Effect of clinical pathway regarding promoting quality nursing care of patients with myocardial infarction exposed to invasive procedures

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Abstract

Myocardial infarction is the death of myocardial tissue because of extended lack of blood and oxygen. Clinical pathway has emerged as one of the most famous new initiatives alleged to lower costs whilst maintaining or even improving the satisfactory level of patient care.
Aim: to assess the effect of clinical pathway regarding promoting quality Nursing care of patients with MI exposed to invasive procedures through designing, Implementing, and evaluating the effect of clinical pathway intervention.
Design: A quasi-experimental research design (pre posttest) changed into applied in this study.
Setting: The study has been carried out in Beni-suef university Hospital, Zagazig University Hospitals.
Sample: thirty nurses from the previously mentioned setting and thirty patients with myocardial infarction who are hospitalized and exposed to invasive procedures.
Tools: Assessment questionnaire (pre/post test) sheet, An Observational Checklist, and Hamilton Anxiety Rating Scale (HAM-A).
Results: more than fifty percent of a studied sample of nurses their ages ranged from 20-30yrs, the mean age was (29.1±3.4), females (66.9%), and have been trained in nursing college, their work experience ranged from half to one decade. There has been a statistically significant distinction concerning knowledge and practical abilities of studied nurses among pre and post application of clinical pathway.
Recommendations: Extra new studies should be done for better assessment of the nurse's abilities and distribute educational booklets, pamphlets, and posters to all nurses with a purpose to enhance their degree of knowledge and skills.

Keywords: *Clinical Pathway; Quality Nursing Care; Patients; and Myocardial Infarction.*

1. Introduction

Myocardial infarction ("coronary heart attack") is defined as the irreversible harm of myocardial tissue because of prolonged ischemia and hypoxia. This usually occurred parallel with a coronary artery occlusion after the atherosclerotic plaque rupture, which then results in a coronary clot formation. If a vessel becomes in reality occluded, the myocardium usually supplied with that vessel turns into ischemic and hypoxic. Without enough oxygen, the tissue dies (Klabunde, 2017).

The maximum standard symptom is a pain in the chest or discomfort which also can moreover tour into the jaw, neck, shoulder, arm, or back. It starts in the middle or left side of the chest and continues for greater than a few minutes. The discomfort might additionally experience like heartburn. Different signs can also encompass shortness of breath, nausea, feeling faint, a cold sweat, or feeling tired. About thirty percent of people have extraordinary signs. Ladies more often have atypical symptoms than men. Among those over seventy-five years old, approximately five percent have had an MI with very little or no history of symptoms. An MI may additionally cause heart failure, an abnormal heartbeat, cardiogenic shock, or cardiac arrest (Mehta, et al, 2014).
Risk factors that can make a contribution to a heart attack include aging greater than forty years, thrombo-embolism absolutely or partially obstructed vessel, elevated blood sugar level, elevated cholesterol levels, increased blood pressure, a fatty or salty diet , elevated homocysteine level, elevated C-reactive protein, heavy smoking, obesity, or a preceding history or family history of cardiovascular disease (Tuipulotu, 2011).

Quality nursing care is the degree of health outcomes by delivery of efficient, effective and beneficial health services to people. Nurses are surely one of the most vital groups of health-care professionals and are morally liable for taking right care of their sufferers (Al-Yasseri, 2008).

Clinical pathways (CPs), also called critical pathways, are management plans that display desires for patients and offer the series and timing of movements important to obtain those desires with most advantageous performance. As opposition within the healthcare industry has advanced, CPs had been extensively implemented as a way to lessen variation in care and potentially enhance healthcare quality. Cardiovascular medicine especially is an area in which CPs have been used drastically. Previous studies have cautioned that CPs may additionally assist to reduce prices on the identical time as improving the great of care for AMI patients (Liu, et al, 2011).

The typical management combines thrombolysis medications, primary percutaneous coronary intervention, antiplatelet and anti-ischemic medications. A small single-center trial counseled that the CPs could lower the period of the hospital stay and in-hospital

health care fees for patients with AMI who underwent primary percutaneous coronary intervention procedure (Wang, et al, 2011).

Aim of the study:

Evaluate the effect of clinical pathway regarding promoting quality of nursing care of patients with MI exposed to invasive procedures.

Research Hypothesis:

Improving the quality of nursing care of myocardial infarction Patients exposed to invasive procedures after clinical pathway application.

2. Subjects and methods

2.1. Study design

A Quasi-experimental (pre posttest) research design has been used in this study.

2.2. Study variables

The independent variable in this study was the Clinical Pathway while the dependent variables were: Quality Nursing Care of patients with Myocardial Infarction Exposed to Invasive Procedures.

2.3. Study setting

The study was carried out in Beni-suef university Hospital, Zagazig University Hospitals.

2.4. Study sample

The study subjects consisted of all convenient nurses who have been worked in the previously mentioned settings (thirty nurses) and thirty patients with myocardial infarction.

2.5. Tools for data collection

The subsequent tools were utilized to gather the specified data:
 i)   A assessment questionnaire (pre/post test) sheet:

It has been developed by the researcher based on a scientific literature review to gather data about the subsequent:-
 1) Sociodemographic data of nurses such as age, gender, educational level, years of experience… etc.
 2) Nurses Knowledge concerning myocardial infarction such as definition of MI, symptoms, complication, and management…..etc.
 3) Nurses Knowledge concerning invasive procedures (care of urinary catheter, care of intravenous line, and Nurses' practical skills in ER and CCU.

Scoring system:

The scoring system of these tools covers four items:
 • Knowledge of the disease (MI) questions from one to thirty, one for true and two for false.
 • Nurses' practical skills in ER and CCU (twenty - one questions) done=one, not done =two.
 • Nurses' Knowledge intravenous line care, (seventeen questions). Need practice= one , satisfactory = two, excellent = three
 • Nurses' Knowledge of urinary catheter care (twenty - six questions).Need practice= one, satisfactory = two, excellent = three.

Each right answer got one score with a total score of twenty – six for the correct answer for all questions. less than seventy percent are considered unsatisfactory knowledge level and seventy percent or more are considered satisfactory.
 ii)   An Observational Checklist

It developed by Hama to T.f (2015); to assess the quality of nursing care during invasive procedures through using a clinical pathway, which includes:
 • The preparatory stage that includes care of patients before invasive procedures.

 • The technique of care during invasive procedures.
 • Post procedure care after invasive procedures.

Scoring system:

According to Pain Assessment Scales for Adult, adopted from Prkachin, K. M. (1992).
 • Zero to two considered none pain
 • Three to five indicates a moderate degree of pain.
 • Six to eight indicates the severe degree of pain
 iii)   Hamilton Anxiety Rating Scale (HAM-A)

It has been developed to observe patient's anxiety degree during and after invasive procedures. The tool was adopted from Borkovec T and Costello (1993). It consisted of 14 statements.

Scoring system:

The overall score of the observational checklist of anxiety for patients undergoing invasive procedures ranged from zero to fourteen distributed as follow:

Each item is scored on a scale of zero (not present) to four (severe), with a total score range of zero to fifty-six, where less than seventeen indicates mild severity, eighteen to twenty-four mild to moderate severity and twenty-five to thirty moderate to severe.

Pilot Study:

The pilot study executed on ten percent of nurses (three nurses) to test the study tools in terms of clarity, and time required. Some items have been modified in line with nurses' responses in the pilot study. The sample involved in the pilot study became excluded from the study subject.

Content validity:

It was established by panel of 5 expertise who reviewed the instruments for clarity, relevance, comprehensiveness, understanding, applicability and easiness for administrative minor modifications were required. The content validity of this tool was checked by expert professors in fields of medicine and nursing and correction was carried out accordingly.

Procedure:
 1)   Preparatory phase:
 • A review of current and past, local and international related literature in the various aspects of the problems using books, articles, periodicals, and magazines was done to develop the study tools and designing the clinical pathway.
 • The proposed study setting was assessed for the numbers of nurses and patients in Beni-suef university Hospital, Zagazig University Hospitals, and Alsalam Sector, CCU were obtained.
 • As regards preparation of the instructional management program. The theoretical contents of the program were concerned with disease, as the definition of MI, determine the possible causes of identifying risk factors, and recognize signs and symptoms, Invasive procedures and the practical contents of the instructional program.
 • Lectures, discussion, and demonstration, re demonstration, handouts, videotape and pictures, real objects that helped in covering theoretical and practical information.
 • Official permissions of data collection and implementation of the study conducted in Beni-suef university Hospital, Zagazig University Hospitals, and Alsalam Sector, CCU were obtained.
 • Permissions after explanation of the character and purpose of the study have been obtained from the concerning health team member who will be involved in the application of the study.
 • The researcher met every nurse three days weekly for three months and focused on completing one day of the pathway at each meeting.
 • According to nursing supervisors' roles, they mapped the nursing care plan for all aspects of nursing care. Ensure accurate timing as well as the proper nursing clinical performance of Adult care.
 • This phase ended by a pilot study.
 2)   Implementation phase

- Data were collected at Beni-suef university Hospital, Zagazig University Hospitals, and Alsalam Sector, CCU during the period from September 2017 to January 2018.
- The tools filled through interviewing with nurses and patients. The purpose of the study was explained to the nurses prior to answering the questions. The study was carried out at morning, and after noon shifts.
- At initial interview the researcher introduce herself to initiate line of communication, explain the nature and purpose of the study.
- Subjects were individually filled out the sociodemographic data and pre/ knowledge questionnaire sheet.
- Also she scheduled with them the teaching sessions for both theory and practice and the nurses were divided into small groups, each group contains 4-5 nurses.
- Four teaching sessions were conducted; each session took forty five minutes related to MI (definition, signs and symptoms, severity, complications and nursing role). The researcher gave each nurse clinical pathway guidelines related to care of patients with MI in addition to the teaching sessions to assure understanding and clear any misunderstanding. The researcher continued to reinforce the gained of information, answer any questions and gave feedback. Communication channel was kept open between the researcher and the nurses. Then, immediately post knowledge tests were carried out.
- Each nurse was pre-tested in performance the pre-determined procedures before provision of any information (pretest) utilizing the observational checklist, in the form of a short session of around half an hour. Four sessions for nurses' performance related to all invasive procedure such as care in CCU & ER, IV line and care of urinary catheter was taught.

3) Evaluation Phase

Upon the completion of the clinical pathway implementation, the posttest to evaluate the outcomes was done using the same pretest tools.

Ethical considerations:

Informed consent was obtained from nurses and patients who were willing to participate in the study after explanation of the nature and purposes of the study. Confidentiality of the subjects was certainly assured.

Statistical analysis

The collected information have been organized, tabulated and statistically analyzed by the usage of SPSS model 19 (Statistical Package for Social Studies). For testing factors affecting the level of knowledge and practice, presented as satisfactory and unsatisfactory, chi-square test turned into used. When chi-square test was not suitable due to the presence of observations with a small number, Monte Carlo exact test was used. The extent of significance was adopted at $p<0.05$. T-test used to measure the differences of the mean score of anxiety level of patient pre and post-program application

3. Results

Table (1): Illustrated that; greater than fifty percent of studied sample of nurses their ages ranged from twenty to thirty years with a mean (29.1 ± 3.4), females, had a bachelor degree, and their years of experience ranged from half to one decade with a mean of years (7.7 ± 4.2).

Table 1: Frequency Distribution of A Studied Sample of Nurses According to Demographic Data

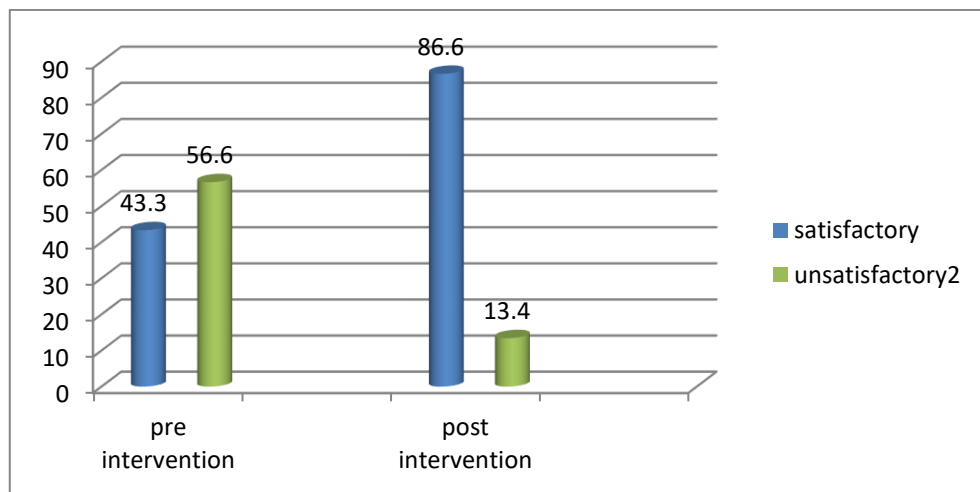| characteristics	No	Percent
age (years)		
25-30	18	60
31-35	12	30
Mean	29.1 ± 3.4	
Education		
Diploma	6	20
Post diploma	9	30
Bachelor	15	50
Sex		
Male	10	33.3
Female	20	66.9
Years of experience		
Less than 5	7	23.4
5-10	15	50
More than 10	8	26.6
Mean	7.7 ± 4.2	

Fig. 1: Frequency Distribution of Nurses Regarding Their Total Level of Knowledge Pre and Postprogram Application.

Fig. (1): Showed that; there had been a great progress at nurses knowledge as the majority of nurses have a satisfactory level of knowledge post-program application compared with (43.3%) of them who had a satisfactory level pre-program application. Also,

the post-program application only (13.4%) of nurses had an unsatisfactory knowledge level in comparison with more than fifty percent of them who had an unsatisfactory level pre-program application.

Table 2: Association between Total Level of Knowledge of Studied Nurses Pre and Postprogram Application

Items	Pre		Post		CHI	p
	N	%	N	%		
Satisfactory	13	43.3	26	86.6	12.3	.0004
Unsatisfactory	17	56.6	4	13.4		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non significant

Table (2): The table clarified that there has been a statistically significant distinction among pre and post-program application regarding knowledge of studied nurses.

Table 3: Frequency Distribution of Studied Sample According to Their General Practical Skills in CCU and ER Pre-Program Application

Item	Done completely		Not completely	
	N	%	N	%
Interaction when patient arrive	22	73.3	8	26.7
Put in cardiac bed	14	46.6	16	53.4
Insert IV lines	17	56.6	13	43.4
Take blood sample for investigations	14	46.6	16	53.4
Check vital signs	17	56.6	13	43.4
Connect monitor	13	43.3	17	56.7
Do 12 leads ECG	19	63.3	11	36.7
Administration of oxygen	19	63.3	11	36.7
Insert urinary catheters	19	63.3	11	36.7
Give painkillers and thrombolysis	20	66.6	10	33.3
Reassurance and psychological support	13	43.3	17	56.7
Patient education	21	70	9	30
Assessment of pain level	19	63.3	11	36.7
Check vital signs according to condition	13	43.3	17	56.7
Psychological support and education for the family	8	26.6	22	73.4
Connect monitor and reassessment	16	53.3	14	46.7
Check prescribed drugs	21	70	9	30
Reduce exercise for patient	16	53.3	14	46.7
Assessment of serial investigation	16	53.3	14	46.7
Give the proper diet	17	56.6	13	43.4
Documentation	23	76.6	7	23.4

Table (3): Revealed that; pre-program application more than two-thirds of a studied sample of nurses do completely the following (Interaction when patient arrive, Patient education, check prescribed drugs and Documentation). Also, more than fifty percent of them perform the following (Insert IV lines, Check vital signs, Do

12 leads ECG, Administration of oxygen, Insert urinary catheters, and Give painkillers and thrombolysis). While more than fifty percent of nurses didn't perform completely the following (Put the patient in cardiac bed, Take blood sample for investigations, Connect patient to monitor, Give Reassurance and psychological support, Check vital signs according to condition, or Give Psychological support and education for the family).

Table 4: Frequency Distribution of Studied Sample According to Their General Practical Skills in CCU and ER Post-Program Application

Item	Done completely		Not complete	
	N	%	N	%
Interaction when patient arrive	26	86.6	4	13.3
Put in cardiac bed	30	100	0	0
Insert IV lines	30	100	0	0
Take blood sample for investigations	30	100	0	0
Check vital signs	26	86.6	4	0
Connect monitor	30	100	0	0
Do 12 leads ECG	30	100	0	0
Administration of oxygen	30	100	0	0
Insert urinary catheters	28	93.3	2	6.6
Give painkillers and thrombolysis	22	73.3	8	26.6
Reassurance and psychological support	24	80	6	20
Patient education	26	86.6	4	13.3
Assessment of pain level	30	100	0	0
Check vital signs according to condition	27	90	3	10
Psychological support and education for the family	21	70	9	30
Connect monitor and reassessment	28	93.3	2	6.6
Check prescribed drugs	28	93.3	2	6.6
Reduce exercise for patient	27	90	3	10
Assessment of serial investigation	22	73.3	8	26.6
Give the proper diet	30	100	0	0
Documentation	30	100	0	0

Table (4): Revealed that; at post-program application all of the nurses (100%) perform completely the following (Put patients in cardiac bed, Insert IV lines, Take blood sample for investigations, Connect patients to monitor, Do 12 leads ECG, Administration of oxygen, Assessment of pain level, Give the proper diet, and Documentation).Also, the majority of them perform completely the following (Interaction when patient arrives, Check vital signs, Insert urinary catheters, Give painkillers and thrombolysis, Reassurance and psychological support, Patient education, Check vital signs according to condition, Psychological support and education for the family, Connect monitor and reassessment, Check prescribed drugs, Reduce exercise for patient, and Assessment of serial investigation).
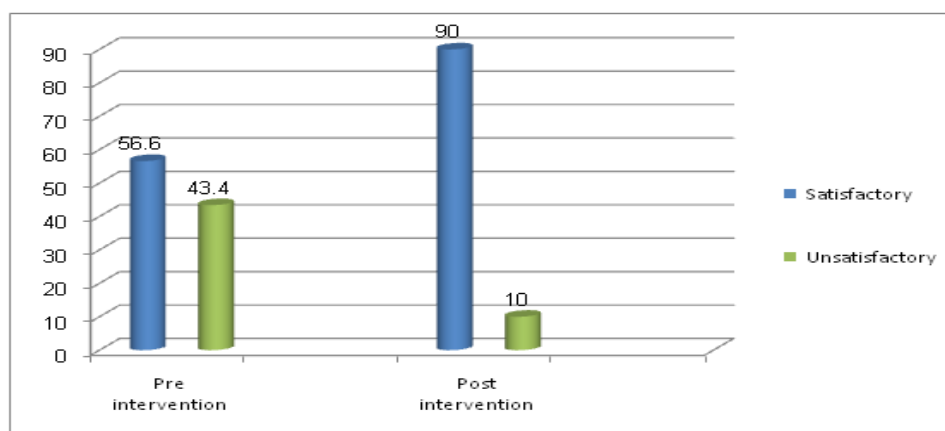

Fig. 2: Frequency Distribution of Nurses According to Their Total Practical Skills in CCU and ER Pre and Post-Program Application.

Fig. (2): Showed that; there has been a good progress at nurses practical skills level as the most common nurses (90%) have a satisfactory level of performance post-program application compared with (56.6%) of them who had a satisfactory level of knowledge pre-program application. Also, at post-program application only (10%) of nurses had an unsatisfactory performance level compared with

more than thirty percent of them who had an unsatisfactory level pre-program application

Fig. (3): Showed that; the most common of nurses (86.6%) has been had a satisfactory level of care post-program application compared with (46.6%) of them who had a satisfactory level of care pre-program application. Additionally, at post-program application

only (13.4%) of nurses had an unsatisfactory care level in comparison with more than fifty percent of them who had an unsatisfactory level pre-program application

Table (4): The table showed a highly statistically significant difference amongst pre and post-program application regarding care of intravenous line and urinary catheter.

Table (5): The table confirmed that a highly statistically significant difference between pre and post-program application concerning total care level of nurses.

Table (6): The table showed that there has been a highly statistically significant difference among pre and post-program application regarding their pain level.
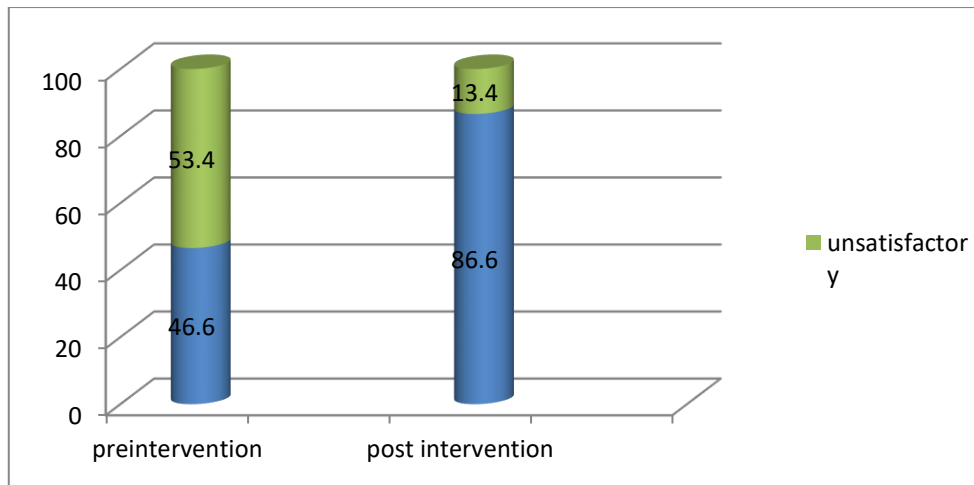

Fig. 3: Frequency Distribution of Nurses According to Their Total Level of Care Pre and Post-Program Application.

Table 4: Mean Score of Nurses Concerning Their Care of Intravenous Line and Urinary Catheter Pre and Post-Program Application

Items	Pre		Post		T	P
	Mean	SD	Mean	SD		
Care of IV line	24.6	1.5	40.1	3.2	23.1	.00001
Care of catheter	51.3	.50	62.8	4.9	7.2	.0001
Total	75.9	5.7	102.9	6.7	16.6	.0001

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non significant.

Table 5: Relation Between Total Level of Care of Studied Nurse's Pre and Post- Program Application

Items	Pre				Post				CHI	P
	Satisfactory		Unsatisfactory		satisfactory		Unsatisfactory			
	N	%	N	%	N	%	N	%		
Care of iv	16	53.4	14	46.6	28	93.3	2	6.7	12.2	.0004
Care of catheter	11	36.6	19	63.4	25	83.3	5	16.7	13.6	.0002
Performance in ccu	18	60	12	40	27	90	3	10	7.2	.007
Total	14	46.6	16	53.4	26	86.6	4	13.4	10.8	.001

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non significant.

Table 6: Frequency Distribution of Studied Patient Regarding the Evaluation of Patient's Level of Pain

classification of pain	Pre		Post		CHI	P
	N	%	N	%		
None/mild	6	26.6	14	46.7		
moderate	15	50	13	43.3	6.3	.04*
Severe	9	23.4	3	10		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table 7: Relation between Mean Score of the Studied Patient Regarding Their Anxiety Level Pre and Post-Program Application

Items	Mean	SD	T	P
Pre	41.9	3.2	34.7	.00001
Post	14.1	3.7		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table (7): The table clarified that there has been a highly statistically significant difference among pre and post-program application regarding their anxiety level.

Table (8): The table demonstrated that there has been a statistically significant difference amongst the nurses' demographic data and the overall level of knowledge pre-program application regarding nurse's age and their educational level.

Table (9): The table illustrated that there had been a statistically significant distinction amongst the demographic data of nurses and the total level of skills pre-program application regarding age and their experience years.

Table (10): The table showed that there had been a statistically significant distinction between the total level of knowledge of studied nurses and the total level of their skills pre-program application.

Table 8: Relation between Socio-Demographic Dataof Studied Nurses and the Total Level of Knowledge Pre- Program Application

characteristics	Satisfactory		Unsatisfactory		CHI	P
	N	%	N	%		
age (years)						

25-30	4	22.2	14	77.8	8.1	.004
31-35	9	75	3	25		
Education						
Diploma	1	16.6	5	83.4		
Post diploma	2	22.2	7	77.8	6.6	.03
Bachelor	10	66.6	5	33.4		
Sex						
Male	4	40	6	60	.06	.7
Female	9	45	11	55		
Years of experience						
Less than 5	3	42	4	58		
5-10	5	33.4	10	66.6	1.8	.4
More than 10	5	62.5	3	37.5		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table 9: Relation between Socio-Demographic Data of Studied Nurses and the Total Level of Practice Pre-Program Application

characteristics	Satisfactory14		Unsatisfactory16		CHI	P
	N	%	N	%		
age (years)						
25-30	5	27.7	13	72.3	6.4	.01
31-35	9	75	3	25		
Education						
Diploma	3	50	3	50		
Post diploma	5	55.5	4	44.5	.5	.7
Bachelor	6	40	9	60		
Sex						
Male	6	60	4	40	1.07	.3
Female	8	40	12	60		
Years of experience						
Less than 5	1	14.2	6	85.8		
5-10	6	40	9	60	8.5	.01
More than 10	7	87.5	1	12.5		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table 10: Relation between Total Level of Knowledge of Studied Nurses and the Total Level of Their Practice Pre- Program Application

Items	Satisfactory practice 14		Unsatisfactory practice 16		chi	p
	n	%	N	%		
Satisfactory knowledge	9	69.2	4	30.8	4.6	.03
Unsatisfactory knowledge	5	29.4	12	70.6		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table 11: Relation between Total Level of Knowledge of Nurses and the Total Level of Their Practical Skills Post Program Application

Items	Satisfactory practice 26		Unsatisfactory practice 4		chi	p
	n	%	n	%		
Satisfactory knowledge	24	92.3	2	7.7	5.03	.02
Unsatisfactory knowledge	2	50	2	50		

*=Significant difference, *p≤0.05 **= highly significance, **p≤0.01 Ns= Non-significant.

Table (11): The table clarifies that there has been a statistically significant difference between the overall level of knowledge of studied nurses and the total level of their skills post-program application.

4. Discussion

According to the findings of the prevailing study, more than fifty percent of studied sample of nurses their ages ranged from 20-30yrs, the mean age was (29.1±3.4), females (66.9%), and have been trained in nursing college, their work experience ranged from half to one decade (Qadir & Younis, 2015) had the same opinion as they reported that "The study clarify that the majority of the samples had been twenty-two to twenty-eight years old (forty-eight percent) and three decades was the mean age". From the result, we are capable of concluding that the majority the nurses who have worked inside the CCUs were junior due to the fact CCUs needed more efforts.

(Kadhim, 2013) become disagreeing with the study findings concerning the gender as he noted that" most of the nurses (61.4%) were male". This end result meant that adult males have extra attitudes for the nursing profession than a female, and the researcher suggests that this result is commonly in eastern countries due to the male get a nursing job more than females. This result is also likewise to another study performed by (Hassan& Hassan, 2013) who

indicated that the general public of the nurses in CCU had been males (seventy percent).

As regard to the level of education, (Özdemir& Akdemir, 2008) and (Shamoun & Gorges, 2007) had been disagreeing with the consequences of the prevailing study as they said that" the general public of the subjects had educated at an institute of nursing". This clarify that most common of the nurses had no chance to accomplish their education because the intensive care units need high qualified nurses".

(Sheta, 2006) was disagreeing with the present study regarding level of education but agree concerning the age of nurses and their years of experience as noticed that, the "majority of nurses have been a secondary diploma nurse, their age group between (twenty to thirty years), With years of experience nearly three quarters were five to seven years".

(Breseem, 2005) and (Al-Batayneh, 2001) were disagreeing with the finding of the present study regarding years of experience and noted that" Majority of nurses had one to five years of employment (seventy-seven %)" and" most of the nurses (50.8%) had experience of one to five years at CCU." respectively. This end result advised that most of the nurses who worked in CCU had been junior which helps and ensured the first result.

There has been a marvelous progress at nurses' practical skills level as the common of the studied samples of nurses has a satisfactory level of knowledge post-program implementation in comparison with more than thirty percent of them who had a satisfactory

level of knowledge pre-program application. Also, post-priogram application only thirteen percent of nurses had an unsatisfactory knowledge level compared with more than fifty percent of them who had an unsatisfactory level pre-program application. (Refaey, 2012) was agreeing with these results as he mentioned that" An obvious improvement in nurses post assessment total and subtotal knowledge scores had been recorded as compared to their pre-assessment knowledge with highly significant statistically differences. This improvement is probably related to the truth that majority of them are young, and have half to one decade of experience."

This agrees with (Christoffer, 2007) in his study "A quasi-experimental study to assess the effectiveness of established teaching programme on knowledge and practice of cardiopulmonary resuscitation amongst nurses working in Rajiv Gandhi University, Concluded that the programme was very powerful in enhancing the knowledge and practical skills of staff nurses.

(American nurse association, 2010) declared that education has a widespread effect on the knowledge and abilities of the nurse. (Evens, 2006) in another study additionally discovered that knowledge could be obtained through basic and continuing education, training, personal experience, and in-carrier education programs.

There has been a noticeable improvement at nurses' practical skills level as the common nurses have a good stage of performance post-program application in contrast with nearly fifty percent of them had a satisfactory level of knowledge pre-program application. Additionally, at the post-program application only ten percent of nurses had an unsatisfactory performance level compared with more than thirty percent of them who had an unsatisfactory level pre-program application.

This finding is supported by (Mekinen, 2010) who illustrated that overall level of overall performance became significantly improved after program implementation. As well, (Herlitz et al., 2006 and Seada, 2003) who stated that the result of the existing study also discovered an development in nurse's overall performance scores as the majority of them acquired an pleasant score immediately post program application and in the follow up period relative to the satisfactory score in the pre-program phase.

This finding is in agreement with (Frascone and Kaye, 2009) who mentioned that the coronary care nurse is responsible for preparing the resuscitation equipment before affected person admission as well as the mobile crush cart containing all supplies, equipment, and medication needed emergencies. This is in line with (Heng et al., 2011) who stated that it is very important that nurses ought to be knowledgeable for checking emergency equipment for delivery of pleasant nursing care to critically ill patients.

There was a surprisingly statistically significant distinction between the levels of information and nurse's age and their educational level. We are able to rationalize that the education, especially in college, has immoderate effectiveness on the ranges of nurses' understanding, and the nurses must continue their study in nursing college to increase the levels of education and to apply excellent nursing care and practices (Aziz & Lafi, 2013) has the same opinion with these findings and cited that "high qualified nurses have a nice understanding stage than others".

There has been an obvious statistically significant distinction among the levels of nurses' practical skills and nurses' age and their working years of experience. These outcomes are supported by (Giraldo, 2010) who discovered that "there has been a significant relationship among the degrees of quality of nursing care and education sessions, and demonstrated that the training course changed into effective for every stage of education and the training course was important to acquire new information for the nurse"

There was a statistical difference among the overall stage of information of studied nurses and overall level of their practice post-intervention (Refaey, 2012) was supported with the study findings as he mentioned that" The mean knowledge scores of nurses are increased immediately after implementation of the program with a significant statistical distinction. As properly, the mean practice scores of the study group subjects had been greater immediately after the implementation of the program with

an extraordinarily significant statistical difference compared to the pre-application of the program. Additionally, a positive correlation was discovered among knowledge and practical skills scores of the study participants "

5. Conclusion

More than fifty percent of a studied sample of nurses their ages ranged from twenty to thirty years, women, completing a bachelor degree and their experience years ranged from five to ten years. There has been a statistically significant distinction amongst pre and post clinical pathway application concerning knowledge and practical skills of studied nurses. Also, there has been a statistically significant distinction among the overall level of knowledge of studied nurses and the entire level of their practical skills before and after program application.

6. Recommendations

Increase the variety of distinctly licensed nurses in   the coronary care unit to extend the level of nurse's skills. Regular training periods for all myocardial infarction sufferers to encourage them to perform disease monitoring measures. Provision of the instructional booklet for acute myocardial infarction sufferers admitted to critical care department and their family members to increase health awareness and to improve the extent of information. Distribute booklets, pamphlets, and posters to all nurses to enhance their level of understanding and practice. Workshops and seminars must be prepared to raise awareness of health team employees and hospital administrators about benefits of clinical pathways for their profession.

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