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Effect of Educational Program on Compliance of Myocardial Infarction (MI) Patients in Gaza Strip

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Abstract
Myocardial infarction is a major cause of death and disability worldwide and in Palestine as well. Acute myocardial infarction is considered the main cause of death among males 15-59 year old. Mortality rate from MI is 18.7% in males and 7.7% in females worldwide. However, recently it has become evidenced that there are certain modifiable factors that may contribute to the occurrence of MI. Such factors if recognized and acted upon may prevent MI or its recurrence. **The aim of this study;** was to determine the effect of an educational program on compliance of myocardial infarction patients in Gaza Strip. **Research design;** Quasi-experimental design (pre-test/post-test) was used in this study. **The study sample;** consisted of 65 clients suffering from myocardial infarction who were selected randomly from cardiac outpatient clinics in Shifa and Nasser hospital in Gaza Strip. **Tools for data collection** included structured interviewing questionnaire that was used to collect data on socio-demographic characteristics, pretest and post-test questionnaire about patient's knowledge and reported practices, then biochemical lipid profile levels results were taken from patients' health records. **Study results** revealed a statistically significant difference between pre and post educational program in most variables related to patient's knowledge about the nature of myocardial infarction, causes, signs and symptoms, complications and medication. Also, a highly statistically significant difference was found between pre and post educational program in relation to subject's reported practices. **The study concluded** that, educational program implicated changes in myocardial infarction subjects' knowledge, and reported practices. The study **recommended** generalizing such educational program in other cardiac clinics in Gaza Strip in order to improve myocardial infarction patients' compliance to medication, diet, exercise, smoking cessation and stress management. This would ultimately increase the quality of life for myocardial infarction patients and decrease the incidence of complications.
Keyword: compliance, myocardial infarction, educational program, knowledge, reported practice
1-IntroductionCoronary atherosclerosis is a chronic disease with stable and unstable periods. During unstable periods with activated inflammation in the vascular wall, patients may develop myocardial infarction (MI) which may be a minor event in a lifelong chronic disease, but if undetected may be a major catastrophic event leading to sudden death or severe haemodynamic deterioration. A myocardial infarction may be the first manifestation of coronary artery disease, or it may occur, repeatedly, in patients with established disease (Thygesen, Joseph, Albert & Harvey 2012). Cardio vascular diseases (CVDs) are the number one cause of death globally. An estimated 17.1 million people died from CVDs in 2004, representing 29% of all global deaths. Out of these deaths, an estimated 7.2 million were due to coronary heart disease (WHO, 2011). Low- and middle-income countries are disproportionally affected; 82% of CVD deaths take place in low- and middle-income countries and occur almost equally in men and women. By 2030, almost 23.6 million people will die from CVDs, mainly from heart disease and stroke. These are
projected to remain the single leading causes of death. The largest percentage increase will occur in the Eastern Mediterranean Region (WHO, 2011).

Cardiovascular diseases (CVDs) principally heart diseases are the first leading cause of death among Palestinian population in the year 2005 (Palestinian Ministry of Health Annual Report 2005). Myocardial Infarction is defined in pathology as myocardial cell death due to prolonged ischaemia. After the onset of myocardial ischaemia, histological cell death is not immediate, but takes a finite period of time to develop as little as 20 min or less. It takes several hours before myocardial necrosis can be identified by macroscopic or microscopic post-mortem examination. Complete necrosis of myocardial cells at risk requires at least 2–4 hours, or longer, depending on the presence of collateral circulation to the ischemic zone, persistent or intermittent coronary arterial occlusion, the sensitivity of the myocytes to ischaemia, preconditioning, and individual demand for oxygen and nutrients. The entire process leading to a healed infarction usually takes at least 5–6 weeks. Reperfusion may alter the macroscopic and microscopic appearance (Thygesen, et al., 2012)

Acute cardiac situation (ACS) is an emergent situation characterized by an acute onset of myocardial ischemia that results in myocardial death if definitive interventions do not occur promptly. The spectrum of ACS includes unstable angina, non–ST segment elevation MI, and ST-segment elevation MI (Smeltzer, Bare, Hinkle & Cheever, 2010). The annual incidence of myocardial infarction (MI) for men aged between 30-69 is about 600 per 100 000 and for women about 200 per 100 000. The majority of AMI occur in people over the age of 50, although everyone is at risk of developing artheroma, leading to an MI, but there are well-known risk factors which may increase susceptibility to the disease, such as high blood pressure, smoking or lack of exercise. Therefore health providers should emphasise preventive measures (Kumar, Ramiah & Gunasekera**,** 2008).

In the Middle East there is a relatively high mortality rate from CVD. Age-standardized cardiovascular death rates in countries such as Iraq, Yemen, Egypt, Lebanon, and Jordan; they are more than double the comparative figures for the United States. On estimate, approximately 25-40% of deaths in many Arab countries are due to cardiovascular diseases. Recently it has become clear that regarding MI, the nine most common and potentially modifiable risk factors are lipoproteins, smoking, psychosocial factors, high blood pressure, alcohol consumption, lack of exercise, diabetes, abdominal obesity, and low fruit and vegetable consumption. These risk factors apply to both men and women in all parts of the world. As such, these risk factors contribute to the growing burden of strokes, heart failure, myocardial infarction and peripheral vascular disease (Shantouf, 2012). Management of these risk factors and heart health indexes in the patients who have been diagnosed with MI will result in prevention of secondary MI, reduction of post improvement mortality, increase of life span and improvement of life quality (Vardanjani, Fanisaberi, Shahraki & Khalilzadeh, 2013).

2-Significance of the study:

Despite improved clinical care, increased public awareness and extensive use of health innovations, coronary artery disease (CAD) remains the leading cause of mortality worldwide and in Palestine as well. Acute myocardial infarction (MI) is considered the main cause of death among males 15-59 year old worldwide. Mortality rate from MI is 18.7% in males and 7.7% in females in Palestine (Palestinian Ministry of Health, 2005). The researcher noticed the problem of noncompliance among post myocardial infarction patients through the recurrence of myocardial infarction attacks while communicating with MI patients in outpatient clinics in Gaza strip. These patients require more attention to save their lives from another life threatening attack of myocardial infarction or any other related subsequent adverse effects. This research could help nurses in their practice with MI patients to direct them to deal with the modifiable risk factors in an effort to prevent MI recurrence of other complications which will ultimately improve their quality of life.

3-Aim of the study:

The aim of this study was to determine the effect of educational program on compliance of myocardial infarction patients in Gaza Strip.

4-Research hypotheses:

The following hypotheses were tested to determine the effect of educational program on compliance of myocardial infarction patients in Gaza Strip.

1. MI patients' compliance to treatment will be improved after implementation of the cardiac educational program
2. MI patients' compliance to food regimen will be improved after implementation of the cardiac educational program.

5-Subject and Methods

5-1-Research design:

A quasi-experimental one group pre-post test design was used in this study where the study subjects act as their own control.

5-2-Setting of the study:

This study was conducted in Palestine at Gaza Strip region which is composed of five governorates: Gaza north, Gaza City, Mid-zone, Khan Younis and Rafah. In this region, there are 22 hospitals; three of them are considered main hospitals, Shifa hospital in Gaza governorate, Nasser Hospital in Khan Younis governorate and European Gaza Hospital in Rafah governorate (Palestinian Ministry of Health, 2005). The study was conducted at the only

two cardiac outpatient clinics in Gaza Strip; one of these clinics is located in Shifa hospital and the other in Nasser hospital. Cardiac outpatient clinic at Shifa hospital serves about 5843 patients annually, out of them about 360 are MI patients. Cardiac outpatient clinic at Nasser hospital serves about 3524 cardiac patients, out of them about 140 are MI patients. The services provided at the hospitals out patients' clinics include medical examinations, laboratory services and health education services (Palestinian Ministry of Health 2010).

5-3-Study Sample:

A systemic random sampling method was used in this study. The total number of MI patients who were registered at Shifa and Nasser cardiac outpatient clinics from October 2010 till the end of September 2011 was 643 patients according to the registry system of the Palestinian Ministry of Health, 500 of them met the inclusion criteria; 360 from Shifa outpatient clinic and 140 from Nasser outpatient clinic, 15% of them were selected, so the total number of study sample was 75 MI patients. By dividing the total number of the population (500) on the number of the sample (75) to find the standard distance between the subjects the result was 6.6 moved to be 7, so the sampling interval was every 7^{th} patient. However, the final number of study subjects was 65 patients due to drop out of 10 patients; 4 of them traveled abroad and 6 refused to answer the post test sheets.

5-4-Inclusion criteria:

Subjects were included in this study according to the following inclusion criteria: Diagnosed as myocardial infarction at least three months ago, age 60 years or less, can read and write, and willing to participate in the study.

5-5-Tools for data collection:

Five tools were used to collect data for this study: (1) A structured interviewing **questionnaire** that was developed by the researcher to assess Socio-demographic data about the patient, anthropometric measurements to calculate Body mass index (BMI), and pre-post knowledge assessment regarding myocardial infarction, complications, drugs used; their effects and side effects. Also included in this tool are questions to assess information about the dietary practices, smoking, stress management and physical activities practices. Regarding knowledge, the patients were considered having good knowledge if they scored 70% or more, fair knowledge if they scored less than 60% to less than 70% and poor knowledge if they scored less than 60%. (2) **Perceived Stress Scale** (PSS): it was used to measure the extent to which myocardial infarction was perceived as stressful. The scale is composed of 10 items, each item was scored from 0 (never) to 4 (very frequent), and scores of items 4, 5, 7 and 8 were reversed. Higher scores corresponded to higher perceived stress. (3) **Patients' medical records**: were used to obtain biochemical lipid profile levels (cholesterol, low density lipoprotein and high density lipoprotein). (4) **Twenty four hours dietary recall** form that was developed by the researcher to assess the patient's dietary intake during the previous 24 hours which was filled through face to face interview of patients. Healthy dietary items were given plus one (+1) point while unhealthy items were given minus one (-1) point then total scores was calculated. (5) **Medication compliance tool**: included questions regarding the name and dosage of drugs used by participants and the number of times they missed their medication during the previous three days. Every missed dosage from the prescribed drugs was given minus one (-1) then summation of the missed dosages over the three days was calculated.

5-6-Procedure:

A written approval was obtained from Ministry of Health in Gaza to collect data and implement the program at outpatient clinics in the designated study sites. Written consent was obtained from MI patients who met the criteria for inclusion in the study after explaining the aim of the study to them. The patients were informed about the confidentiality of the collected data and their rights to withdraw from the study at any time without jeopardizing the kind or quality of treatment they receive in the outpatient clinics. The study was conducted on three phases; pre implementation, implementation & evaluation phase.

5-6-1-The pre-implementation phase:

The educational program was carefully prepared in Arabic based on available Arabic and English literature. It was typed in the form of a booklet that also included relevant pictures and simple instructions. Patients' weight and height were measured; cholesterol, low density lipoprotein and high density lipoprotein were retrieved from patients' medical records. Other required data were collected using the structured interviewing questionnaire that was developed by the researcher. This phase took between 25 to 30 minutes for each patient to complete.

5-6-2-The implementation phase:

The educational program was given individually in four sessions (20-30 minutes each) on a two weeks period. For the purpose of decreasing the cost of time and transportation the first and second sessions were conducted after pre-test interview during patient's waiting time for visiting the physician or waiting to receive the results of his/her investigations, between the two sessions there was a small break with soft drink. The first session covered information such as definition of myocardial infarction, symptoms, diagnosis and complications and the second session covered lifestyle modifications including dietary intake and cessation of cigarette smoking (for smokers). The third and fourth sessions were conducted in the next week at each patient's home after agreeing on the time of visit, the third session covered physical exercises and stress management and the fourth session covered the effects and side effects of drugs prescribed and the importance of follow up schedule. Researcher handed the booklet to each patient at the end of the program and described how this booklet can be used and the importance of going through it in case they want to check information. These two sessions were either conducted separately on two different days or on the same day separated by a small break. The patients were encouraged to contact the researcher as needed through cell phone for consultation and follow up concerning program information.

5-6-3-The evaluation phase:

Three months after the completion of the educational program, patients were reassessed using study tools 2-5 as post test. Evaluation sessions were conducted either in the outpatient clinics or in patients' homes according to patient' preference.

6- Results:

Results of the study are presented in the following sequence: **(1):** Description of the patients' socio-demographic data and study settings. **(2):** Patients' knowledge about myocardial infarction, cholesterol measures, blood pressure, MI medications, physical activity, smoking and diet. **(3):** compliance with treatment regimen, which answer the first research hypothesis; compliance with medication prescribed, compliance with physical activity, compliance with smoking cessation or reduction. **(4):** compliance with diet regimen which answers the second research hypothesis. **(5):** patient's stress level. **(6):** patient's medical record. **(7):** anthropometric measures.

6-1- Description of patients' socio-demographic characteristics

Results revealed that 47.7% of patients aged between 51- 60 years old with mean age of 52.1±7.18. The majority were males (92.3%), most of them were married (98.5%). Regarding educational level, 44.6% were university educated and 27.7% were secondary school educated. As for the occupational status, 41.5% worked as white collar workers. Most of them (63.1%) were of average financial status.

6-2- Patients' total knowledge scores pre and post educational program

Table (1) shows that 7.7% of patients had good knowledge scores about MI disease and treatment regimen pre educational program compared to 96.6% post education program. While 81.5% had poor knowledge scores pre educational program compared to (0%) post educational program with a statistically significant difference (p= 0.000).

Table (1): Patients' total knowledge scores *regarding MI disease and treatment regimen* pre and post educational program (n= 65)

Level of knowledge regarding MI disease & treatment regimen	**Pre**		**Post**		**X^2**	**P**
	No	**%**	No	%		
Good	5	7.7	63	96.6	105.248	0.000*
Fair	7	10.8	2	3.4		
Poor	53	81.5	0	0		
Total	65	100	65	100		

* P value is significant at level of ≤ 0.05

Concerning physical exercise, smoking and diet, table (2) reveals that 40% of patients had good knowledge about the physical exercise pre educational program compared to 96.9% post educational program, while those who had poor knowledge were 60% pre the program compared to 3.1% post the program with a statistically significant difference (p= 0.000). Regarding effect of smoking, result showed that, 15.4% of patients had good knowledge scores about the effect of smoking on their health pre educational program compared to 73.8% post educational program, while 56.9% had poor knowledge pre education program compared to 7.7% post the program with a statistically significant difference (p= 0.000). Concerning diet, results show that, 9.2% of patients had good knowledge scores about healthy diet pre educational program compared to 87.7% post educational

program, while 70.8% of patients had poor knowledge regarding healthy diet pre the program compared to 6.2% post program with a statistically significant difference (p= 0.000).

Table (2) Patients' total knowledge scores *regarding exercise, smoking and diet* (n= 65)

Level of knowledge	Pre		Post		X^2	p
	No	%	No	%		
Exercise						
Good	26	40	63	96.9	48.772	0.000*
Fair	0	0	0	0		
Poor	39	60	2	3.1		
Total	65	100	65	100		
Smoking					50.478	0.000*
Good	10	15.4	48	73.8		
Fair	18	27.7	12	18.5		
Poor	37	56.9	5	7.7		
Total	65	100	65	100		
Diet					81.330	0.000*
Good	6	9.2	57	87.6		
Fair	13	20	4	6.2		
Poor	46	70.8	4	6.2		
Total	65	100	65	100		

* P value is significant at level of ≤ 0.05

6-3-Patients' compliance to treatment regimen pre and post educational program (Hypothesis one):

Table (3) shows that 13.8% of patients had good compliance scores pre education program compared to 72.3% post education program, while 73.8% had poor compliance pre educational program compared to 23.1% post educational program with a statistically significant difference (p= 0.000). This finding supports the first hypothesis of this study as patients' compliance to treatment regimen will be improved after being exposed to the education program.

Table (3): Total patients' scores regarding compliance to treatment regimen pre-post education program (n= 65)

Practice	Pre		Post		X^2	p
	No	%	No	%		
Good	9	13.8	47	72.3	45.344	0.000*
Fair	8	12.3	3	4.6		
Poor	48	73.9	15	23.1		
Total	65	100	65	100		

* P value is significant at level of ≤ 0.05

6-4- Patients' compliance with food regimen (Hypothesis two):

Table (3) shows that 30.8% of patients had good dietary practice scores pre educational program compared to 70.8% post educational program, while 44.6% had poor dietary practices pre program compared to 15.4 post program with a statistically significant difference (p= 0.000).

Table (3): Total patients' scores regarding compliance with food regimen pre and post education program (n= 65)

Practice	Pre		Post		X^2	p
	No	%	No	%		
Good	20	30.8	46	70.8	21.459	0.000*
Fair	16	24.6	9	13.8		
Poor	29	44.6	10	15.4		
Total	65	100	65	100		

* P value is significant at level of ≤ 0.05

6-5-perceived stress

Table (5) shows that 47.7% of patients were highly stressed as being diagnosed with MI pre educational program compared to 3.1% post program, while none reported low stress before program implementation compared to 27.7 post program, with a statistically significant difference (p= 0.022).

Table (5): Patients' scores regarding perceived stress pre and post education program (n= 65)

Perceived stress	Pre		Post		X^2	p
	No	%	No	%		
High	31	47.7	2	3.1	59.743	0.000*
Moderate	27	41.5	16	24.6		
Mild	7	10.8	29	44.6		
Low	0	0	18	27.7		
Total	65	100	65	100		

* P value is significant at level of ≤ 0.05

6-6-patients' biomedical parameters

As showed in table (6) the mean scores of cholesterol pre educational program was 198.54±50.95 compared to 168.33±31.97 post educational program with a statistical significant difference (p=.000). Also the mean scores of LDL pre educational program was 114.97±42.98 compared to 89.25±34.42 post educational program with a statistical significant difference (p= .000). While there was no statistical significant difference in the mean of HDL pre and post program (p =.562).

Table (6): Mean of patients' biochemical lipid levels pre and post educational program (n=65).

Parameters	Mean± std		t- test	P- value
	Pre	Post		
Cholesterol	198.54±50.95	168.33±31.97	6.044	0.000*
LDL	114.97±42.98	89.25±34.42	5.980	0.000*
HDL	41.0±25.60	42.36±20.31	0.583	0.562

* P value is significant at level of ≤ 0.05

6-7-Section (7): mean score of patient' body mass index

Table (7) shows that, 29.2% of patients were obese, 43.1% were overweight and 27.7% had normal weight compared to 21.6%, 49.2% and 29.2% respectively. The table showed also that, the mean score of patients' body mass index post educational program was improved compared to the mean score pre educational program with a statistical significant difference (p= 0.012).

Table (7): *Mean score of patients' body mass index pre and post educational program*

BMI	Mean± std				t	p-value
	Pre		post			
	No	%	No	%		
Normal weight	18	27.7	19	29.2	2.579	0.012*
Over weight	28	43.1	32	49.2		
Obese	19	29.2	14	21.6		
Total	65	100	65	100		
Mean	27.67±3.59		27.00±3.59			

* P value is significant at level of ≤ 0.05

7-Discussion

Cardiac disease self-management are personal actions to manage heart disease and prevent disease progression which include reporting of symptoms of disease worsening; performing of treatment regimen as prescribed; limiting sodium intake; following recommended diet; participating in smoking cessation programs; and participating in recommended exercise (Ackley, Ladwig, Swan & Tucher, 2009).

Results of the present study showed that the majority of patients were males and the mean age of all patients was 52.1±7.18 years. This is in agreement with Jafary et al., (2007) who conducted a study in Pakistan, where the majority of MI subjects were males, and their mean age was 52.2 years. Concerning the education level of patients, more than half of patients in the study sample had primary, elementary or secondary education. The same was reported by Dawood et al., (2008) who conducted a study on MI patients in the United State which revealed that about half of study subjects had high school education or less. Regarding financial status, it was noticed that, the majority of patients had average. This result was supported by Vardanjani, Fanisaberi, Shahraki, Khalilzadeh & Dehkordi, (2013) who conducted a study on MI patients in Iran University and found that the majority had average economic status. In terms of marital status, the majority of the patients were married. This was in consistence with a study conducted by Molazem, Rezaei, Mohebbi, Ostovan & Keshavarzi (2013) on 70 patients with MI in coronary care units of hospitals affiliated to Shiraz University, Iran, to evaluate the effect of continuous care model on the lifestyle of patients with MI, and found that, the majority of participants were married in the intervention and control groups. The result is congruent with cultural values of the Palestinian community which encourages young people to get married and form a family. Slightly more than two fifths of patients in the current study were white-collar workers, and one third were blue-collar workers while more than one tenth were retired. Results are supported by Leonga, Molassiotisa & Marsh, (2004) who conducted a study on 52 MI patients at Manchester university hospital, and found that, one quarter of respondents were working as blue-collar workers, less than half were white-collar workers and less than one third of respondents were retired. This means that, stressful working life of white collar workers might be a disposing factor for MI.

(2): Patients' knowledge

Regarding patient's knowledge related to MI, which included: definition, causes, risk factors, complications, cholesterol, blood pressure, medication, physical activity, smoking and diet, the current study results revealed, a positive statistically significant difference between patients' knowledge scores pre and post the educational program, indicating higher total and subtotal knowledge scores post program. This result is in accordance with Ghahramanian, Golchin, & Rostami (2011) who reported that, education programs have positive effects on knowledge of cardiac patients. This knowledge improvement might be the result of the provision of an educational program and the elevated patients' concern about the heart attack as life threatening and the fear of recurrence which made them more receptive to the provided knowledge and instructions.

(3): Compliance with treatment regimen (hypothesis one)

Regarding patients' compliance to medications, the current study showed that, slightly more than one tenth of patients had good compliance scores pre program implementation compared to almost three quarters post education program. This result is congruent with Hadi & Rostami, (2006) who conducted a study on 150 patients at Shiraz hospital outpatient clinic, Iran, to identify the effectiveness of a hypertension educational program on increasing medication compliance, the result showed improvement in compliance scores between pre and post educational program. In relation to patients' compliance to daily physical exercise, the current study showed that, patients' compliance was low before attending the educational program while improved after educational program. Similar results were reported by Hallal, Anderson & Bull, (2012) as they explained that, the Middle East and North Africa region, as a whole, is burdened with high prevalence rates of physical inactivity. However, when the need arises as a result of sickness and when health education programs are provided, people are more likely to change their behavior.

In terms of patients' compliance with smoking cessation, findings of the current study showed that more than half of subjects were smokers before the implementation of the educational program. However, raising their awareness to the dangerous side effects of smoking on their general health as well as their heart condition resulted in some of them either quit smoking or decreased the number of cigarettes they smoke daily. The result was consistent with a study conducted by Nasrabadi (2011) in Iran to evaluate the effect of instructional manual on knowledge and self-expressed practices among smokers suffering from unstable angina disease, the results showed that, more than three quarters of smoker patients quit smoking as a result of the instruction manual. It seems that when smokers are faced with the fact that smoking cessation is essential to the management of MI and prevention of recurrence they are more likely to comply.

Generally; these findings of patients' compliance to treatment regimen which include patients' compliance to medications, to physical exercises and to smoking cessation supported the first hypothesis of the current study.

(4): Compliance with diet regimen (hypothesis two)

Regarding patients' compliance to diet, results of the current study show that, less than one third of patients had good diet regimen practice scores pre educational program compared to more than two thirds who had good diet regimen scores post educational program. Similar results were reported by Argyriou et al., (2011) who conducted a study on acute myocardial infarction patients who were hospitalized in a large state hospital in Athens. After implementation of a dietary education program, the majority of patients followed healthy dietary habits during three years follow up after hospital discharge.

This finding of patients' compliance with diet regimen supported the second hypothesis of the current study.

(5): Perceived stress

Concerning patients' perceived stress, results of the current study show that, there was a reduction in patients' perceived stress post educational program as compared to pre program. In agreement with this study results, Schneider et al., (2012) who conducted a randomized controlled study of 201 black men and women with coronary heart disease who were randomized into two groups one received transcendental meditation program and the other received health education program reported that, there was reduction in psychological stress factors and anger expression. Also Merkes, (2010) found that participation in stress reduction program is likely to result in a better coping with improved overall well-being and quality of life and enhanced health outcomes. Community health nurses can play a significant role through proper communication and interaction with patients to decrease their worry about the impact of their disease on their health and social life, which otherwise can exacerbate symptoms and complicate their future care.

(6): patients' biomedical lipid profile

Regarding physiological parameters of MI patients in the study, results show that, the mean scores of cholesterol pre educational program was 198.54±50.9) compared to 168.33±31.97 post educational program with a statistically significant difference (p=.000). Also the mean score of LDL pre educational program was 114.97±42.98 compared to mean score of 89.25±34.42 post educational program with a statistical significant difference (p= .000). While no statistically significant difference was found in the mean scores of HDL. Similar results were found by Daubenmier, Weidner, Sumner, Mendell, Worden & Studley (2007) who conduct a study to examine the relative contribution of dietary fat reduction, increased exercise, and increased stress management practice to changes in coronary and psychosocial risk factors among 293 female and 576 male patients with CHD participating in the Multisite Cardiac Lifestyle Intervention Program over a 3-month period, they reported a significant reduction in total cholesterol, low-density lipoprotein cholesterol. Also by Shahamfar, Aslanabadi, Gupta, Daga, Zolfaghari & Shahamfar, (2010) who conducted a study to find more effective ways of reducing the atherosclerosis risk factors in patients with MI, and examined the effectiveness of a teaching program, they reported that, after modification of risk factors in patients the mean total cholesterol was significantly lower in the case group than in the control group, reduction in LDL level in case and control group, the mean HDL level increase in both group; however, no significant difference between before and after intervention was gained. It seems that most of the patients of this study may have been carried out properly the information and the advices they received from the educational program about the importance of compliance to medication, practicing the exercise, follow the dietary regimen and to be away from stress and smoking, so the improvement in cholesterol and LDL levels were apparent.

(7): Body Mass Index

Regarding BMI the current study illustrated that, about one fifth of patients were obese before educational program compared to less than one sixth post education program. Mean score of patients' body mass index pre-educational program were (27.67±3.59) compared to (27.00±3.59) post educational program with a positive statistically significant differences. This indicated there was a reduction in patients' body weight after educational program. On the same line, Vardanjani et al., (2013) who conducted a study among 122 MI patients from hospital of Iran University to identify The Effect of Face-to-Face Education and Educational Booklet on Heart Health Indexes of the Hospitalized Patients with Myocardial Infarction and found that, changes of body mass index are more positive in case group compared with control group. Similar result by Reddy and Prabhakaran, Mohanan & Jeemon, (2008) who conducted a study to evaluated the impact, efficacy and acceptability of a quality improvement program to management of Acute Coronary Syndromin secondary care settings in Kerala, India and they reported that body mass index improved from 37.4pre educational program to 24.5 post educational programs. This result should be made as a recommendation, advice and encouragement to patients to change their dietary habits and exercises through educational program after the attack of MI will lead

to favorable effect shown by a reduction of BMI.

Generally, result of the current study revealed that, patients' compliance to medications, physical exercises, smoking cessation were improved post educational program which support and approve the first hypothesis that; MI patients' compliance to treatment will be improved after implementation of the cardiac educational program. Also Patients' compliance with food regimen as fruits, vegetables, carbohydrates, meat, saturated fat and unsaturated fat were improved post educational program which support and approve the second hypothesis that; MI patients' compliance to food regimen will be improved after implementation of the cardiac educational program. The educational program provided in this study significant reduction of patients' stress, level of cholesterol, LDL and BMI.

8. Conclusion:

Based on study results, it can be concluded that as a result of the implementation of the educational program, MI patients showed improvements in their knowledge and reported practice regarding treatment regimen including medications, physical exercise, smoking cessation and stress control which support the first research hypothesis. There were also improvements in MI patients' knowledge and reported practices regarding dietary intake which support the second research hypothesis.

9. Recommendations:

In the light of the findings of this study, the following recommendations are suggested:

1. Apply the developed MI educational program to cardiac outpatient clinics allover Gaza strip as primary and secondary lines of prevention.
2. Community health nurses should provide follow up services for MI patients to enhance and ensure patients' compliance with the education program.

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