

Effect of Learning Program on Patients with Angina Attack Regarding Preventive Measures of Angina Attack

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Abstract

Background: Angina is the single most common etiology of death globally. However, with falling angina mortality rates, an increasing number of individuals accept angina and should need support to manage angina and may need support to manage their symptoms and improve prognosis. Angina usually goes away quickly. Still, it is often an indication of a life-threatening heart problem. It's important to search out what is going on and what the patient will do to avoid an attack. The preventive measures about angina attack and changes in patients' lifestyles can control angina and its complications. **So the study was aimed** to evaluate the effect of learning programs on patients with angina attacks regarding preventive measures of angina attacks. **Design:** A quasi-experimental research design. **Setting:** The study was applied in 5 hospitals in Port Said city. **Subjects:** This study covered 111 patients recording in an intensive care unit, and internal medicine departments in El-Tadamon Hospital, Al-Nasr Hospital, Al-Amery Hospital, Al-mabra Hospital, and Porfoud Hospital at Port Said city. **One tool used for data collection;** "Structured questionnaire sheet" which consists of thirty-one questions concerning socio-demographic characteristics, angina attack, and preventive measures of an angina attack. **Results:** This study indicated that there are statistically significant improvements at p-value (0.001) immediately after program implementation regarding patients' knowledge about preventive measures of an angina attack. Moreover, it was also found a statistically significant relationship between patients' knowledge and total scores of their knowledge. There are statistically significant associations between the changes in the scores of either knowledge and socio-demographic characteristics (age, and duration of disease) while there are no statistically significant associations between their knowledge and educational level. **Conclusion:** It can be concluded from the results of the present study that the learning program for the patients with angina attacks had a positive impact on their knowledge concerning preventive measures of an angina attack. **Recommendation:** development and implementation of continuous learning program about preventive measures of angina attack in all cardiac outpatients of all health care settings at port said city.

Keywords: Angina attacks, Patients, learning program, preventive measures.

Introduction

Angina attack is chest pain or a sensation of pressure that occurs when the heart muscle is not getting enough oxygen. It tends to develop in women at a later age than in men (Waldmann, *et al.*, 2012). Over 9 million people have been estimated that in the United States by the American Heart Association (AHA) suffer from angina attack which significantly impacts the ability to work, quality of life, and costs to society. A significant proportion of patients with arteria coronaria angiography to evaluate angina, mainly women, are found to possess normal-appearing epicardial coronary arteries (American Heart Association, 2015, Waldmann, *et al.* 2012,).

Stable angina is not life-threatening on its own. However, it is a serious warning sign that the patients have an increased risk of life-threatening problems, such as a heart attack or stroke (Mansour, *et al.*, 2004, and Rosamond, *et al.*, 2010). Chronic stable angina (CSA) can negatively impact the quality of life (QoL) so CSA is a prevalent and significant problem in the United States. **Disease Control**

and Prevention Centers (2011) reported that about 7.8 million people in the United States (US) aged greater than 20 years experienced angina. Each year, more than five hundred thousand people aged greater than forty-five years are diagnosed with CSA (Pragodpol, & Ryan, 2013, and Mozaffarian, *et al.*, 2013).

In a recent study of Chronic stable angina incidence, twenty-nine percent of patients with Chronic stable angina attending primary care practices experienced at least 1 episode of angina per week (Beltrame, *et al.*, 2009). According to WHO, World Bank, UNESCO, *et al.*, (2014) reported that Coronary Heart Disease Deaths in Egypt reached 107,232 or 23.14% of total deaths. The age-adjusted mortality rate is 186.36 per 100,000 population which places Egypt 23rd in the world (Rosamond, *et al.*, 2010). So the aim of this study is to evaluate the effect of a learning program on patients with angina attacks regarding preventive measures of angina attacks.

Angina occurs when the heart does not get enough oxygen, which results in tightness,

pressure, burning, or pain in the back, chest, jaw, neck, shoulders, or arms. Sometimes it's a sense of shortness of breath or unusual fatigue. The discomfort or pain from angina is often confused with indigestion. Angina is not actually a disease; it is a symptom of coronary artery disease (CAD blockages in the bigger arteries in the heart) and coronary microvascular disease (MVD blockages in the smaller arteries in the heart). This means that the underlying causes of angina are a result of blockages in the arteries of the heart; both the bigger arteries and the smaller arteries (Kim, 2014).

Therefore, Singh, (2014) assured the factors that contribute to blockages in the heart arteries and symptoms of angina including high amounts of fat, smoking, and cholesterol in the blood, and a high amount of sugar in the blood due to diabetes or insulin resistance, and high blood pressure. There are two main types of angina, unstable angina, and stable angina. Unstable angina - where angina attacks are more unpredictable, occurring with no obvious trigger and continuing despite resting while Stable angina -where angina attacks occur due to an obvious trigger (such as exercise) and improve with rest and medication. While Unstable angina should be regarded as a medical emergency because it is a sign that the heart function has rapidly and suddenly deteriorated, increasing the patient's risk of having a heart attack or stroke (Jeffrey, 2013).

The most common risk factors of angina include smoking, family history, hypertension, obesity, diabetes, high alcohol consumption, lack of exercise, stress, and hyperlipidemia (Mayo Foundation for Medical Education and Research, 2012). Smoking is associated with about fifty-four percent of cases and obesity twenty percent. Lack of exercise has been linked to seven–twelve percent of cases. Job stress appears to play a minor role accounting for about three percent of cases (Kivimäki, et.al, 2012, Lee IM, et.al, 2012)

The most complications of angina are atherosclerosis which will continue to get worse. This can lead to the blood supply to the heart becoming blocked, which could trigger a heart attack. Similarly, the blood supply blockage to the brain could trigger a stroke. Every year it is estimated that one in every one hundred people with stable angina will have a fatal heart attack or stroke and as many as one in forty people will have a non-fatal heart attack or stroke (Vadnais, 2009).

Lifestyle modification is an integral component of therapy for patients with angina & It will favorably impact the adverse cardiovascular risk factor profile in many patients with angina. Exercise capacity and exercise training improves angina, and decreasing mortality in patients with coronary disease. Preventive measures of angina involve exercise, decreasing obesity, treating hypertension, a healthy diet, decreasing cholesterol levels, stopping smoking, and control blood sugar in diabetes, Medications, and exercise are roughly equally effective (Naci, & Ioannidis, 2013). There is evidence in diabetes mellitus, that very tight blood sugar control improves cardiac risk, although improved sugar control appears to decrease other problems such as blindness and kidney failure. The World Health Organization (WHO) recommends "low to moderate alcohol intake" to reduce the risk of coronary artery disease, although this remains without scientific cause and effect proof (World Health Organization, 2004).

Angina treatment aims to provide immediate relief from the symptoms, reduce the risk of further complications, and prevent future attacks (Nezamzadeh,et.al,2012). Finally, AHA guidelines and the current guidelines from the American College of Cardiology Foundation highlight the importance of learning patients about the clinical manifestations, etiology, prognosis of their disease, treatment options, supporting active patient participation in treatment decisions, and using evidence-based pharmacological treatments that improve the patients' health status and survival with minimal side effects and the ACCF/AHA guidelines also recommend that patients with nursing research and practice stable heart disease be educated about the importance of lifestyle modifications, such as smoking cessation, blood pressure (BP) control, lipid control, weight control, and diabetes management in improving their QoL. Increased exercise tolerance may also reduce cardiovascular (CV) risk and enhance the quality of life (QoL) in patients with chronic stable angina (CSA) who have comorbid type 2 diabetes mellitus (T2DM), and exercise as recommended by the American Diabetes Association for contributing to weight loss in patients with T2DM, blood glucose control improving QoL. In patients with T2DM, a structured exercise program has been shown to lower glycosylated hemoglobin by 0.66% and may reduce the risk of diabetic complications (Nezamzadeh,et.al,2012, American Diabetes Association, 2012, and Boule, et.al, 2001). So this study aims to evaluate the effect of a learning program on

patients with angina attacks regarding preventive measures of angina attacks.

Significance of the study:

The most common early symptom of coronary heart disease is angina pectoris. Many people still have misconceptions about the importance of angina. The greatest danger of angina is the increased risk of cardiac arrest if it is not discovered and treated quickly. Any sort of angina, if neglected and untreated, can develop to myocardial infarction at any point later on (Gravelly-Witte, et.al., 2007, and Heran, et.al., 2011).

An angina is the most common cause of death in the world. However, as CHD mortality rates decline, an increasing number of patients are diagnosed with the disease and may require assistance to manage their symptoms and improve their prognosis. Intervention of anginal patients is a comprehensive strategy aimed at improving the health outcomes of persons with coronary artery disease; education, exercise training, and psychological support are the three main components of anginal patient services. This is an update of a Cochrane systematic review that was first published in 2011, with the goal of determining the particular impact of cardiac rehabilitation's educational component.

Most cardiovascular illnesses can be avoided by addressing behavioral risk factors such as smoking, eating an unhealthy diet, being overweight or obese, being physically inactive, and drinking too much alcohol. Indeed, because of early detection measures, improved medical treatment, lifestyle improvements, and risk factor reductions, UK age-standardized CHD mortality rates declined by 73 percent for all ages between 1974 and 2013, and by 81 percent for those dying before the age of 75. Hence, the researcher carried out this study to evaluate the effect of learning program on patients with angina attacks regarding preventive measures of angina attacks.

Aim of Study:

To evaluate the effect of learning program on patients with angina attacks regarding preventive measures of angina attacks.

Problem Statement:

There is an urgent need to evaluate the effect of learning program on patients with angina attacks regarding preventive measures of angina attacks because the importance of modification of multiple risk factors of chronic stable angina will reduce the mortality rate from ischemic heart disease (IHD). Hence, it will control patients' lifestyles.

Research questions:

How does a learning program regarding preventive measures of angina attacks improve patients' knowledge?

Is there a significant statistical relationship between the patients' knowledge and their sociodemographic data?

Does a learning program make positive improvements in patients' knowledge after attending a learning program regarding preventive measures of angina attacks ?

Hypothesis Research:

H1: There will be positive improvements effect of a learning program on patients with angina attacks regarding preventive measures of angina attacks.

H2: There will be a relationship between the patients' knowledge and their sociodemographic data.

Material and Methods:

Research Design:

The design of this study was a quasi-experimental design done to evaluate the effect of a learning program on patients with angina attacks regarding preventive measures of angina attacks.

Setting:

The study was conducted in an intensive care unit, and internal medicine departments in five hospitals (El-Tadamon Hospital, Al-Nasr Hospital, Al-Amery Hospital, Al-Mabra Hospital, and Porfoud Hospital) at Port said City.

Subjects:

The population of this study consisted of (111) patients who have a recording in an intensive care unit, and internal medicine departments in five hospitals at Port Said city from the beginning of June to the end of November 2016.

The inclusion criteria included:

- Adult patients aged from 20-60 years.
- Agree to participate in the study.

The exclusion criteria included:

- Adult patients are aged less than 20 and more than 60 years.
- Refusal to participate.

Tool for data collection:

The structured questionnaire sheet was the tool which used in the study

It was developed by the researcher based on the review of related nursing literature to evaluate the effect of learning program on

patients with angina attacks regarding preventive measures of angina attacks.

It is comprised of two parts.

Part I:-

It included items related to socio-demographic characteristics of the studied patients such as sex, age, educational level, occupational status, and duration of angina pectoris.

Part II:-

It included 26 questions related to patients' knowledge regarding angina pectoris; (definition, signs and symptoms, causes, risk factors, preventive measures, and complications).

Validity of the tool:

The content validity of the tool was tested by a board of 5 experts in Medical-Surgical Nursing and professors specialized in the management of patients with cardiac diseases to ensure that the questions were clear, relevant, applicable, understandable, and complete and appropriate modification was done accordingly.

Reliability of the tools:

Test-retest reliability was used. The internal consistency of the tool was calculated using Cronbach's alpha coefficients. The study tool revealed reliability at Cronbach's alpha $\alpha=0.87$ for the tool.

Pilot study

A pilot study was applied after the development of the tool. It was carried out on ten percent of patients in an intensive care unit, and internal medicine departments in three general hospitals at Port said City to test the reliability and applicability of the tool of the study. The radical modifications were done based on the pilot study result.

Administrative Design:

The official letters were obtained from the Dean of the faculty to the directors of each study setting to take cooperation and permission.

Ethical Considerations:

This research was approved by the faculty of nursing ethics committee, Permission to conduct the study was obtained from the responsible authorities after explaining its purpose. Data was obtained from every patient prior to their inclusion in the study after explaining its importance and purpose. The researcher informed the patients that the study was voluntary, they were allowed to refuse to participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, nurses were assured that

patients' information would be confidential and utilized for research purposes only.

Data collection procedure:

The researcher used scientific books, papers, periodicals, and the internet to analyze current local and international related literature to gain a better understanding of the problem, create the study measures, and complete them. The actual fieldwork took place at the chosen setting from the beginning of June to the end of November 2016. In the previously described scenarios, The researcher explained the study's nature and goal and requested cooperation.

This study was conducted in four phases:-

Phase I (Assessment phase):- to assess patients' knowledge about preventive measures of angina attacks. The researcher interviewed the patients on an individual basis the researcher introduced the sheet (**Tool I**) to the patient and asked them to complete it. Most of the patients spent about thirty minutes in the interview.

Phase II (program planning):-The learning program was developed based on the identified needs and demands of patients gathered in phase I and the light of the most recent pertinent literature.

Phase III (program implementation):-The patients were divided into 5 groups according to their hospital. The learning program was implemented for each group of patients in each hospital. It lasted for one month and one week, it included six sessions one session per week. Each session took about 30 minutes. The program was presented in clear and concise form, and focused on the point of learning, using different teaching methods such as discussions, lectures, data show, videotapes. In the developed program a booklet was distributed to the participant. Researcher attended the previously mentioned settings 5 days per week (Sunday and Thursday), from 9 am to 11 am for learning sessions and data collection. Data Collection was within six months from the beginning of June to the end of November 2016.

Phase IV(Evaluation phase): The program outcome were evaluated by using tools I. two times; first preprogram, second immediately after the implementation of the program.

Scoring system:-

The total score of patient' knowledge against the 2 basic items was calculated to be 44. The respondent was given one point for each correct answer and zero for an incorrect one. The items scores were summed up. These scores were turned into a percent score. The total score of 60% and more was considered satisfactory in

knowledge while scores below 60% were considered unsatisfactory.

Statistical analysis:-

After data were collected, they were coded and transformed into a specially designed format suitable for computer feeding. All data were verified after entering data for any errors. Data were analyzed using statistical package for social sciences (SPSS) windows 18.0 version and were presented in tables.

Data were presented utilizing descriptive statistics in the form of frequencies and percentages for qualitative variables, and ranges means, and standard deviations. Qualitative variables were compared utilizing the Z test. For quantitative variables, mean and standard deviation was calculated the difference between the two methods was made using student test(t). The difference in the right ratio of the items of knowledge before and post-learning program tested with Wilcoxon site rank test (z&p). For multiple group comparisons of quantitative data, a one-way analysis of variance test (ANOVA) was used. Pearson's link coefficient (r) was calculated for the numerical variables. When one or two ordinal variables are ordinal, the Spearman variable is the (rho) test. The level of importance was adopted at $p < 0.05$.

Results:

Table (1): showed the socio-demographic characteristics of studied patients. About half of studied patients (54.1%) were male and more than one-third of studied patients (45.9%) were female. As regards age, about (27.0%) of patients were from 55 years and less than 65 years, and about (10.8%) of patients were from 35 years and less than 45 years. As regards their educational level, about one-third of studied patients (31.5%) were non-educated, about less than one-third (25.2%) of patients had a secondary certificate, and a minority of studied patients (13.6%) had a bachelor certificate. About more than two-third of studied patients (70.3 %) don't work. As regards their duration of angina attacks, more than one-third (38.7%, 35.1% respectively) were from 5 years to less than 10 years and from 10 years to less than twenty years.

Table (2): declared differences in patients' knowledge regarding angina throughout the program intervention. The results indicated

improvements in patients' knowledge in various areas of angina. These improvements were statistically significant at a p-value (0.001). The most prominent improvement was in the score of knowledge about Signs and Symptoms, and risk factors of an angina attack. It reached (96.4%, 84.7% respectively) in the immediate post-test. Moreover, satisfactory levels percentages in all knowledge aspects improved in the post-test. The levels were significantly higher than the pre-program levels (pretest).

Table (3): demonstrated differences in patients' knowledge regarding preventive measures of angina throughout the program intervention. The results indicated improvements in patients' knowledge in various areas of preventive measures of an angina attack. These improvements were statistically significant at a p-value (0.001). The most prominent improvements were in the scores of knowledge about Low-fat diet avoiding heavy eating (98.2%), adequate rest & sleep (97.3%), avoiding a stressful situation (97.3%), and avoiding excessive physical activities (97.3%) in the immediate posttest. Moreover the percentages of satisfactory level altogether knowledge areas improved within the posttest. The patients' knowledge levels were significantly higher than the pre program level (pretest).

Table (4): illustrated comparison of mean patients' knowledge total score regarding angina attacks throughout the program intervention. The percentages of improvement were highest in patients' knowledge between the immediate posttest and therefore the pre-program level (84.34±9.44) at p-value (0.001) where $t=14.912$.

From **Table (5):**, it was observed a correlation between patients' knowledge regarding angina attacks and their sociodemographic throughout the program intervention. There is a statistically significant difference found between patients' age groups, patients' knowledge, and their disease duration. It demonstrated a statistically significant relationship between patients' knowledge of their age groups and duration of disease at a p-value (.001*) where (rho =-0.339, and -0.394 respectively). Meanwhile, there was a statistically insignificant relationship between patients' knowledge and educational level where (rho=-0.250) at p-value (0.008).

Table (1) Socio-Demographic Characteristics of angina Patients

Items		N n= (111)	
		Count	Percentage %
Sex	Male	60	54.1%
	Female	51	45.9%
Age	35-<45	12	10.8%
	45-<55	20	18.0%
	55-<65	30	27.0%
	65-<75	27	24.3%
	75+	22	19.8%
	Non Educated	35	31.5%
Educational Level	Primary	18	16.2%
	Intermediate	16	13.5%
	Secondary(diploma)	28	25.2%
Occupational Status	Bachelor Degree	14	13.6%
	Working	33	29.7%
Duration of angina	Not Working	78	70.3%
	<1	4	3.6%
	1-<5	10	9%
	5-<10	39	35.1%
	10-<20	43	38.7%
	20+	15	13.5%

Table 2 Differences in patients' knowledge about angina throughout the program intervention.

Patient's knowledge about	Time				Z	P
	Count	Pre test %Percentage	Immediately post test Count	Percentage %		
Definition	37	33.3%	70	63.1%	4.371	0.001
Causes	27	24.3%	84	75.7%	6.862	0.001
Signs and Symptoms	81	73.0%	107	96.4%	4.914	0.001
Types of angina	26	23.4 %	63	56.8%	5.181	0.001
Risk factors	59	53.2%	94	84.7%	5.000	0.001
Complications	32	28.8%	70	63.1%	5.078	0.001

Table 3 Differences in patients' knowledge regarding preventive measures of angina throughout the program intervention.

Patient's knowledge about preventive measures	Time				Z	P
	Count	Pre test %Percentage	Immediately post test Count	Percentage %		
Low salt diet	91	82.0%	106	95.5%	3.441	0.001
Low fat diet& avoid heavy eating	79	71.2%	109	98.2%	5.477	0.001
Cigarette smoking cessation	45	40.5%	87	78.4%	5.612	0.001
Regular exercises& avoiding physical inactivity	49	44.1%	67	60.4%	2.546	0.011
Adequate rest& sleep	75	67.6%	108	97.3%	5.245	0.001
Avoid a stressful situation	71	64.0%	108	97.3%	5.925	0.001
Avoid exposure to cold weather	50	45.0%	101	91.0%	7.141	0.001
Avoid excessive coffee	76	68.5%	101	91.0%	4.490	0.001
avoid excessive Physical activities	69	62.2%	108	97.3%	6.091	0.001
Control blood pressure (hypertension)	53	47.7%	102	91.9%	6.379	0.001
Control sugar in blood (diabetes mellitus)	48	43.2%	99	89.2%	6.640	0.001
Control weight	47	42.3%	101	91.0%	6.971	0.001

Table 4 Comparison of mean patients' knowledge total score regarding angina attacks throughout the program intervention.

Variables	Mean	±SD	t	p
Knowledge pre learning program	52.04	± 19.39	-----	-----
Knowledge immediately post Learning program	84.34	±9.44	14.912	0.001

Table 5 Correlation between patients' knowledge regarding angina attacks and their sociodemographic throughout the program intervention.

Variables	Age		Educational level		Duration of disease	
	rho	p	rho	p	rho	p
Knowledge pre learning program	-0.339	0.001	0.250	0.008	-0.394	0.001
Knowledge immediately post learning program	-0.199	0.037	-0.017	0.860	-0.133	0.165

Discussion

Angina may be a crucial clinical manifestation of coronary disorder. Additionally, in patients with angina, the danger of future cardiovascular events is often prevented with aggressive secondary prevention (Ades, et al.,1992, Medical Research Council & British Heart Foundation, 2002, and Yusuf, et al., 2014). The concept of coronary heart disease prevention has often become cardiovascular medicine. For several years, the sector gave hypocrisy to prevention but neglected to require it seriously. The likelihood of effective prevention was met with skepticism from many quarters. Gradually, however, the tide has turned, and prevention is getting the whip's hand. Widespread acceptance of the benefits of prevention came first within the world of secondary prevention, preventing recurrent coronary events in patients with established coronary heart disease. Secondary prevention is important to stand between treatment and prevention as the boundary. Many cardiologists consider secondary prevention to be the treatment of arteria coronaria disease; others see it as prevention of recurrent coronary events. There is a more uniform agreement which prevention of new-onset coronary heart disease should be called primary prevention (Lewin, et al.,2002, Scott, 2016, Murphy, 2006).

In addition to strategies for influencing risk factors associated with secondary events in patients with coronary heart disease, they are frequently used, although relatively little data have been reported on the efficacy of those interventions in older patients. Benefits for these patients, including those ≥ 75 years aged where possible, are described here. Traditionally, components of secondary prevention programming (including management of dyslipidemia, hypertension, smoking cessation, exercise, diabetes, and weight; and interventions directed at depression, social isolation, return to figure, and other psychosocial issues) are provided by the clinician within the office setting or through cardiac rehabilitation

programs. Cardiac rehabilitation programs are particularly compatible with the availability of secondary prevention services, but unfortunately, many older patients who would derive enjoy these interventions do not participate due to lack of referral or a spread of societal and other barriers (American Diabetes Association, 2012, and Lewin, et al., 2002).

Therefore the aim of this study was to evaluate the effect of a learning program on patients with angina attacks regarding preventive measures of an angina attack. The results of this study revealed that about half of the studied patients were male and about quite one-third of the studied patients were female. Most of them were in the age bracket from 55 years and fewer than 65 years. These results were supported by the general prevalence of angina pectoris, which was 28/1000 in men and 25/1000 in women (1.57 first, 7.70 frequent, and 20.65 continuous). The prevalence of angina was lower in women than men in the least ages ($p < 0.05$). In the male, the prevalence was highly low in those less than forty-five (1/1000) increasing to $\geq 141/1000$ in those ≥ 75 years. In women, the angina prevalence was 108/1000 in these 75 years. the very best prevalence in both sexes was within the age range 75–84 years. Although the prevalence was higher \geq in men than in women, the greater number of elderly women within the population meant that more women than men aged 75 years had angina which, overall, almost as many ladies as men had angina (Murphy, et. al, 2006, Mozaffarian, et al, 2015).

Moreover, the findings of this study showed that over one-third (35.1%, 38.7% respectively) were from five years to about ten years and from ten years to about 20 years regarding their duration of angina. These results could be because about one-third of studied patients were noneducated, and therefore the majority of studied patients don't work. These results were in the same line with Murphy, et al., (2006) reported that increased sharply with advancing age and increasing social and economic deprivation. Older patients and women were less likely to get evidence-based treatment.

The results of this study revealed that the improvements in post-program levels were significantly above the pre-program levels (pretest). These results could be because the impact of the program improved their knowledge about preventive measures of angina. These results were congruent with **Alexander (2005)** who found that good programs of secondary prevention improve outcomes of health in patients with coronary heart disease. the general aging of the American population and improving survival of patients with the coronary disorder has created an outsized population of older adults (≥ 65 years of age) eligible for secondary prevention. Increasing evidence has accumulated over the past two decades that older adults with heart disease can greatly benefit from exercise training and all other aspects of secondary prevention. (**National Center for Health Statistics, 2014, and Mark, et.al, 2002**)

The results of this study revealed that the improvements in post-program levels were significantly above the pre-program levels (pretest) in various areas associated with preventive measures as (low salt diet, low-fat diet avoiding heavy eating, cigarette smoking cessation, regular exercises, adequate rest & sleep, avoiding a stressful situation, avoiding exposure to weather, avoiding excessive coffee, avoiding excessive Physical activities, control vital sign (hypertension), control sugar in the blood (diabetes mellitus), and Control weight. These results could be because of the importance of controlling risk factors to avoid recurrence of angina and an academic program emphasized modified risk factors which play a basic role in preventing recurrence of angina pectoris.

These results supported by **Mark, et al., (2002)** who reported that secondary prevention interventions to effect and control the risk factors in older patients with coronary heart disease, including habitual cigarette smoking, hypertension, abnormal blood lipids, elevated blood glucose, obesity, various psychological concerns, and physical inactivity, appear effective to an extent almost like that observed in younger patients. Greater older adult participation in these programs is required to realize the full potential of secondary treatment and prevention. Moreover, several studies added that regular physical activity using large muscle groups, like walking, running, or swimming, produces cardiovascular adaptations that their knowledge and socio-demographic characteristics (age, and duration of disease) while there are no statistically significant associations between their knowledge and educational level.

increase exercise capacity, endurance, and striated muscle strength.

Habitual physical activity also prevents the event of blood vessel disease and reduces symptoms in patients with established cardiovascular disease. The evidence is reported that exercise reduces the danger of other chronic diseases, including type 2 diabetes, depression, obesity, osteoporosis, cancer of the breast and Colon (**Knowler et al, 2002, Vuori,2001, Wing, 2001, Pollock, 2001, Breslow, et al.,2001, and Slattery, 2002**).

The results of the present study revealed that there is a statistically significant difference between patients' knowledge, their age groups, and duration of disease. These results might be due to the majority of studied patients being from 55 years to more than 70 years and the duration of disease from 5 to twenty years. That period is enough time to be aware of their disease and be more knowledgeable and effect of learning program about preventive measures of angina. These findings are supported by **Mark, et al., (2002)** who reported providing an update on the benefits of specific interventions for risk factors for secondary prevention in this age group and, where possible, to identify benefits for older adults (75 years of age). Increased awareness on the part of physicians, nurses, third-party payers, and patients and their families of the advantages of secondary prevention programs to adults and older adults will provide a basis for referral and aid within the implementation of such programming.

Conclusion:

Based on the results of the present study, the following was concluded:

1. There are statistically significant improvements at p-value (0.001) immediately after program implementation regarding patients' knowledge about preventive measures of angina pectoris.
2. It was also found a statistically significant relationship between patients' knowledge and total scores of their knowledge.
3. There are statistically significant associations between the changes in the scores of

Recommendation:

1. A well-organized and structured continuing education program should be established at Primary Health Centers for anginal patients.

2. Health care providers should take time to explain in-depth angina, causes, and prevention/control through health and self-care measures to prevent complications.

3. Family members of diabetic patients should also be counseled to adopt a healthy lifestyle to prevent anginal attacks.

4. Studies in a similar context but with a wider scope and much larger sample size are recommended to confirm the findings of this study.

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References:

Ades PA, Waldmann, ML, McCann, WJ, et al. (1992): Predictors of cardiac rehabilitation participation in older coronary patients. *Arch Intern Med.*; 152: 1033-1035.

Alexander M. Clark, Lisa H., Ben, V., and McAlister, A. (2005): Meta-Analysis: Secondary Prevention Programs for Patients with Coronary Artery Disease 143(9):659-672.,

American Diabetes Association, (2012): "Standards of medical care in diabetes-2012," *Diabetes Care*, vol. 35, supplement 1, pp. 11-63.

American Heart Association, (2015): , National Center for Health Statistics. Current Estimates from the National Health Interview Survey, 1995.

Circulation. ;131:e29-e322

Barr, T., Nanette, K. W., (2002): AHA Scientific Statement Secondary Prevention of Coronary Heart Disease in the Elderly (With Emphasis on Patients ≥ 75 Years of Age), An American Heart Association Scientific Statement From the Council on Clinical Cardiology Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention.

Beltrame, J. F., Weekes ,A. J., Morgan C., Tavella R., and Spertus J. A., (2009): "The

prevalence of weekly angina among patients with chronic stable angina in primary care practices: the coronary artery disease in general practice (CADENCE) Study," *Archives of Internal Medicine*, vol. 169, no. 16, pp. 1491–1499.

Boule, N. G., E., Haddad, Kenny ,G. P., Wells ,G. A., and Sigal R. J., (2001): "Effects of exercise on glycemic control and body mass in type 2 diabetes mellitus: a meta-analysis of controlled clinical trials," *The Journal of the American Medical Association*, vol. 286, no. 10, 1218–1227.

Breslow RA, Ballard-Barbash R, Munoz K, et al. (2001): Long-term recreational physical activity and breast cancer in the National Health and Nutrition Examination Survey I epidemiologic follow-up study. *Cancer Epidemiol Biomarkers Prev.* 10: 805–808.

Fihn, S. D., Gardin, J. M., Abrams, J. et al. (2012): ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease: a report of the American College of Cardiology Foundation/American Heart Association task force on practice guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons," *Circulation*, vol. 126, pp. e354–e471.

Go, A. S., Mozaffarian, D., Roger, V. L. et al. (2013): "Heart Disease and Stroke Statistics—Update: A Report From the American Heart Association," *Circulation*, vol. 127, no. 1, pp. e6–e245.,

Gravelly-Witte, S., De Gucht, V., Heiser, W., Grace, S. L., & Van Elderen, T. (2007). The impact of angina and cardiac history on health-related quality of life and depression in coronary heart disease patients. *Chronic illness*, 3(1), 66-76.

Heran, B. S., Chen, J. M., Ebrahim, S., Moxham, T., Oldridge, N., Rees, K., ... & Taylor, R. S. (2011). Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane database of systematic reviews*, (7).

Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT (2012): "Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy". *Lancet* 380 (9838): 219–29. Doi: 10.1016/S0140-6736(12)61031-9. PMC 3645500. PMID 22818936.

- Kim, B. (2001):** Social constructivism. *Emerging perspectives on learning, teaching, and technology*, 1(1), 16.
- Kivimäki M, Nyberg ST, Batty GD, et al. (2012):** "Job strain as a risk factor for coronary heart disease: a collaborative meta-analysis of individual participant data". *Lancet* 380 (9852): 1491–7. Doi: 10.1016/S0140-6736(12)60994-5. PMC 3486012. PMID 22981903.
- Knowler WC, Barrett-Connor E, Fowler SE, et al. (2002):** for the Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med*, 393–403.
- Lewin, R. J. P., Furze, G., Robinson, J., Griffith, K., et al (2002):** 194 *British Journal of General Practice*, March A randomised controlled trial of a self-management plan for patients with newly diagnosed angina R J P Lewin, G Furze, J Robinson, K Griffith, S Wiseman, M Pye and R Boyle
- Jeffrey, W. (2013):** Young Jr and Sheila Melander 7-UTHSC College of Nursing, 920 Madison Avenue, Memphis, TN 38163, USA. HEALTH WELLNESS & TREATMENT,
- Mansour, M. A., , Mohammed, R. A., Yaqoub Y. A. I., Mohammed A. A., et al.(2004):** Evaluating Symptoms to Improve Quality of Life in Patients with Chronic Stable Angina
- Mark, A. W., Jerome, L. F., Philip, A. A. Bernard, R. C., Nancy, H. M., Syed, M. M., Ira, S. O. ckene, Vuori IM. (2001):** Dose-response of physical activity and low back pain, osteoarthritis, and osteoporosis. *Med Sci Sports Exerc.*, 33 (6 suppl):S551–S586.
- Medical Research Council, British Heart Foundation MRC/BHF,(2002):** Heart Protection Study of cholesterol lowering with simvastatin in 20,536 high-risk individuals: a randomised placebo controlled trial. *Lancet* 20023607–22.22 [PubMed]
- Mozaffarian D., (2015):** Prevalence of coronary heart disease by age and sex
- Hyattsville, Md: US Department of Health and Human Services, CDC; (1998):** DHS publication No. (PHS) 98-1527.
- Murphy,N.F., Simpson, C. R., MacIntyre, K., McAlister, F. A., Chalmers J, and McMurray, J J. V.(2006):** Prevalence, incidence, primary care burden and medical treatment of angina in Scotland: age, sex and socioeconomic disparities: a population-based study 92(8): 1047–1054. Mayo Foundation for Medical Education and Research, (2012): Coronary artery disease, 29 June DS00064.
- Naci, H.; Ioannidis, J. P. A. (2013):** "Comparative effectiveness of exercise and drug interventions on mortality outcomes: met epidemiological study". *BMJ* 347 (oct01 1): f5577–f5577. doi:10.1136/bmj.f5577.
- National Center for Health Statistics, 2014**
- Nezamzadeh, M., Khademolhosseini, S. M., Mokhtari Nori, J., & Ebadi, A. (2012).** Design of guidelines evidence-based nursing care in patients with angina pectoris. *Iran J Crit Care Nurs*, 4(4), 69-76.
- Pollock KM. (2001):** Exercise in treating depression: broadening the psychotherapist's role. *J Clin Psychol*. 1289–1300.
- Pragadpol, P., and Ryan, C. (2013):** "Critical review of factors predicting health-related quality of life in newly diagnosed coronary artery disease patients," *Journal of Cardiovascular Nursing*, vol. 28, no. 3, pp. 277–284,.
- Scott M. G., (2016):** Primary Prevention of Coronary Heart Disease, Integrating Risk Assessment With Intervention, by American Heart Association.
- Slattery ML, Potter JD. (2002):** Physical activity and colon cancer: confounding or interaction? *Med Sci Sports Exerc.*, 34: 913–919.
- Rosamond W, Flegal K, Furie K, et al.(2010):** Coronary Heart Disease Statistics, British Heart Foundation, Heart disease and stroke statistics--2008 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation*. 2008; 117:e25–146. [PubMed].
- Waldmann, ML, McCann, WJ., et al. (2012):** Coronary artery disease. Mayo Foundation for Medical Education and Research., Predictors of cardiac rehabilitation participation in older coronary patients. *Arch Intern Med*. 1992; 152: 1033–1035.
- Wenger NK, Froelicher ES, Smith LK, et al. (1995):** Clinical Practice Guideline No. 17: Cardiac Rehabilitation. US Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research, National Heart, Lung, and Blood Institute; AHCPR Publication No. 96-0672.
- Wing RR, Hill JO. (2001):** Successful weight loss maintenance. *Annu Rev Nutr.*; 21: 323–341.
- World Health Organization, World Bank, UNESCO, CIA and individual country databases for global health and causes of death,(2014):** World health rankings ,live longer live better .
- World Health Organization Department of Health Statistics and Informatics in the Information, Evidence and Research Cluster (2004):** The global burden of disease 2004 update. Geneva: WHO. ISBN 92-4-156371-0
- Vadnais, D. S., and Wenger, N. K., (2009):** "Management options in chronic stable angina pectoris: focus on ranolazine," *Clinical Medicine Insights*, vol. 1, 871–887.
- Yusuf S, Sleight P, Pogue J. et al (2014):** Effects of an angiotensin-converting-enzyme inhibitor, ramipril, on cardiovascular events in high-risk patients. The heart outcomes prevention evaluation study investigators. *N Engl J Med* 2000342145–153.153 [PubMed]