

Effect of Designated Nursing Guidelines for Unstable Angina Patients on their Physical Health Outcomes in Cardiac Care

Ahmed Mohamed Salem¹, Nadia Mohamed Taha²,
Zeinab Hussein Ali³,

1. M.Sc. Nursing, Faculty of Nursing, Zagazig University.

2. Professor of Medical Surgical Nursing, Faculty of Nursing, Zagazig University

3. Professor of Adult Health Nursing, Faculty of Nursing, Helwan University.

Abstract

Coronary artery disease is the main cause of death in many countries now. One of the most common manifestations of coronary artery disease is unstable angina. Life style modification and following guidelines for improve patient's knowledge and practice regarding control of blood pressure, smoking cessation and suitable diet is an effective step for improving physical health outcomes. **The aim of this study** was to evaluate the effect of designated nursing guidelines for unstable angina patients on their physical health outcomes in cardiac care unit at Ain Shams General Hospital. A quasi experimental **design** was used to conduct this study. The study was conducted in cardiac care unit at Ain shams general hospital, Cairo, Egypt. A purposive sample of **60 adult patients** suffering from unstable angina divided into two groups study and control. **Method;** Study lasted from the beginning of February 2017 to beginning of December 2017. **Tools:** three tools were used for collection of data. Self-administered questionnaire for patient consisted of demographic characteristics and medical history of patients, patient's knowledge, observation checklist, and physical health status. **Results;** the study finding revealed that, there was significant improvement in patient knowledge in study group; pre 40 %, post 100%, while no improvement in control group; pre 30%, post 30%, there was a significant improvement of patients practice in study group; pre 10%, post 100%, while no improvement in control group; pre P 0.0, post P 0.0. Also, the patients in study group showed high improved level regarding chest pain recurrence; pre P 0.429, post P 0.013, follow up P 0.00 while no improvement in control group; pre and post P 0.133, follow up P 0.818. **In Conclusion,** Application of designated nursing guidelines for adult patients with unstable angina showed an improvement in patients' knowledge and practice reflecting on improving physical health outcomes. **The study recommended that;** Increase awareness of patients about risk factors of unstable angina to empower and motivate them to adopt healthy lifestyle to minimize the disease. This can be achieved through mass media and health education programs about the disease process and the importance of adopting healthy lifestyle.

Key words: Designated Nursing Guidelines, Physical Health Outcomes, Unstable Angina

I. Introduction:

Acute coronary syndrome (ACS) describes the range of myocardial ischemic states that includes Unstable Angina (UA), non ST elevation myocardial infarction (NSTEMI) or ST elevation myocardial infarction (STEMI). Unstable angina (UA) is defined by the presence of ischemic symptoms without elevations in biomarkers and transient, if any electrocardiogram (ECG) changes the MI is suggested (Smith, 2017).

The UA is unpredictable and may occur at rest as well as with exertion. UA may indicate deterioration of plaques, such as rupture that causes local vasoconstriction and thrombus formation. The person with previously stable angina may note a significant change in the pattern of angina, such as increased pain and frequency of angina episodes. The pain usually refractory to treatment with nitroglycerine (Lockwood, 2017).

Risk factors include hypertension (HTN), smoking, diabetes mellitus (DM), lack of exercise, obesity, high blood cholesterol, poor diet, depression, and excessive alcohol. The underlying mechanism involves reduction of blood flow and oxygen to the heart muscle due to atherosclerosis of the arteries of the heart (Yayan, 2014).

The UA treatment includes: Plenty of rest preferably in a hospital setting to enable a battery of tests, analgesic to treat pain, Blood thinners to prevent blood clots, Treat high blood pressure and high cholesterol levels, Angioplasty to prevent the artery from closing over a period of time, coronary artery bypass graft (Arts, Fernandez & Lofgren, 2014).

1. Significance of the study

The ACS is the number one cause of mortality throughout the world. Contributes substantially to the escalating costs of health care. More than 20 million people will die mainly from heart disease by the year 2030, 23% of cases were less than 55 years old (Muzaini & Adah, 2017).

Therefore in order to ensure management unstable angina patients with low cost by early treatment and minimize the complication through the role of nurses in implementing designated nursing guidelines for unstable angina patients. Guidelines promoting life style modification and reducing modifiable risk factors of the disease.

2. Aim of the study:

The aim of the study was to evaluate the Effect of Designated Nursing Guidelines for Unstable Angina Patients on their Physical Health Outcomes in Cardiac Care Unit at Ain Shams General Hospital through:

1. Assess patient's knowledge, practice and physical health status.
2. Design nursing guidelines based on patient's basic assessment.
3. Implement the designated nursing guidelines to improve patient's knowledge, practice and physical health outcomes.
4. Evaluate the effect of nursing guidelines on patient's knowledge, practice and physical health outcomes.

1. Sample and Methods:

Design:

A quasi research design was utilized to conduct the study.

Participants:

A purposive sample of 60 adult patients with unstable angina, in Cardiac Care Unit (CCU) at Ain Shams general hospital. They were divided randomly into two groups "study" and "control" (30 patients for each group).

Research tools:

Three tools were utilized for data collection, designed in Arabic form, they were:

Tool I: A Self-Administered Questionnaire: (Appendix I)

Was designed in Arabic form to avoid misunderstanding. Developed by the investigator guided by (Braunwald, 2012; American Heart Association, 2015; Edmonds, 2015; Eileen & Anderson, 2017) to assess Patient present medical history, family history and smoking habits. Consisted of two parts:

Part I: Demographic Characteristics: Concerned with assessment of demographic characteristics of patients.

Part II: Medical History and Smoking Habits: Concerned with assessment of Patient present medical history, family history and smoking habits.

Tool II: Patient Knowledge: (Appendix II)

It was used in the pre, immediate post and follow up phases. Patient knowledge was developed by the investigator guided by (Fryar, Chen, & Li, 2012; World Health Organization, 2014; Goda, 2017) to assess the patient's knowledge regarding UA. Was used to assess the patient's knowledge regarding three Independent variables: control of blood pressure, smoking cessation and suitable diet. It covered the following items:

The scoring system

The score one was given to the right answer or yes, whereas score zero was given to the incorrect answer or no answer. The scores of total knowledge were transformed into percent score as: unsatisfactory level of Knowledge: for those who had score < 60%, satisfactory level of Knowledge: for those who had score ≥ 60%.

Tool III: Observational Check List: (Appendix III)

It was used by the investigator during observing patient performing self-measuring of blood pressure. Was adopted from (Du, 2013) to observe patient performing self-measuring of blood pressure.

The scoring system

Each observational item scored as two for completely done, one for incompletely done or zero for not done. The scores of total Practices were transformed into score percent as: unsatisfactory practices: for those who had score < 50%, satisfactory practices: for those who had score ≥ 50%.

Tool IV: Physical Health Status Assessment: (Appendix IV)

Was developed by the investigator based on literature review, under supervision and guided by Waller, (2016). It was used in pre, immediate post and follow up phases. It was used to assess patient's physical health outcomes.

The scoring system

It was used to assess the patient's physical health outcomes as: chest pain recurrence and rate of hospital readmission; each item scored as two for never, one for sometimes and zero for always.

Note: Some questions were formulated in a negative format and the scoring was coded in the reversed order.

2. Content validity and reliability:

Content validity was used for the modified tools and the designed booklet to determine whether the tools covered the aim or not. It was evaluated by a jury of five experts, two professors of medical surgical nursing, one professors of critical nursing, one professor of nursing administration from Faculty of nursing-Zagazig and Helwan University and one professor of critical medicine from Faculty of Medicine-Zagazig University. Modifications were done according to their recommendations. In the present study the overall reliability of tools; Patients knowledge, observational checklist and physical health status assessment (Alpha Cronbach's 0.86) acceptable.

3. Pilot study:

A pilot study for tools of data collection was carried out on (six patients) 10% within selected criteria in order to test for clarity, relevance, comprehensiveness, understandable, feasible, applicability and ease for implementation. Patients who shared in the pilot study were included in the main study sample because no modification done in the tools.

4. Field work:

The data was collected through:

The researcher interviewed patients in groups; one group/two days/week (2 patients) at day shift (two theoretical sessions in first day and 3 practical sessions in second day) from 9:00 am to 8:00 pm in CCU, follow up phase from 9.00 am to 2 pm in outpatient clinic (once/week).

Selection of patients, collection of data and guidelines lasted over a period of 10 months, from beginning of February 2017 to beginning of December 2017, which classified as following: Five months for pretest, guidelines implementation and immediate posttest (from beginning of February 2017 to beginning of July 2017), three months after immediate posttest until follow up test (from beginning of July to beginning of October 2017), two months for follow up test (from beginning of October 2017 to beginning of December 2017).

5. Ethical considerations:

All ethical issues were taken into consideration during all phases of the study. The ethical research considerations in this study included the following: The research approval was obtained before the guidelines implementation, the objectives and the aims of the study were explained to the participants. The investigator confirmed the anonymity and confidentiality of subjects. Subjects were allowed to choose to participate or not and they had the right to withdraw from the study at any time without penalty. Investigator confirmed that the data collected would be confidential and used only to improve the patients' health.

6. Statistical analysis:

Data collected throughout questionnaire and outcome measures coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) software for analysis. According to the type of data, qualitative data was presented as number and percentage, quantitative continues group presented by mean \pm SD, the following tests were used to test differences for significance; Differences between frequencies (qualitative variables) and percentages in groups were compared by Chi-square test. Differences between parametric quantitative independent groups by t test in non-parametric by Man Whitney, correlation by Pearson's or Spearman's correlation. P value was set at <0.05 for significant results & <0.001 for high significant result.

II. Results:

Table (1) showed the study sample consists of 60 unstable angina patients in two groups (30 study and 30 control); age of patients in both study and control groups ranged from 30 to 65 years (with Mean \pm SD 57.4 ± 8.8 , 52.9 ± 13.0 respectively), age ranged between 40-65 years old of study and control patients (66.7% and 53.3% respectively). Additionally 70% of the patients in both groups were male and 40% of the patients in both groups were primary educated. Also, 70% of patients in study group and 50% of patients in control group were married and belonged to rural areas. Concerning occupation, most of patients in study group 90% and all control group 100 % were working. Finally 50% of study group and 66.7% of control group had income between 2000-4000 pound (with Mean \pm SD 2060.0 ± 721.9 , 2260.0 ± 712.6 respectively).

Table (2) revealed that; 70% of study group and 60% of control group had hypertension. Also, all patients 100% in both study and control group had atherosclerosis. The same table also reveals that 80% of study group and 50% of control group had family history of cardiovascular disease. Meanwhile, 60% of study group and 10% of control group had family history of diabetes mellitus.

Table (3) showed smoking habits throughout study phases. As the table shows, 70% of both groups were smokers. Also, 50% of study group and 60% of control group were smokers for more than 6 years, and also showed 30% of study group and 20% of control group smoked more than 2 packs / day. Ultimately showed that no statistically significant differences regarding smoking habits between both groups throughout study phases.

Table (4) showed that; the satisfactory total patients' knowledge post and follow up guidelines implementation increased to 100% in study group compared to control group (30%, 40% respectively). Which was statistically significant difference relation regarding satisfactory total patients' knowledge between both study and control groups through post and follow up phases ($P=0.00$, $P=0.00$ respectively) were noticed.

Table (5) showed that; the satisfactory total patients' practices post and follow up guidelines implementation increased to (100%, 90% respectively) in study group compared to control group (0%, 0% respectively). Which was statistically significant difference relation regarding satisfactory total patients' Practices between both groups through post and follow up phases ($P=0.00$, $P=0.00$ respectively) were noticed.

Table (6) revealed that; the satisfactory patients' knowledge in study group had statistically significant difference relation between pre / post, pre / follow up and post / follow up phase (Mean \pm SD 5.5 ± 2.8 , 13.3 ± 0.0 , 11.9 ± 0.9 with $P= 0.00$, $P=0.00$, $P=0.00$ respectively) compared to control group no statistically significant between pre / post, pre / follow up and post / follow up phases (Mean \pm SD 7.0 ± 2.3 , 7.0 ± 2.3 , 7.3 ± 2.2 with $P=1.000$, $P=0.615$, $P=0.615$ respectively). Also showed that the satisfactory patients' practices in study group had statistically significant relation difference relation between pre / post, pre / follow up and post / follow up phase (Mean \pm SD 4.3 ± 3.2 , 35.7 ± 2.0 , 26.3 ± 5.1 with $P= 0.00$, $P=0.00$, $P=0.00$ respectively) compared to control group no statistically significant between pre / post, pre / follow up and post / follow up phases (Mean \pm SD 1.6 ± 2.2 , 1.6 ± 2.2 , 0.1 ± 0.4 with $P= 0.911$, $P= 0.911$, $P= 0.911$ respectively).

Table (7) revealed that; the patients in both study and control groups had no statistically significant regarding chest pain recurrence through pre phase (Mean + SD 21.6 ± 6.1 , 21.9 ± 6.1 respectively) $P= 0.429$. Compared to post phase (Mean + SD 17.9 ± 5.9 , 21.9 ± 6.1 respectively) $P=0.013$ and follow up phase (Mean + SD 9.9 ± 8.7 , 23.4 ± 6.4 respectively) $P= 0.00$, which had statistically significant difference relation were noticed. Also, shows that the patients in both study and control groups were no statistically significant regarding rate of hospital readmission throughout pre, post and follow up phases ($P=0.133$, $P=0.133$, $P=0.818$ respectively).

Table 1: Frequency and percentage distribution of demographic characteristics for patients in both groups

Demographic Characteristics	Group				X ²	P
	Study (n= 30)		Control (n= 30)			
	No	%	No	%		
Age in years:					t 1.55	0.125
30 - < 40	10	33.3	14	46.7		
40 - 65	20	66.7	16	53.3		
Range Mean ± SD	30-65 57.4 ± 8.8		30-65 52.9 ± 13.0			
Gender:					0.00	1.00
Male	21	70.0	21	70.0		
Female	9	30.0	9	30.0		
Education:					1.6	0.65
Illiterate	6	20.0	9	30.0		
Primary	12	40.0	12	40.0		
Secondary	6	20.0	6	20.0		
University	6	20.0	3	10.0		
Marital Status:					10.6	-
Single	0	0.0	9	30.0		
Married	21	70.0	15	50.0		
Widow	9	30.0	6	20.0		
Occupation:					4.65	0.321
Work	27	90.0	30	100.0		
Not work	3	10.0	0	0.0		
Residence:					2.5	0.11
Rural	21	70.0	15	50.0		
urban	9	30.0	15	50.0		
Income:					t 1.08	0.28
1000 - < 2000	15	50.0	10	33.3		
2000 – 4000	15	50.0	20	66.7		
Range	1000-4000		1000-4000			
Mean ± SD	2060.0 ± 721.9		2260.0 ± 712.6			

(n=60).

(*) statistically significant at P < 0.05

Table 2: Frequency and Percentage Distribution of Present Medical and Family History for Patients in Both Groups (n= 60).

History	Group				X ²	P
	Study (n=30)		Control (n=30)			
	No	%	No	%		
Present Medical						
Hypertension	21	70.0	18	60.0	0.65	0.41
Valvular Heart disease	9	30.0	15	30.0	2.5	0.11
Stroke	3	10.0	0	0.0	3.15	0.076*
Atherosclerosis	30	100.0	30	100.0	0.0	0.0
Family History						
Cardiovascular Disease	24	80.0	15	50.0	5.93	0.015*
Stroke	15	50.0	6	10.0	5.93	0.015*
Diabetes Mellitus	24	60.0	6	10.0	21.6	0.00**
Kidney Disease	6	20.0	3	10.0	1.17	0.27
Psychological Disease	3	10.0	0	0.0	3.15	0.076

(*) statistically significant at P < 0.05

Table 3: Frequency and Percentage Distribution of Smoking Habits for Patients in Both Groups throughout the Study Phases (n= 60).

Smoking Habits	Pre / Post / Follow up			
	Study (n=30)		Control (n=30)	
	No	%	No	%
Smoker	21	70.0	21	70.0
Duration of Smoking (Years)				
4-6 Y	6	20.0	3	10.0
More than 6 Y	15	50.0	18	60.0
X ²	1.27		1.27	
P	0.52		0.52	
Cigarette / Day				
Less than 1 Pack	3	10.0	3	10.0
1 – 2 Packs	9	30.0	12	40.0
More than 2 Packs	9	30.0	6	20.0
X ²	1.02		1.02	
P	0.79		0.79	

(*) statistically significant at P < 0.05

Table 4: Frequency and Percentage Distribution of Total Patients' Knowledge about Unstable Angina in Both Groups throughout the Study Phases (n= 60).

Total Patients' Knowledge	Group											
	Pre				Post				Follow up			
	Study (n=30)		Control (n=30)		Study (n=30)		Control (n=30)		Study (n=30)		Control (n=30)	
	No	%	No	%	No	%	No	%	No	%	No	%
Satisfactory	12	40.0	9	30.0	30	100.0	9	30.0	30	100.0	12	40.0
Unsatisfactory	18	60.0	21	70.0	0	0.0	21	70.0	0	0.0	18	60.0
P	0.41				0.00**				0.00**			
X ²	0.65				23.3				25.7			

(*) statistically significant at P < 0.05

Table 5: Frequency and Percentage Distribution of Total Patients' Practices about Self- Measuring of Blood Pressure in Both Groups throughout the Study Phases (n= 60).

Total Patients' Practices	Group											
	Pre				Post				Follow up			
	Study (n=30)		Control (n=30)		Study (n=30)		Control (n=30)		Study (n=30)		Control (n=30)	
	No	%	No	%	No	%	No	%	No	%	No	%
Satisfactory	3	10.0	0	0.0	30	100.0	0	0.0	27	90.0	0	0.0
Unsatisfactory	27	90.0	30	100.0	0	0.0	30	100.0	3	10.0	30	100.0
P	0.076				0.00**				0.00**			
X ²	3.15				60.0				49.09			

(*) statistically significant at P < 0.05

Table 6: Relation between Total Satisfactory Knowledge and Practice Scores For Unstable Angina Patient in Both Groups throughout the Study Phases (N= 60).

Total	Group	Pre Mean ± SD	Post Mean ± SD	Pre Mean ± SD	Follow up Mean ± SD	Post Mean ± SD	Follow up Mean ± SD
Satisfactory knowledge	Study (n=30) Paired t/ Sign P	5.5 ± 2.8	13.0 ± 0.0	5.5 ± 2.8	11.9 ± 0.9	13.0 ± 0.0	11.9 ± 0.9
		-14.603 0.00**		-11.794 0.00**		6.279 0.00**	
Satisfactory practices	Study (n=30) Paired t/ Sign P	4.3 ± 3.2	35.7 ± 2.0	4.3 ± 3.2	26.3 ± 5.1	35.7 ± 2.0	26.3 ± 5.1
		-22.810 0.00**		-13.588 0.00**		9.357 0.00**	
	Control (n=30) Paired t/ Sign P	7.0 ± 2.3	7.0 ± 2.3	7.0 ± 2.3	7.3 ± 2.2	7.0 ± 2.3	7.3 ± 2.2
		0.000 1.000		-0.506 0.615		-0.506 0.615	
	Control (n=30) Paired t/ Sign P	1.6 ± 2.2	1.6 ± 2.2	1.6 ± 2.2	0.1 ± 0.4	1.6 ± 2.2	0.1 ± 0.4
		3.619 0.911		3.619 0.911		3.619 0.911	

(*) statistically significant at P < 0.05

Table 7: Relation between Physical Health Outcomes for Unstable Angina Patients in Both Groups throughout the Study Phases.

Items	Pre		Post		Follow up	
	Study (n=30) Mean ± SD	Control (n=30) Mean ± SD	Study (n=30) Mean ± SD	Control (n=30) Mean ± SD	Study (n=30) Mean ± SD	Control (n=30) Mean ± SD
Chest pain recurrence	21.6 ± 6.1	21.9 ± 6.1	17.9 ± 5.9	21.9 ± 6.1	9.9 ± 8.7	23.4 ± 6.4
t/ Mann Whitney	0.704		2.550		6.793	
P	0.429		0.013*		0.00**	
Rate of Hospital readmission	14.0 ± 2.9	15.9 ± 6.1	14.0 ± 2.9	15.9 ± 6.1	14.3 ± 3.9	14.0 ± 5.9
t/ Mann Whitney	1.524		1.524		0.231	
P	0.133		0.133		0.818	

(*) statistically significant at P < 0.05

III. Discussion:

The study sample constitutes of 60 UA patients divided in two equal study and control groups who received designated nursing guidelines in Cardiac Care Unit (CCU); More than two third of study group and more than half of control group aged 40-65 years old. More than two thirds of both groups were male. Whereas more than one third of both groups had primary education. More than two third of study group and half of control group were married and belonged to rural areas. The majority of both study and control group were employed. Half of study group and nearly two third of control group had income 2000-4000 pound.

Concerning the medical history, the results of this study clarified that more than two third of study group and more than half of control group had HTN. This finding might be attributed to vasoconstriction which leads to HTN and insufficient blood supply to the heart. This finding agreed with **Rosendorff, (2016)** who illustrated in a study about Treatment of Hypertension in Patients with Coronary Artery Disease in United States, and showed that the <140/90mmHg blood pressure target is reasonable for the secondary prevention of cardiovascular events in patients with HTN and UA.

Concerning the smoking habits, results of this study showed that more than two third in both study and control group were smokers. Also clarified that half of study group and more than half of control group were

smokers for more than 6 years. Also clarified that nearly one third of study group and nearly one quarter of control group smoked more than 2 packs / day. This might be due to acting as modifiable risk factors of CAD with increased number of cigarettes smoked per day and smoking duration. This finding agreed with **Tantaewy (2013)** in study about Effect of Cardiac Rehabilitation Program on Lifestyle Pattern of Patients with Myocardial Infarction in United States, mentioned the most common co-morbid condition was smoking.

The present study clarified that patients more than one third in study group and less than one third in control group had satisfactory level of knowledge regarding UA in pre guidelines implementation. This might be due to lack of education for patients about the disease from health care givers and more patients were primary educated. This finding was agree with **Elaskary (2011)** who conducted study about Impact of Health Promotion program on compliance with therapeutic regimen among hypertensive patients in Palestine, reported that there was a significant increase in knowledge level post program and in follow up after three months compared to preprogram.

Immediate post guidelines implementation, the results of the study showed that there was a statistical significant increase in patients' level of knowledge regarding UA in study group. This might be due to patient receiving motivation and knowledge about life style modification regarding UA. This finding agrees with **Al-Wehedy, Abd Elhameed, & Abd El-Hameed (2014)** found in a study about Effect of Lifestyle Intervention Program on Controlling Hypertension among Older Adults in Egypt, that lifestyle modification sessions improve the knowledge scores of UA patients in study group with highly statistical significant difference compared to control group.

The current study findings come in accordance with previous studies, as there was marked improvement in patient's practices score related to self-measuring of blood pressure immediate post guidelines implementation. This may be due to patient become more knowledgeable, trained and aware with the importance of blood pressure monitoring. This approach is also supported by **O'Brien (2018)** who conducted study about Improving knowledge, attitudes and beliefs about acute coronary syndrome through an individualized educational intervention. And found that the patient education using motivational interviewing techniques has the potential to alter knowledge, attitudes and beliefs about the disease.

Concerning the total satisfactory knowledge and satisfactory practice Scores, The current study showed that study group had both satisfactory knowledge and practice through post and follow up phases compared to control. This result in the same line with **Singh, Ahmad, Rahmat, & Hmwe. (2016)** who found in a study about Nurse-led intervention on knowledge, attitude and beliefs towards acute coronary syndrome that Knowledge, attitude and beliefs about ACS increased significantly from baseline to 1 month after intervention.

Concerning the physical health outcomes, the current study results showed that study group had improvement related chest pain recurrence throughout study phases. This might be due to patient's adherence to guidelines which affect patient knowledge and practices which reflect on their physical outcomes. This is supported by **Elattafy (2016)** who found in a study about Effect of an Educational Program on Self-Efficacy of Patient with Myocardial Infarction that providing education with promoting personal motivation and self-efficacy could result in better health outcomes.

Also the study group had no improvement related to rate of hospital readmission. This might be due to that physical health outcome specifically the rate of hospital readmission judgment need long term duration post guidelines implementation. In contrast, **Tawalbeh & Ahmad (2014)** found that it would be useful for future cross-national longitudinal to test the mechanisms for education effects on health.

Conclusion:

According to the results of the present study, it can be concluded that there was statistically significant difference relation between both study and control groups regarding knowledge, practices and chest pain recurrence throughout study phases.

Recommendations:

Based on the results of the present study the following recommendations are suggested; adequate education and training for increasing awareness of patients about risk factors of unstable angina, Empower and motivate patients to adopt healthy lifestyle to prevent the disease.

References:

- [1]. **Abdelhameed, M. A. (2013):** Impact of a Designed Nursing Intervention protocol on Myocardial Infarction Patient's outcome at a selected University Hospital in Egypt. *Journal Biology, Agriculture and Healthcare*, Vol. 3(17), PP: 22-35.
- [2]. **Al-Halabi, B. and Hbejan, K. (2011):** Smoking Effect on Ischemic Heart Disease in Young Patients. *Journal of Cardiovascular and Thoracic Research*; 2(4) Pp: 1- 5.
- [3]. **Al-Wehedy, A. Abd Elhameed, S. and Abd El-Hameed, D. (2014):** Effect of Lifestyle Intervention Program on Controlling Hypertension among Older Adults, *Journal of Education and Practice*; 5 (5), Pp 61-71.
- [4]. **Arts, J., Fernandez, M. and Lofgren, I. (2014):** Coronary Heart Disease Risk Factors in College Students. *American Society for Nutrition*; (5) Pp: 177-187.
- [5]. **Braunwald, E. (2012):** Unstable Angina and Non-ST Elevation Myocardial Infarction. *American Journal of Respiratory and Critical Care Medicine*; 185(9).Pp: 924-932.

- [6]. **Du, H. (2013):** nurses knowledge and skill of blood pressure measurement Tanique in a private hospital setting. International Journal of Nursing Practice. Available at: https://dspace.nwu.ac.za/bitstream/handle/10394/.../Du_Toit_H.pdf accessed on 10/12/2017 at 10 am.
- [7]. **Edmonds, M. (2015):** 2014 AHA/ACC Guideline for the Management of Non–ST-Elevation Acute Coronary Syndromes. Available at <http://adelaideemergencyphysicians.com/2014/10/2014-ahaacc-guideline-for-the-management-of-non-st-elevation-acute-coronary-syndromes/>. Accessed on 25/11/2017 at 6 pm.
- [8]. **Elaskary, E. (2011):** Impact of Health Promotion program on compliance with therapeutic regimen among hypertensive patients in Gaza Strip, Unpublished Doctorate Thesis. Faculty of Nursing, Cairo University.
- [9]. **Elattafy, S. (2016):** Effect of an Educational Program on Self-Efficacy of Patient with Myocardial Infarction, Unpublished Doctorate thesis. Faculty of Nursing; Zagazig University.
- [10]. **Fryar, C.D., Chen, T.C. And Li, X. (2012):** prevalence of uncontrolled risk factors for cardiovascular disease. National Center for Health Statistics. United States. 103. Pp: 1-8.
- [11]. **Lockwood, W. (2017):** angina. RN.ORG publisher; United States, available at: www.rn.org/courses/coursematerial-210. accessed on 20/1/2018 at 1 am.
- [12]. **Muzaini, C and Adah, B (2017):** Complications of Acute Coronary Syndrome in Young Patients, Iranian Journal of Public Health; 46(1): 139–140.
- [13]. **Rosendorff, C. (2016):** Treatment of Hypertension in Patients with Coronary Artery Disease. American journal of medicine; (129). Pp: 372-378.
- [14]. **Singh, S., Ahmad, A., Rahmat, N. and Hmwe, N. (2016):** Nurse-led intervention on knowledge, attitude and beliefs towards acute coronary syndrome. Available at: doi: 10.1111/nicc.12240. Accessed on 10/1/2018 at 3 am.
- [15]. **Smith, J. (2017):** Diagnosis and Management of Acute Coronary Syndrome, Journal of the American Board of Family Medicine; 28 (2). Pp: 283-293.
- [16]. **Tantaewy, N.M. (2013):** Effect of Cardiac Rehabilitation Program on Lifestyle Pattern of Patients with Myocardial Infarction. Journal of Biology, Agriculture and Healthcare; 3(8). P:9.
- [17]. **Tawalbeh, L. and Ahmad, M. (2014):** The Effect of Cardiac Education on Knowledge and Adherence to Healthy Lifestyle, SAGE Journals; 23(3). P: 9.
- [18]. **Waller, D. (2016):** Acute Medicine; 1st ed, Elsevier, United States. Pp: 7020 – 7113.
- [19]. **Yayan, J. (2014):** Association of traditional risk factors with coronary artery disease in nonagenarians: the primary role of hypertension. 2014 (9). Pp: 2003-2012.