the study tools and the guidelines, to estimate time needed for each tool to be filled in as well as to identify any possible obstacles that may hinder data collection. Based on the results no modifications were done so the patients involved in the pilot study were included in the main study. The pilot study was done two weeks before starting the study from beginning of December 2021 to end of December 2021.

### **Field work:**

The collection of data and application of educational program was carried out from beginning of January 2022 to end of June 2022. The process of data collection was achieved three times: before implementing program (pre-test) to have baseline assessment about patients level of knowledge about ischemic heart disease and life style practice, then immediately (post-test) for patients' knowledge and after one month and three month for life style practice and patients' clinical outcomes following implementation of program (post-test).

**The study was conducted on four phases as the following:**

### **Assessment Phase:**

Assessment of patient's knowledge

regarding IHD and lifestyle practices regarding IHD was done; This assessment shed- light and was given more insight about the current knowledge level to help detecting knowledge and life style practice deficit, as it's the result was obtained from patients assessment sheet, as well as, literature review Also assessment of lifestyle practices regarding IHD patients was be done.

### **Planning phase:**

The researcher was collected data about the study setting to put plan for carrying out the study. The educational program developed by the researcher to meet needs, deficiencies and objective of the program. Moreover, teaching material was prepared e.g. discussion, demonstration and booklet helped in covering theoretical and practical information.

### **The implementation phase:**

1- The life style modification program implementation was conducted in 4 sessions. Each session lasted about 30 minutes, including periods of discussion according to the patients' progress and feedback.

2-The researcher attended the clinical setting (CCU& cardiology out patients clinics) in the morning & afternoon shifts three times weekly during the time of the study to collect data. Patients assessed before and after the implementation of life style modification program (Tool I& Tool II).

3-Different teaching and learning methods were used during the sessions, which included; Power point presentation, pictures, and videos were used to enhance learning of patients about modification life style practices for ischemic heart disease patients. Session ranged between 20 – 30 minutes

4-The instructional colored booklet was given to each patients enrolled in the study in order to help for reviewing and support teaching. It was written in Arabic language and supplemented by photos illustrations to help

the patients and understanding of the contents.

5-At the beginning of the first session, patients were oriented regarding the program contents, its purpose and its impact on their knowledge on life style practices. Patients were informed about the time of the next session at the end of the session.

6-Each session was started by a summary about what has been discussed in the previous session and the objectives of the new session, also, the session ended by a summary of its contents and feedback from the patients was obtained to ensure that he/ she got the maximum benefit .

#### **Evaluation Phase:**

The evaluation of the patients' knowledge was done immediately post program implementation and follow up after three months using tool I and after one month and three months of life style modification program for life style practice using tool II and patients' clinical outcome.

#### **Statistical analysis:**

The collected data were tabulated and statistically analyzed using an IBM computer and the statistical package for social science (SPSS) advanced statistics, version 25 (SPSS Inc., Chicago, IL). Numerical data were expressed as mean and standard deviation. Qualitative data were expressed as frequency and percentage. Chi-square test was used to examine the difference and relation between qualitative variables. Fisher's exact test was applied on smaller sample sizes, alternative to the chi-square test, when the frequency count is  $< 5$  for more than 20% of cells. For quantitative data, comparison between two periods within the same group was done using paired t-test. Pearson method was used to test correlation between numerical variables. A p-value  $< 0.05$  was considered significant, and  $< 0.001$  was considered.

#### **Results**

**Table (1):** Demonstrates percentage distribution of studied patients according to their demographic characteristics, It shows that 61.0 % of studied patients their age was between 40 and 50 years, with mean age and standard deviation  $41.87 \pm 5.71$ , 69.0 % of them were males and the 84.0% of them were married. As well 81.0 % of the studied patients were living in urban areas and 65.0% had intermediate education, 88.0% of them were working and 68.2% their works require physical effort.

**Table (2):** Shows that 90.0% of patients did not perform any surgical operation. Related to Present medical history, 77.0 % of the studied patients weren't suffer from comorbid diseases, 66.0% of them were diagnosed with IHD since less than one year , 47.0% of them used nitrates as a medication for ischemic heart disease and 52.0% of the asked medical help when feeling pain and pressure in the chest. Related to family history, the majority of the studied patients' family members 82.0%, 89.0%, 87.0% respectively had not ischemic heart disease, not performed heart catheterization or artery stent operation.

**Figure (1):** Demonstrates that the 99% of studied patients had poor total knowledge level regarding ischemic heart disease and life style practices at pre life style modification program implementation, while, immediately post implementation 79% of them had good level of knowledge and after three months there was slightly decline in their level of knowledge 55%.

**Figure (2):** Documentes that the total 100% of studied patients had unhealthy life style behavior pre life style modification program implementation, however, post one month implementation 90% of them had healthy life style behavior, while post three months slight increase in healthy life style behavior was observed 96% .

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**Table (3):** Shows that is negative correlation between total patients' knowledge about lifestyle modification and their clinical outcomes except in two items (High density lipoprotein and Secondary outcomes (lifestyle behavior) and a highly statistical significant

correlation between patient's life style and patients' clinical outcomes post life style modification program implementation (P <0.001).

**Table (1): Percentage distribution of studied patients according to their demographic characteristics (n = 100).**

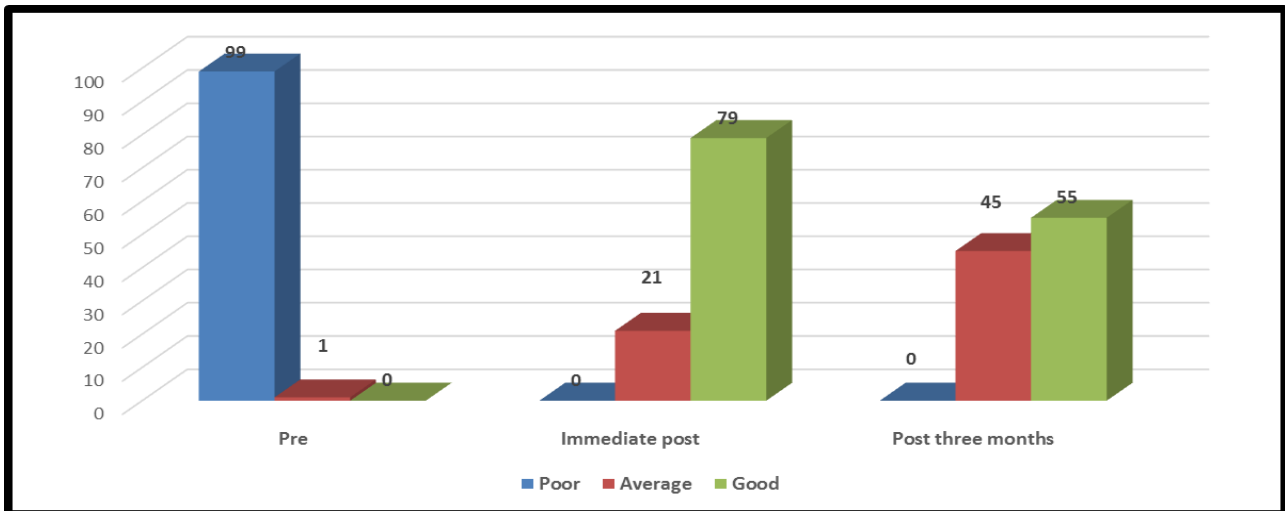
Patients' demographic characteristics		No.	%
Age	20- < 30	2	2.0
	30 - < 40	37	37.0
	40 – 50	61	61.0
	<b>Mean ± SD</b>	<b>41.87 ± 5.71</b>	
Gender	Male	69	69.0
	Female	31	31.0
Marital status	Married	84	84.0
	Single	13	13.0
	Divorced	3	3.0
Residence	Urban	81	81.0
	Rural	19	19.0
Educational level	Illiterate	6	6.0
	Read and write	17	17.0
	Intermediate education	65	65.0
	University education	12	12.0
Occupation status	Not working or retired	12	12.0
	Working	88	88.0
Nature of effort required for work	Physical effort	60	68.2
	Mental effort	28	31.8



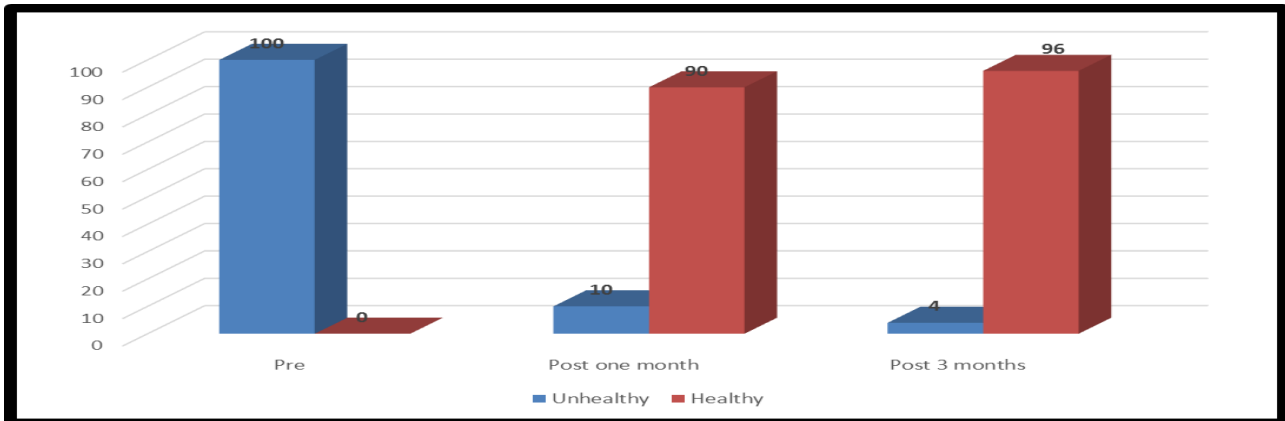
**Table (2): Distribution of the studied patients according to their health history (n = 100)**

Patients' health history		No.	%
<b>Past history</b>			
Presence of previous surgery	Yes	10	10.0
	No	90	90.0
<b>Present history</b>			
Suffering from comorbid disease	Yes	23	23.0
	No	77	77.0
Type of comorbid diseases*	<b>(n = 23)</b>		
	Diabetes mellitus	7	30.4
	Hypertension	12	52.2
	Diseases of the digestive system	7	30.4
	High blood cholesterol	12	52.2
	Diseases of the kidneys	5	21.7
	Diseases of the respiratory system	6	26.0
	Lupus erythematosus	1	4.3
Period since diagnosis (in years)	< 1 year	66	66.0
	1 < 5 years	24	24.0
	≥ 5 years	10	10.0
	<b>Mean ± SD</b>	<b>1.44 ± 0.67</b>	
Medications taken for ischemic heart disease	Nitrates	47	47.0
	Inhibitors of calcium channels	5	5.0
	Aspirin	29	29.0
	Cholesterol-lowering drugs	19	19.0
Reasons for asking medical help	Feeling pain in the stomach	15	15.0
	unable to walk	15	15.0
	Feeling pain and pressure in the chest	52	52.0
	Feeling dizzy and lack of concentration	18	18.0
<b>Family history</b>			
Ischemic heart disease	Yes	18	18.0
	No	82	82.0
Artery stent operation performed	Yes	10	10.0
	No	89	89.0
Heart catheterization	Yes	13	13.0
	No	87	87.0

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**Figure (1):** Difference between knowledge among studied patients regarding ischemic heart disease during (preprogram, after one and three months of program implementation) n =100



**Figure (2):** Difference between life style behavior level among studied patients with ischemic heart disease during (preprogram, post one month and 3months of program implementation) n =100

**Table (3):** Correlation coefficient between patients' lifestyle practice and their clinical outcomes.(n=100).

Patients' clinical outcomes	Total knowledge about lifestyle modification (post 3 months of program)	
	R	P value
<b>Primary outcomes</b>		
Repeated admission to hospital since disease	0.366	<0.001**
Times of readmission	0.575	0.025*
<b>Secondary outcomes (physiological measures)</b>		
Blood pressure level	0.349	<0.001**
Blood cholesterol level	0.415	<0.001**
High density lipoprotein	0.416	<0.001**
Low density lipoprotein	0.375	<0.001**
<b>Secondary outcomes (lifestyle behavior)</b>	0.342	<0.001**



## **Discussion**

Cardiovascular diseases are a public health concern everywhere, especially ischemic or Coronary Heart Diseases (CHD) which are on top of causes list of mortality and morbidity in both genders globally. From which nearly 80% occurs because of modifiable risks factors such as sedentary life, high fat diet, high blood pressure, smoking, diabetes, obesity, dyslipidemia and stress all are the main risks which lead to increased prevalence of CHD especially in Egypt reached 107,232 or 23.14% of total deaths from IHD (AlRahimi et al., 2020).

Strategies to improve adherence to healthy lifestyles and drug therapies are essential and can be implemented at health system, health care and patient levels with using of education, technology and personalized approaches. Improving quality of medical education with a focus on ischemic heart disease prevention for patients' physicians, nurses, health workers, and the public is required (Gupta & Yusuf, 2020). So, this study aimed to evaluate the effect of implementing designed life style modification program on outcomes among patients' with ischemic heart disease. To fulfill the aim of this study, the discussion of the findings is presented in the following sections.

Regarding age: The present study revealed that, more than half of studied patients their ages were between 40 and 50 years. This might be because; this is the most affected age with ischemic heart disease. This result was agreed with Hassanin et al., (2020) who studied "Demographics, clinical characteristics, and outcomes among hospitalized heart failure patients across different regions of Egypt, " and concluded that Ischemic heart disease affects more than half of the sample in age over 45 years in their study.

The result of the current study also similar to the finding of study conducted by Tsao et al., (2022), whose study entitled " Heart Disease and Stroke Statistics 2022 Update: A Report From the American Heart Association " and reported that the prevalence rate of IHD increases as people get older particularly after 45 years of age.

As regard to gender, the present study revealed that more than two third of the studied patients were males. From the researcher's point of view, this result might be because of stressors they face and unhealthy life style behavior they followed. This finding agreed with Khan et al., (2020), who studied "Global Epidemiology of Ischemic Heart Disease", and reported that more than two third of studied patients were males.

In addition to, Brown et al., (2022), who studied "Risk Factors for Coronary Artery Disease ", and showed that the male-to-female ratio was 2.1:1. So men had a higher prevalence of IHD than woman. But this finding was in contradict with study by Einarson et al., (2020), study entitled " Prevalence of cardiovascular disease in type 2 diabetes: a systematic literature review of scientific evidence " they reported that more than half of the studied patients with ischemic heart disease were females.

Concerning to marital status, the present study finding revealed that the majority of studied patients were married. From the researcher's point of view, this result might be due to the physical and social stress in their life and their families' responsibility. This finding was in consistence with Wong et al., (2019), who studied " Marital status and risk of cardiovascular diseases: a systematic review and meta-analysis " they reported that married patients who have ischemic heart disease represented the higher percentage of their study subject than single and widow patients.

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As regard to residence, the finding of the present study represented that majority of the studied patients were living in urban areas, from the present study researcher's point of view, this might be due to sedentary life style and advanced technology in urban areas that reduce physical activity than in rural lead to accumulation of bad cholesterol in coronary artery. Results were similar also to findings of study by **Singh et al., (2020)**, who studied "Urban-Rural Differences in Coronary Heart Disease incidence in the United States ". They revealed more than two third of studied group were living in urban areas.

In respect to the level of education, the result of the present study revealed that about two third of the studied patients had intermediate education. This finding agreed with the finding of study by **Ahmed et al., (2020)**, study entitled " Factors Affecting the Outcomes of Patients with Ischemic Heart Disease at Intensive Care Units " they reported that two third of studied patients had intermediate education. Similarly, this result supported by the result of study by **Tsao et al., (2022)**, they stated that most of patients with ischemic heart disease had intermediate education level and the minority had university education and incongruent with the result of study by **Gomar et al., (2019)**, about "Epidemiology of coronary heart disease and acute coronary syndrome" and showed that most of studied subjects were Read and write.

Regarding to occupation status, the result of the present study revealed that majority of studied patients was working. This result was consistence with the result of **Khan et al., (2020)**, who reported that most of studied subjects were working. This result was in the same line with the result of study by **Jian & Siegrist, (2021)**, about " Occupational Risks of Recurrent Coronary Heart Disease," and

stated that more than two third of studied subjects were working.

As regard to nature of effort required for work. The result of this study revealed that more than two third of studied patients their works require physical effort. This result agreed with the results of the study by **Sara et al., (2020)**, whose study entitled "Association between work-related stress and coronary heart disease ", they noted that more than half of studied patients had their works require physical effort.

Regarding past medical history. The result of this study revealed that most of patients did not performed any surgical operation. This result was agreed with the result of study by **Taylor et al., (2021)**, who studied "The role of cardiac rehabilitation in improving cardiovascular outcomes ". They revealed more than two third of studied group had not performed any surgical operation. Also, the result of the present study was consistent with the result of study conducted **Jagadish et al., (2019)**. titled "The patient with ischemic heart disease undergoing non cardiac surgery ", and reported that more than half of studied patients had not performed any surgical operation. Similarly, this result was agreed with **Hassanin et al., (2020)**, and illustrated that most of studied patients had not performed any surgical.

Regarding to Present medical history. The finding of the present study showed that more than three quarter of the studied patients weren't suffer from comorbid diseases, This finding was consistence with the finding of study by **Köhler et al., (2020)**, about " Patient empowerment and general self-efficacy in patients with coronary heart disease ".And concluded that more than half of studied patients hadn't suffered from comorbid diseases. But this finding was in contradict with **Kendir et al., (2019)**, who studied"

Cardiovascular disease patients have increased risk for comorbidity" and stated that majority of studied patients had suffer from comorbid diseases.

As regard to Period since diagnosis. The present study revealed that about two third of studied patient were diagnosed with IHD since less than one year. This result was supported by the result of **Mehta et al., (2020)**, who reported that more than half of studied patients were diagnosed with IHD since less than one year. This finding was also similar to the finding of study by **Nouri et al., (2020)**, about "Temporal Trends of the Incidence of Ischemic Heart Disease in Iran ". And revealed that more than two third of studied patients were diagnosed with IHD since less than one year.

Regarding to Medications taken for ischemic heart disease. THE finding of the present revealed. Near than half of study patients used nitrates as a medication for coronary heart disease. This result was congruent with **Perdoncin & Duvernoy, (2019)**, who studied " Treatment of Coronary Artery Disease in Women ", and showed that more than two thirds of studied patients used nitrates as a medication for ischemic heart disease.

As regard to Reasons for asking medical help. The finding of the present study showed that more than half of studied patients asked medical help when feeling pain and pressure in the chest. This result was supported by the result of study by **Taylor et al., (2021)**, who concluded that most of studied patients asked medical help when feeling pain and pressure in the chest.

Regarding to family history. The finding of the present study showed that the majority of the studied patients' family members had not ischemic heart disease, not performed artery stent operation or heart catheterization. This result was supported by **Shahjehan & Bhutta, (2022)**, whose studied Coronary Artery

Disease and reported that majority of studied patients family members had not ischemic heart disease, not performed artery stent operation or heart catheterization. Similarly, this result agreed by **Jagadish et al., (2019)**, and revealed that more than half of studied patients had not performed any surgical operation. But this finding was in contradict with **Sabatine et al., (2021)**, study entitled " Percutaneous coronary intervention with drug-eluting stents versus coronary artery bypass grafting in left main coronary artery disease: an individual patient data meta-analysis " and stated that more than half of studied patients family members had ischemic heart disease, performed artery stent operation or heart catheterization

Regarding to patients' total knowledge: this study revealed that the most of studied patients had poor total knowledge level regarding ischemic heart disease at pre life style modification program implementation .This result in the same line with the of study result **Brinks et al., (2021)**, who titled "lifestyle modification in secondary prevention". they reported more than three third of studied patients had poor total knowledge level regarding ischemic heart disease at pre life style modification program implementation. Also, the result was consistent with **Jung & Yang, (2021)**, who studied "Factors influencing health behavior practice in patients with coronary artery diseases". And noted that majority of studied patients had poor total knowledge level regarding ischemic heart disease at pre life style modification program implementation

As regard to total patients' life style behavior: The finding of the study revealed improvement in the studied patients' life style behavior post program implementation. This result was in the same line with the result of study by **Lönnberg et al., (2020)**, who studied "Improved unhealthy lifestyle habits in

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patients with high cardiovascular risk: results from a structured lifestyle programmed in primary care " and reported that the majority of studied patients had unhealthy life style behavior preprogram implementation, while, post program implementation most of them had healthy life style behavior and slight increase in healthy life style behavior in follow up. Also, this result agreed with the result of study by **Livingstone et al., (2021)**, whose study entitled "Unhealthy Lifestyle, Genetics and Risk of Cardiovascular Disease and Mortality in Individuals from the UK Biobank" and stated that most of patients had unhealthy life style behavior preprogram implementation, while, most of them had healthy life style behavior post program implementation.

As regard to Correlation between patients' knowledge about lifestyle modification and clinical patients' outcomes. The present study noted that is negative correlation between total patients' knowledge about lifestyle modification and their clinical outcomes except in two items (High density lipoprotein and Secondary outcomes (lifestyle behavior) and a highly statistical significant correlation between patient's life style and patients' clinical outcomes post life style modification program implementation ( $P < 0.001$  ). This result agreed with the result of study by **Ezzati & Salehi , (2019)**, who studied " correlation of heart knowledge and cardiac risk factors with readiness for lifestyle modification in companions of patients with cardiovascular diseases in the west of iran ". and declared that a negative correlation between total patients' knowledge about lifestyle modification and their clinical outcomes. This finding in the same line with the result of study by **Elbashir et al., (2022)**, who reported that there is negative correlation between total patients' knowledge about lifestyle modification and

their clinical outcomes with a highly statistically significant correlation.

To sum up the discussion of the current study, the study results documented that, the studied patients showed statistical significant improvement of the knowledge resulting in improving of patients life style practice for ischemic heart disease patients immediately post and at follow up after three months and improved patients outcome post one month and at follow up post three months of program implementation compared to pre life style modification program which support the study hypotheses.

### **Conclusions:**

Lifestyle modification program effectively improved patients' knowledge regarding ischemic heart disease and life style practice among ischemic heart disease patients where their knowledge were significantly more competent post Life style modification program implementation than pre. And there was highly statistically significant correlation between total patients' knowledge about lifestyle modification and their clinical outcomes except in two items (high density lipoprotein and secondary outcomes life style behavior) post life style modification program implementation  $p < 0.01$ .

### **Recommendations:**

- 1- Establishing a written updated protocol for assessment of patients' life style practice regarding IHD with continuous education & appraisal to ensure adequate knowledge, and safe life style practices, for minimizing the incidence of complications.
- 2- Emphasize multidisciplinary collaboration to reliably implement safe life style practice protocol in an effort in coronary care units for IHD patients'.
- 3- Lifestyle practice for ischemic heart disease patients' on larger sample size to evaluate its effect on patients' performance and their

outcomes.

4-Ongoing educational guidelines and training courses for nurses about ischemic heart disease and life style practice

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## تأثير برنامج تعديل نمط الحياة المصمم على نتائج مرضى نقص التروية القلبية

منى شحات محمد عبدالله - هبة عبدالقادر على - هيام احمد محمد - صفاء محمد حامد

مرض نقص تروية القلب هو مصطلح يطلق على مشاكل القلب الناتجة عن انسداد الشريان التاجي الذي يؤدي إلى عدم كفاية إمداد القلب بالدم وينتج عنه الذبحة الصدرية أو النوبة القلبية. لكل من الرجال والنساء ، يعد مرض القلب التاجي أو مرض نقص التروية أحد الأسباب الرئيسية للوفاة في العالم. عادة ما يكون بدون أعراض ويمكن الوقاية منه . لذا هدفت هذه الدراسة إلى تقييم تأثير تنفيذ برنامج تعديل نمط الحياة المصمم على النتائج بين مرضى القلب الإقفاري. وقد أجريت هذه الدراسة في وحدة عناية القلب والعيادات الخارجية لأمراض القلب بمستشفى جامعة بنها. تم اختيار عينة ملائمة من مرضى نقص تروية القلبية الذين تم قبولهم في مكان الدراسة الحالية خلال ستة أشهر و معايير إختيارهم كالتالي: المرضى البالغين من الذكور والإناث الواعين ، الذين تتراوح أعمارهم بين 20-50 عامًا وليس لديهم أي مضاعفات. بلغ العدد الإجمالي للمرضى المشاركين في هذه الدراسة (100) مريض. وقد خلصت الدراسة بأن أدى برنامج تعديل نمط الحياة إلى تحسين ممارسة أسلوب حياة المرضى بشكل فعال ونتائجهم السريرية فيما يتعلق بمرضى نقص تروية القلب بعد تنفيذ برنامج تعديل نمط الحياة أكثر من ذي قبل. وكانت هناك علاقة سلبية ذات دلالة إحصائية عالية بين ممارسة نمط حياة المرضى الكلي ونتائجهم السريرية بعد تنفيذ برنامج تعديل نمط الحياة . وقد أوصت نتائج الدراسة بإنشاء بروتوكول محدث مكتوب لتقييم ممارسة نمط الحياة فيما يتعلق بمرضى نقص التروية القلبية والرعاية من خلال التعليم والتقييم المستمر لضمان المعرفة الكافية ، وإكمال ممارسات نمط الحياة الآمنة ، مما يؤدي إلى تقليل حدوث المضاعفات.