



## Nurses' Performance Regarding Management of Thrombolytic Therapy among Acute Myocardial Infarction Patients'

Moataz Abdelsalam Mohamed\*<sup>1</sup>, Mannar Fathy Hamza<sup>2</sup>, Sabah Ahmed Ammar<sup>2</sup>

<sup>1</sup>Clinical instructor, Medical Surgical Nursing, Faculty of Nursing - Galala University, Egypt

<sup>2</sup>Assistant Professor, Medical Surgical Nursing, Faculty of Nursing - Helwan University, Egypt

\*Corresponding author: Moataz Abdelsalam Mohamed, E-mail: Moataz.Ms1114@nursing.helwan.edu.eg

DOI: 10.31838/ecb/2023.12.5.438

Article History: Received: 08.03.2023

Revised: 10.04.2023

Accepted: 28.04.2023

### ABSTRACT

**Background:** Thrombolytic therapy is used in the treatment of a ST segment elevation myocardial infarction (STEMI) to establish reperfusion, reduce infarct size, prevent, and treat complication. Coronary care nurses play integral roles in the administration of thrombolytic therapy. **Aim:** Assess nurses' performance regarding management of thrombolytic therapy among acute myocardial infarction Patients'. **Design:** A descriptive research design was used. **Setting:** This study was carried out at Critical Care Unit, at Cairo University Hospitals, Egypt. **Sample:** A convenience samples for all available nurses (45) who accept to participate in this study. **Tool:** Two tools were used to collect study data: Tool I: Nurses' self-administrated interview questionnaire; include two parts: 1. Demographic characteristics for nurses, 2. Nurses knowledge questionnaire. Tool II: nurses' practice observational checklist. **Results:** the present study showed that 64.4% of the studied nurses had an unsatisfactory level of knowledge, and (55.6%) of the studied nurses had in-competent level of practice regarding to thrombolytic therapy **Conclusion:** Approximately more than two-thirds of the studied nurses had unsatisfactory level of knowledge regarding to thrombolytic therapy, more than half of the studied nurses had in-competent level of practice regarding to thrombolytic therapy. In addition, there was a highly statistically significant relation between total knowledge and total practice regarding management of thrombolytic therapy and personal characteristics. There was a positive strong highly statistically significant correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses. **Recommendations:** Providing in-service educational training programs and upgrading courses based on evidence-based guidelines based on nurses' needs to improve their knowledge and practice related to acute myocardial infarction patients who receiving thrombolytic.

**Keywords:** Acute Myocardial Infarction, Nurses' Performance, Thrombolytic Therapy.

### INTRODUCTION

Myocardial Infarction (MI), commonly known as a heart attack is defined pathologically as the irreversible death of myocardial cells caused by ischemia. Clinically, MI is a syndrome that can be recognized by a set of symptoms, chest pain being the hallmark of these symptoms in most cases, confirmed by biochemical laboratory changes, electrocardiographic changes, or findings on imaging modalities that able to detect myocardial injury and necrosis <sup>(1)</sup>.

Myocardial Infarction results in irreversible damage to the heart muscle due to a lack of oxygen. An MI may lead to impairment in diastolic and systolic function and make the patient prone to arrhythmias. In addition, an MI can lead to several serious complications. The

key is to reperfusion the heart and restore blood flow. The earlier the treatment (less than 6 hours from symptom onset), the better the prognosis <sup>(2)</sup>.

Newly graduated nurses are expected to work effectively in technically complex environments and at the same time perform nursing in a way that makes the patients feel like persons and the time of onset of chest pain was considered as the time of onset of the acute myocardial infarction. Acute myocardial infarction was diagnosed using the standard 12 lead electrocardiogram and cardiac enzyme. The time from onset of myocardial infarction to treatment was separated into early (12 h); this was the time from initial onset of pain to the time when the patient received treatment. Rapid restoration of patency of the infarct-related artery is the key to preserving myocardium and

improving survival in acute myocardial infarction, increase the quality of life of patients, and decrease health expenditure in many countries <sup>(3)</sup>.

Several medications are used in the management of coronary artery diseases and acute coronary events. Thrombolytic agents are widely administered for the treatment of acute coronary events and other thromboembolic diseases. ("The use of thrombolytic agents in acute myocardial infarction (AMI ...") these agents are considered as the first line treatment option in many cases of acute myocardial infarction (AMI). Thrombolytics or fibrinolytics are a group of medications used in the management and treatment of dissolving intravascular clots. They are in the plasminogen activator class of drugs <sup>(4)</sup>.

Thrombolytic therapy is one of the main components of solving a blood thrombus and is the most prevalent treatment utilized in protection from Acute Myocardial Infarction (AMI) ischemic harm by making efficient blood flow through dissolve of blood vessel clots. It is essential enzyme that is dissolves clots in the blood through stimulation of the transformation of plasminogen into plasmin <sup>(5)</sup>.

Thrombolytic therapy has become an established treatment for AMI. Most benefit from thrombolytic therapy is demonstrated in the patient's receiving treatment within the first six hours, with about 30 lives saved per 1000 patients treated, and some 20 per 1000 in those treated within 7-12 hours of symptom onset. The best results of all are seen in the patients treated within the first hour of symptom onset. The American Heart Association has proposed that definitive treatment of AMI should be performed within 1 h of the onset of the disease <sup>(6)</sup>.

Nurses are caregivers, it is a job that must be done conscientiously and correctly because it may cause the loss of a person's life. Thence, nurses' performance is a fundamental component of ensuring that people receive excellent care and that it is delivered promptly when it is required. Nurses' performance varies depending on the type of resources and facilities gettable; it also differs from developed countries to developing countries. Performance is the vital component of

the organization's development and growth. The performance factors are different and affect work output <sup>(2)</sup>.

The role of nurses is great in the multidisciplinary team in the implementation of thrombolytic agents. Taking the patient's medical history is vital in determining the patient, so that leads to the right intervention by noticing complications that may occur early. Nurses are considered the health profession who frequently interact, assess, and give the prescribed treatment to the patients. There is no doubt that the nurse who works in the critical care units must be qualified enough for these tasks in addition to his general duties, therefore, nurses must have a good scientific background about the profession and details related to coronary artery disease and critical care to detect patients' problems, to which make the appropriate decision for and proper medication administration <sup>(7)</sup>.

#### **Significance of the study:**

Cardiovascular diseases (CVDs) are the leading cause of death globally." ("Cardiovascular diseases (CVDs) - WHO") Estimated to be 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. 85% were deaths due to heart attack and stroke. Over three quarters of CVD deaths take place in low and middle-income countries. Coronary artery disease which accounts for nearly one-third to one-half of all the cases of CVDs is reported to be one of the major causes of death in developing and middle east countries and Acute myocardial infarction (AMI) is the most common cause of death in the world <sup>(8)</sup>.

Myocardial infarction (MI) is one of the most common coronary heart lesions, an invisible epidemic in the 21st century, with prevalence approaching three million people worldwide, with more than one million deaths in the United States annually. Thus, changes in health care delivery and increased awareness of the urgency of treating patients with the acute coronary syndrome has led to the provision of thrombolysis in the emergency room (ER) rather than the coronary care unit (CCU) <sup>(9)</sup>.

In Egypt, mortality due to CVD is one of the highest compared to other countries in the region and worldwide. Acute coronary syndrome (ACS) is often the first presentation and serious acute life-threatening clinical manifestation of CVD which includes unstable angina (UA) and myocardial infarction (MI). Thrombolytic therapy is still a common reperfusion therapy for AMI patients in Egypt and In-hospital mortality was significantly higher and was highest among no reperfusion patients. Thereby, improving nurses' practice regarding management of thrombolytic therapy will prevent the complications resulting from error of administration of thrombolytic, which will have a direct impact on patient's progress and decrease hospital stay<sup>(3)</sup>.

## AIM OF THE STUDY

The aim of this study is to assess nurses' performance regarding management of thrombolytic therapy among acute myocardial infarction Patients'. Through the following:

1. Assess nurses' knowledge regarding management of thrombolytic therapy among patients with acute myocardial infarction.
2. Assess nurses' practice regarding management of thrombolytic therapy among patients with acute myocardial infarction.

## RESEARCH QUESTIONS

This study will answer the following questions:

1. What is the level of nurses' knowledge regarding management of thrombolytic therapy among patients with acute myocardial infarction?
2. What is the level of nurses' practice regarding management of thrombolytic therapy among patients with acute myocardial infarction?
3. Is the relation between nurses' knowledge and practice regarding patients with acute myocardial infarction?

## SUBJECTS AND METHOD

### Research design:

A descriptive exploratory design was utilized for conducting this study.

### The study setting:

This study was conducted at Critical Care Unit, at Cairo University Hospitals, Egypt in where the management of thrombolytic therapy are applied. The Critical Care Unit was located on the 2nd floor of the hospital. This unit is divided into five room, each room has 6 beds beside every bed equipped with ventilator and monitor; there was one utility room in addition to one storeroom for supplies and another storeroom for equipment and devices it has (Ultrasound, ECG, and ECHO, X-ray), finally one nursing stations. The working hours are three shifts the morning, afternoon, and night shifts.

### Subjects:

A Convenience sample of 45 nurses (all available nurses) who were working in critical care unit and provide direct care for Acute Myocardial infarction patients receiving thrombolytic therapy, and who will desire to participate will be included in this study. Nurses with less than one year's experience were excluded.

### Tools for data collection:

#### Tool I: Nurses self-administrated interview questionnaire:

This questionnaire designed by the researcher based on reviewing related literature<sup>(10)</sup>; and was written in simple Arabic language to gather data includes two parts:

#### Part I: Demographic characteristics of nurses;

It was developed by a researcher. It includes data related to demographic characteristic of critical care unit nurses such as nurse's age, gender, marital status, educational level, years of experience in

cardiac care unit, years of experience, and attendance of training courses about care of patients with acute myocardial infarction.

## Part II: Nurses' knowledge questionnaire:

It was developed by the researcher based on reviewing related literature <sup>(10)</sup>; to assesses knowledge regarding management of thrombolytic therapy among patients with acute myocardial infarction, which include: - Nurses' knowledge regarding acute myocardial infarction (definition of AMI, causes, signs & symptoms, risk factor, types, complications, and management of AMI). Nurses' knowledge regarding management of thrombolytic therapy (thrombolytic therapy definition, type, mechanism of action, indication, absolute and relative contraindication, early adverse reaction, criteria of administration, onset of action, dose of thrombolytic drug, major complication of AMI).

## Tool II: Nurses' observational checklist:

It was adapted from **Ali et al.** <sup>(11)</sup> and modified was done by the researcher. To determine the nurses' practice regarding management of thrombolytic therapy among patients with acute myocardial infarction. This tool consisted of 45 nursing actions divided into three categories (pre-during-after) infusion of thrombolytic therapy with two choices (Done & Not Done).

### Validity:

The developed tool was formulated and submitted to a jury of five experts (assistant professors and lecturers) in medical-surgical health nursing from Faculty of Nursing- Helwan University to assess the content validity. Their opinion was elicited regarding tools consistency, rephrasing for some statements, and the scoring system.

### Tools Reliability:

The statistical equation of Cronbach's Alpha reliability for first tool nurses' knowledge questionnaire regarding to thrombolytic therapy was 0.987 and the statistical equation of Cronbach's Alpha reliability for second tool nurses' observational checklist was 0.975, that was good which the statistical equation of Cronbach's Alpha reliability coefficient

normally ranges between 0 and 1 higher value <sup>(12)</sup>.

### Ethical Consideration:

The researcher's approval was obtained from the Ethical Committee of the Faculty of Nursing at Helwan University. Then went to the Director of the Critical Care Unit, at Cairo University Hospitals and was interviewed with him, read the protocol papers and research tools, then signed with approval, then was transferred to the Director of Nursing, who also signed the approval. Then the investigator was directed to the training unit in the hospital, which coordinated the entry into the Critical Care Unit, at Cairo University Hospitals.

The researcher has clarified the objectives and aim of the study to nurses included in the study before starting. Oral consent was obtained from the investigator to assure that all the gathered data was confidential and used for research purposes only. The investigator was maintaining anonymity and confidentiality of the subjects' data included in the study. The studied nurses were informed that they have the right to withdraw from the study at any time.

### Field work:

Filed work included the following;

Approval was obtained from the scientific and ethical committee of the Faculty of Nursing at Helwan University, and the study subjects individually gave a verbal agreement to participate in the study. Firstly, the researcher met and introduced himself to the nurses at the previously mentioned settings, explained the purpose of the study after introducing himself. Participants were informed about voluntary participation, the right to withdraw at any stage of data collection, and their identity will be kept confidential.

After that, nursing staff's demographics and work data questions and knowledge questionnaire sheet regarding management of thrombolytic therapy

among acute myocardial infarction Patients were distributed to all nurses and filled in the presence of the researcher to ensure that the questions were answered completely by the nurse. They were delivered tools immediately to the researcher after completion to avoid any biases resulting from the interaction of nurses with each other. The time required to complete the questionnaire was around 15-30 minutes. Then the researcher observes the actual practice of every nurse who used the observational checklist to ensure maximum realistic knowledge. The observational checklist was filled by the researcher in 20-30 minutes.

Data were collected through six months, from the beginning of June 2022 to the end of November 2022. The researcher was available in the study setting three days per week throughout the morning shift from 9:00 AM to 1:00 PM. The studied nurses were assured that the information collected would be treated confidentially and that it would be used only for this study.

#### Statistical Analysis:

Data collected from the studied nurses was revised, coded, and entered using a Personal Computer (PC).

Computerized data entry and statistical analysis were completed using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, and percentages. The Chi-square test ( $X^2$ ) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between three ranked variables.

## RESULTS

**Table (1)** shows personal characteristics among the studied nurses. It illustrates that 55.6% of the age of the studied nurses was between  $31 \leq 40$  years old with a mean age of **34.00±6.52**. Also, more than half (57.8%) of the studied nurses were female. Regarding marital status, more than two-thirds (66.7%) of them were married while only about one-third, 33.3% of them, were single. Concerning years of experience in the field of nursing, more than two-thirds 62.2% of them were worked for more than 15 years old with **Mean±SD = 16.96 ± 6.00**. Moreover, regarding years of experience in the critical care unit, two thirds of the studied nurses worked from six to ten years old with **Mean ± SD =12.49 ± 4.12**, respectively.

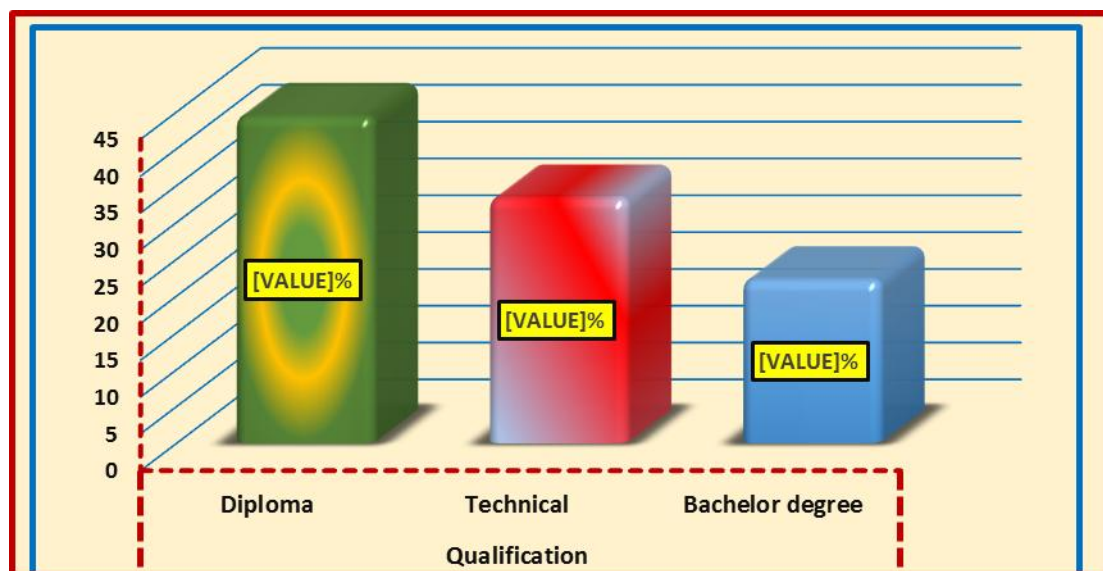
**Table (1): Frequency and percentage distribution of personal characteristics among the studied nurses (n= 45)**

Items	No.	%	
Age (year)	▪ 20 ≤ 30	16	35.6
	▪ 31 ≤ 40	25	55.6
	▪ 41 ≤ 50	4	8.9
	▪ Mean ± SD	34.00±6.52	
Gender	▪ Male	19	42.2
	▪ Female	26	57.8
Marital status	▪ Single	15	33.3
	▪ Married	30	66.7
Years of experience in the field of nursing	▪ 6 ≤ 10	9	20.0
	▪ 11 ≤ 15	8	17.8
	▪ > 15	28	62.2
	▪ Mean ± SD	16.96± 6.00	
Years of experience in the critical care unit	▪ 6 ≤ 10	18	40.0
	▪ 11 ≤ 15	12	26.7
	▪ > 15	15	33.3

	▪ Mean ± SD	12.49 ± 4.12
*Significant $p \leq 0.05$		**Highly significant $p \leq 0.01$

**Figure (1):** shows educational level among the studied nurses. It illustrates that more than two-fifths 44% of the studied nurses holding diploma

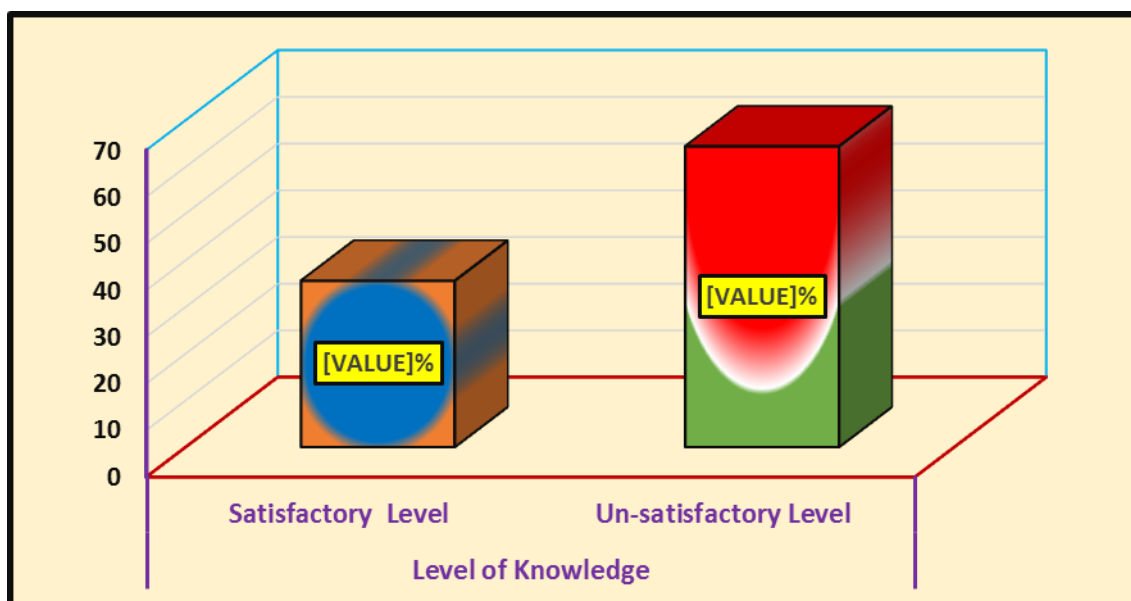
degree while the minority 22.2% had a bachelor's degree.



**Figure (1):** Percentage distribution of education level among the studied nurses' personnel (n= 45).

**Figure (2):** represents level of knowledge regarding management of thrombolytic therapy among the studied nurses. It clarifies that more than two-thirds 64.4% of the studied nurses had unsatisfactory level of knowledge regarding

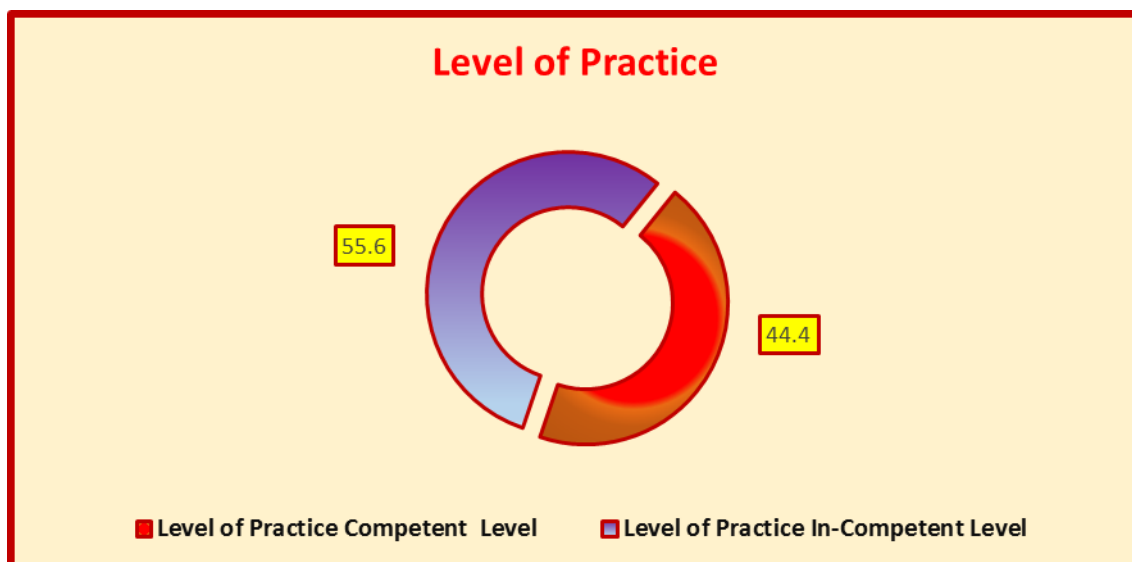
management of thrombolytic therapy. Moreover, more than one-third, 35.6% of them had a satisfactory level of knowledge regarding management of thrombolytic therapy.



**Figure (2):** Percentage distribution of level of knowledge regarding management of thrombolytic therapy among the studied nurses (n= 45).

**Figure (3):** represents level of practice regarding management of thrombolytic therapy among the studied nurses. It clarifies that more than half (55.6%) of the studied nurses had an in-competent level of practice regarding management of

thrombolytic therapy. Moreover, more than two fourths (44.4%) of them had a competent level of practice regarding management of thrombolytic therapy.



**Figure (3):** Percentage distribution of level of practice regarding management of thrombolytic therapy among the studied nurses (n= 45).

**Table (2):** shows the relation between total knowledge regarding management of thrombolytic therapy and personal characteristics among the studied nurses. It indicates a highly

statistically significant relationship between demographic characteristics of study subjects and their total knowledge & practice score.

**Table (2):** Relation between total knowledge regarding management of thrombolytic therapy and personal characteristics among the studied nurses (n= 45).

Items	Total knowledge				$\chi^2$	P-Value	
	Satisfactory		Un-satisfactory				
	16 N	35.6 %	29 N	64.4 %			
Age	▪ 20 ≤ 30	0	0.0	16	35.6	15.5	0.000**
	▪ 31 ≤ 40	15	33.3	10	22.2		
	▪ 41 ≤ 50	1	2.0	3	6.7		
Gender	▪ Male	15	33.3	4	8.9	27.0	FET 0.000**
	▪ Female	1	2.2	25	55.6		
Marital status	▪ Single	12	26.7	3	6.7	19.3	FET 0.000**
	▪ Married	4	8.9	26	57.8		
Educational level	▪ Diploma	1	2.2	19	42.2	21.2	0.000**
	▪ Technical	6	13.3	9	20.0		
	▪ Bachelor	9	20.0	1	2.2		
Years of experience in the field of nursing	▪ 6 ≤ 10	0	0.0	9	20.0	10.7	0.005**
	▪ 11 ≤ 15	1	2.2	7	15.6		



	▪ > 15	15	33.3	13	28.9		
Years of experience in the critical care unit	▪ 6 ≤ 10	0	0.0	18	40.0	27.6	0.000**
	▪ 11 ≤ 15	3	6.7	9	20.0		
	▪ > 15	13	28.9	2	4.4		

\*Significant  $p \leq 0.05$

\*\*Highly significant  $p \leq 0.01$

FET: Fisher Exact Test

**Table (3):** show the relation between total practice regarding management of thrombolytic therapy and personal characteristics among the studied nurses. It indicates that there was a highly statistically significant relation between total practice regarding management of thrombolytic

therapy and personal characteristics (age, gender, marital status, educational level, years of experience in the field of nursing in nursing education among the studied nurses, and years of experience in the critical care unit, at  $P = 0.000$ .

**Table (3):** Relation between total practice regarding management of thrombolytic therapy and personal characteristics among the studied nurses (n= 45).

Items	Total practice				$\chi^2$	P-Value	
	Competent		In-Competent				
	20	44.4	25	55.6			
	N	%	N	%			
Age	▪ 20 ≤ 30	0	0.0	16	35.6	23.4	0.000**
	▪ 31 ≤ 40	19	42.2	6	13.3		
	▪ 41 ≤ 50	1	2.2	3	6.7		
Gender	▪ Male	15	33.3	4	8.9	15.8	FET 0.000**
	▪ Female	5	11.1	21	46.7		
Marital status	▪ Single	12	26.7	3	6.7	11.5	FET 0.001**
	▪ Married	8	17.8	22	48.9		
Educational level	▪ Diploma	1	2.2	19	42.2	24.0	0.000**
	▪ Technical	10	22.2	5	11.1		
	▪ Bachelor	9	20.0	1	2.2		
Years of experience in the field of nursing	▪ 6 ≤ 10	0	0.0	9	20.0	16.7	0.005**
	▪ 11 ≤ 15	1	2.2	7	15.6		
	▪ > 15	19	42.2	9	20.0		
Years of experience in the critical care unit	▪ 6 ≤ 10	0	0.0	18	40.0	26.1	0.000**
	▪ 11 ≤ 15	7	15.6	5	11.1		
	▪ > 15	13	28.9	2	4.4		

\*Significant  $p \leq 0.05$

\*\*Highly significant  $p \leq 0.01$

FET: Fisher Exact Test

**Table (4):** illustrates correlation between knowledge and practice regarding management of thrombolytic therapy among the studied nurses. It clarifies that there was a positive strong highly statistically significant

correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses at  $r = 0.977$  &  $P = 0.000$ .

**Table (4): Correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses (n= 45).**

Item	Total knowledge	
	r	P
<b>Total practice</b>	0.977	0.000**

\*Significant  $p \leq 0.05$

\*\*Highly significant  $p \leq 0.01$

## DISCUSSION

Cardiovascular diseases (CVDs) are a category, of disturbances in the cardiac and the blood vessel, and included coronary heart disease, acute myocardial infarction, heart failure, cerebrovascular disease, peripheral of the vascular disease, defects of the congenital cardiac, deep vein thrombosis, and the pulmonary embolism. Acute myocardial infarction (AMI) is a severe type of coronary artery disease that occurs from the blocked arteries in the heart. Infarction means the dying of tissue related to the decrease in support of the blood<sup>(13)</sup>.

Thrombolytic therapy is considered a preference in the treatment of acute myocardial infarction. Because it improves suffering from a disease and rating of the dying by breaking down the clot in the blood vascular and achieving reperfusion, this decreases the infarction volume, preserves the left ventricular activity. It is dissolving the thrombosis of heart blood vessel, by transforming the plasminogen to the plasmin<sup>(14)</sup>.

Nurses play a vital role in the management of patients with ACS. The care of patients with ACS involves extensive monitoring and regular analysis of data to obtain situational awareness of the patient's evolution and risk for complications. Nurses have been shown to have an essential role in the diagnosis, management, and treatment of acute coronary syndromes. This is because nurses provide care directly to patients and can identify problems early<sup>(15)</sup>.

Concerning to personal characteristics among the studied nurses. The study results illustrated that more than half of the age of the studied nurses were between thirty to less than

forty-one years old with a mean age of  $34.00 \pm 6.52$ . This indicated that the studied nurses were mature enough and tolerated the work responsibility.

This finding goes on the same line as **Sambu**<sup>(16)</sup> who investigated the effect of a training program on nurse's, knowledge, attitudes, and practice regarding nursing care of acute myocardial infarction in Medani Heart Center and Wad Medani Emergency Hospital, Gezira State, Sudan and found that about the majority of the study nurses aged was less than 40 years.

This result contradicted with study by **Bårdsgjerde et al.**<sup>(17)</sup> who studied Nurses' perceptions of patient participation in the myocardial infarction pathway and found that majority age group of nurses 42–50 years worked in cardiac care.

**In relation to gender**, more than half of the studied nurses were female with a male to female ratio is 0.7:1. This may be due to the greater fraction of the nurses in Egypt was female and may also related to the studying of nursing in Egyptian universities were exclusive for females only till few years ago.

The finding from the current study was agrees with a study conducted by **Toppo et al.**<sup>(18)</sup> which studied thesis titled effectiveness of teaching program regarding management of thrombolytic drug therapy in terms of knowledge and practice of staff nurses, showed that the majority of the study sample were females.

This finding is in identical line with **Mohammed et al.**<sup>(19)</sup> who conducted a study about effect of teaching program on nurses' performance regarding drugs that affect blood coagulation in Coronary Care Unit at Assiut

General Hospital on 30 nurses and revealed that the great majority were females.

These critical care nurses' results disagreed with **Mohammed et al.** <sup>(20)</sup> who conducted a study about Assessment Nurses Knowledge toward Anticoagulation Therapy for Patients at Blood Disease Ward in Teaching Hospital in Baghdad city on 100 nurses and revealed that the majority of the studied nurses were males.

**Moreover, in relation to marital status**, more than two-thirds of them were married while only about one-third of them were single. Additionally, in relation to **education** level, more than two-fifths of them hold a secondary school degree while the minority had a bachelor's degree.

In the same line, the study finding was compatible with the study result conducted in Coronary Care Unit in Al-Diwaniya Teaching Hospital and published at Kufa Journal for Nursing Sciences by **Skal & Ahmed** <sup>(21)</sup> which assessed of nurse's knowledge concerning nursing care of the patients receiving thrombolytic therapy with acute myocardial infarction, concluded that that most of the participants were high school nursing graduates and married.

This finding is inconsistent with **Al-Mugheed & Bayraktar** <sup>(22)</sup>, who conducted a study about knowledge and practices of nurses on deep vein thrombosis risks and prophylaxis at the university hospital in Northern Cyprus on 165 nurses and revealed that more than half of the studied nurses had bachelor's degree.

**Concerning years of experience** in the field of nursing, more than two-thirds of them were worked for more than 15 years old with Mean  $\pm$  SD =16.96  $\pm$  6.00. Moreover, regarding years of experience in the critical care unit, two-thirds of the studied nurses worked from six to ten years old.

The study finding was in the same line with the study results published at Zagazig Nursing Journal by **Mohamed et al.** <sup>(2)</sup> which studied factors affecting nurses' performance regarding management of thrombolytic therapy among patients with acute myocardial

infarction, illustrated that more than half of the age of the studied nurses was more than thirty years old with a mean age of 30.8 $\pm$ 7.9. Also, majority of the studied nurses were female, married, working for more than 15 years old.

On other hand, the study finding was incongruent with the study result conducted in at coronary care unit in Al-Diwaniyah Teaching Hospital by **Ahmed et al.** <sup>(23)</sup> which investigated the effect of designed guidelines on nurses' knowledge and performance for acute myocardial infarction patients who receiving thrombolytic therapy, revealed that the majority of participants were between (20-25) years old, graduated from high school nursing, had experience less than 5 years of experience in both nursing profession and in coronary care units

**Considering the total level of knowledge regarding management of thrombolytic therapy** among the studied nurses. The study result indicated that more than two-thirds of the studied nurses had an unsatisfactory level of knowledge regarding management of thrombolytic therapy. Moreover, more than one-third of them had a satisfactory level of knowledge regarding management of thrombolytic therapy. In addition, the presence of a difference between observed and expected values with a highly statistically significant difference. Moreover, satisfactory to unsatisfactory is 0.6:1.

From the researchers' point of view, the reasons for lack of nurses' knowledge regarding management of thrombolytic therapy among patients with acute myocardial infarction might be related to lack of continuing educational programs or sessions about this therapeutic intervention, supervision, continuous evaluation of nurses' practice, and cooperation between multidisciplinary health care team members (nurses - physicians). The researcher' point of views is supported by **Yones et al.** <sup>(24)</sup>, who mentioned that nurses need to improve their knowledge especially on the different routes of medication administration as responsibility for correct administration of medication lies in

their hands. Therefore, for nurses to provide high quality care and function effectively, they must have adequate knowledge that they have used it in practice.

Moreover, it may be due to a decrease in the educational level among the majority of the nurses. It can be argued that the education level is a crucial factor in achieving knowledge. The researcher's point of view is supported by **Diaz-Quijano et al.** <sup>(25)</sup> who summarized that higher education is associated with more training, passed courses, and up-to-date information that can lead to a better level of knowledge.

**Regarding to the total level of practice regarding management of thrombolytic therapy** among the studied nurses. The study result mentioned that more than half of the studied nurses had an in-competent level of practice regarding management of thrombolytic therapy. Moreover, more than two fourths of them had a competent level of practice regarding management of thrombolytic therapy. Moreover, the competent to in-competent ratio is 0.8:1.

From the researchers' point of view, the reasons for lack of nurses' practice regarding management of thrombolytic therapy among patients with acute myocardial infarction might be related to the fact that gap in nursing practice is increased due to poor understanding, ignorance, lack of time, simply or lack of training and inadequacy of adherence to evidence-based guidelines, so there is a various need for thrombolytic therapy policy and current practical guidelines.

**Moreover**, the researcher further interpreted that this might be because of the increased number of patients in relation to nurses and workload. Additionally, nurses' practices were based on imitations rather than on education and training.

**Regarding the relation between total knowledge regarding management of thrombolytic therapy and personal characteristics** among the studied nurses. The study result indicated that, there was a

highly statistically significant relation between total knowledge regarding to thrombolytic therapy and personal characteristics (age, gender, marital status, educational level, years of experience in the field of nursing and years of experience in the critical care unit among the studied nurses, at  $P = 0.000$ .

This finding goes on the same line with **Sambu** <sup>(16)</sup> who studied effect of a training program on nurse's, knowledge, attitudes and practice regarding nursing care of acute myocardial infarction in Medani Heart Center and Wad Medani Emergency Hospital, Gezira State, Sudan and found that there was a highly statistically significant relation between total knowledge regarding to nursing care of acute myocardial infarction and personal characteristics (age and gender).

On other hand, the study finding was inconsistent with the study result conducted in at coronary care unit in Al-Diwaniyah Teaching Hospital by **Ahmed et al.** <sup>(23)</sup> which investigated the effect of designed guidelines on nurses' knowledge and performance for acute myocardial infarction patients who receiving thrombolytic therapy, illustrated that there is no significant relationship between the overall nurses' knowledge with their demographic data (age, gender, educational level, number of years in nursing and years of experience in coronary care unit).

**Concerning relation between total practice regarding management of thrombolytic therapy and personal characteristics** among the studied nurses. The study result indicated that there was a highly statistically significant relation between total practice regarding management of thrombolytic therapy and personal characteristics (age, gender, marital status, educational level, years of experience in the field of nursing and years of experience in the critical care unit among the studied nurses, at  $P = 0.000$ . **From the researcher's point of view**, it can be stated that nurses gain

experience over time by working in clinical settings, and practicing tasks improves the quality of their practice.

In the same line, the study result in accordance with the study result conducted with **Abd-Elhai et al.** <sup>(26)</sup> which studied the effect of training program on nursing performance regarding emergency management of acute myocardial infarction patients, documented that that there was highly statistically significant in relations between total practice scores and age, gender, years of experience in CCU, educational level pre, post & follow-up training program implementation  $p < 0.001$ .

On the same direction, result finding was compatible with descriptive cross-sectional research conducted in a university hospital in upper Egypt by **Ismail et al.** <sup>(27)</sup> which evaluated coronary Care nurses' knowledge and practice regarding management of thrombolytic therapy among acute myocardial infarction patients, revealed that there was association between age, years of experience in nursing & CCU, and practice score were found.

**Concerning the correlation between knowledge and practice** regarding management of thrombolytic therapy among the studied nurses. The study result clarified that there was a positive strong highly statistically significant correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses. It means that nurses under study had poor knowledge and consequently poor practice level.

**These findings might be related to** deficiencies in nurses' knowledge and practice regarding management of thrombolytic therapy among patients with acute myocardial infarction which can adversely affect patient safety and education. Training is considered one way of preventing adverse nursing outcomes. So, to provide high-quality care, nurses must have adequate knowledge that they have used in practice. The researcher's

point of view was in accordance with **Yones et al.** <sup>(24)</sup>, who stated that low knowledge among nurses can lead to medication errors as safe medication administration is based on knowledge, attitude, and sound clinical judgment. The nurses must improve their knowledge about anticoagulant therapy.

In the same vein, the study found was in harmony with the study result published in Egyptian Journal of Health Care and conducted in Ain Shams University Hospital by **Mohammed et al.** <sup>(2)</sup> which studied nursing performance regarding monitoring of patients with ischemic stroke during the administration of Tissue Plasminogen Activator Drug demonstrated that there was a positive statistically significant correlation between total level of nurses' practice and their total level of knowledge. This study concluded based on the study findings that the total studied nurses' knowledge and practice levels are unsatisfactory.

Additionally, the stud finding was consistent with the study result published in Journal of Education and Health Promotion and conducted by **Ehsani et al.** <sup>(28)</sup> which assessed knowledge and practice of cardiovascular nurses regarding warfarin, documented that nurses' knowledge had a statistically significant relationship with their clinical practice and there was also a statistically significant relationship between subscales of knowledge and practice. Nurses must have sufficient knowledge to provide appropriate care in their clinical practice.

On other hand, result for **Bakr et al.** <sup>(29)</sup> which studied assessment of nurses 'performance regarding care of patients undergoing cardiac catheterization, stated that there was no statistically significant correlation between total nurses' knowledge, practice and attitude scores.

**Finally, the study result supported that** majority of the studied nurses had an unsatisfactory level of knowledge and incompetent level of practice regarding management of thrombolytic therapy. In addition to that, there was a positive strong

highly statistically significant correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses.

## CONCLUSION

**Based on the results of the current study, it can be concluded that:**

The results of the present study revealed that more than two-thirds of the studied nurses had an unsatisfactory level of knowledge regarding to thrombolytic therapy, and more than half of the studied nurses had an in-competent level of practice regarding management of thrombolytic therapy. In addition, there was a highly statistically significant relation between total knowledge and total practice regarding management of thrombolytic therapy and personal characteristics. There was a positive strong highly statistically significant correlation between total knowledge and practice regarding management of thrombolytic therapy among the studied nurses.

## RECOMMENDATION

**In the light of results of this study, the following recommendations were suggested:**

**At the educational level:**

- Providing in-service educational training programs and upgrading courses based on evidence-based guidelines based on nurses' needs to improve their knowledge and practice related to acute myocardial infarction patients who receiving thrombolytic in both Arabic and English languages.
- A simplified and comprehensive educational guideline, booklets, and websites in the Arabic language about thrombolytic administration and the role of nurses pre, during, and after administration should be afforded to nurses caring for patients who are treated with thrombolytic drugs.

**At the practical level:**

- Continuous evaluation of nurses' knowledge is essential to identify their needs in coronary units for thrombolytic therapy for acute myocardial Infarction Patients.
- Training programs are highly recommended to improve nurses' knowledge and practice regarding caring for patients with acute myocardial infarction on thrombolytic therapy.

**At the research level:**

- Further study is needed to apply the guidelines with larger sample size including structure and outcome guidelines in addition to process guidelines & evaluate its impact on nurses' regarding management of thrombolytic therapy and patients' outcomes.
- Further research is needed for nurses about further complications following administer thrombolytic therapy for acute myocardial infarction patients and how to prevent it.

## REFERENCES

1. De Lucio, S.L., & Hernández, M.A.L. (2021). Ischemic Heart Disease. In *Cardiomyopathy-Disease of the Heart Muscle*. IntechOpen. DOI:10.5772/intechopen.97515
2. Mohammed, S.S.H., Mohammed, T.E., & Ebraheim, N.M. (2021). Nursing Performance Regarding Monitoring of patients with Ischemic stroke during administration of Tissue Plasminogen Activator Drug. *Egyptian Journal of Health Care*, 12(4), 853-869.
3. Ghonem, G.E., Mohamed, Y.M., Gaballah, S.H., & Hassan, M.S. (2022). Effect of Educational Program on Nurses' Knowledge and Practice Regarding management of thrombolytic Therapy among Patients with Acute Myocardial Infarction. *American Journal of Nursing*, 10(2), 58-66.
4. Nakamura, M., Kimura, K., Kimura, T., Ishihara, M., Otsuka, F., Kozuma, K., & Hirayama, A. (2020). JCS 2020 guideline focused update on antithrombotic therapy in

- patients with coronary artery disease. *Circulation Journal*, 84(5), 831-865.
5. Wang, J., Toan, S., & Zhou, H. (2020). Mitochondrial quality control in cardiac microvascular ischemia-reperfusion injury: new insights into the mechanisms and therapeutic potentials. *Pharmacological Research*, 156, 104771.
  6. Bianco, H.T., Povoia, R., Izar, M.C., Luna Filho, B., Moreira, F.T., Stefanini, E., & Fonseca, F.A. (2021). Accuracy of Post-thrombolysis ST-segment Reduction as an Adequate Reperfusion Predictor in the Pharmacologic Approach. *Arquivos Brasileiros de Cardiologia*, 117, 15-25.
  7. Hogan, T.M., Spiegel, T., & Oskvarek, J. (2021). Emergency Medicine. *Geriatrics for Specialists*, 101-115.
  8. McNamara, K., Alzubaidi, H., & Jackson, J. K. (2021). Cardiovascular disease as a leading cause of death how are pharmacists getting involved. *Integrated Pharmacy Research and Practice*, 9, 1-12.
  9. Paolisso, P., Bergamaschi, L., Satrio, G., D'Angelo, E.C., Magnani, I., Toniolo, S., & Galie, N. (2020). Secondary prevention medical therapy and outcomes in patients with myocardial infarction with non-obstructive coronary artery disease. *Frontiers in Pharmacology*, 10, 1606.
  10. Lewis, S., Bucher L., Margaret, M., Heitkemper, Mariann, M., Harding, Kwong, J. & Roberts, D. (2016). Medical Surgical Nursing: Assessment and Management of Clinical Problems, Problem of Oxygenation and Perfusion, 10 th ed, Elsevier Health Sciences, USA, P:722- 727.
  11. Ali, M., Salim Hossain, M., Islam, M., Arman, S.I., Sarwar Raju, G., Dasgupta, P., & Noshin, T.F. (2014). Aspect of thrombolytic therapy: a review. *The Scientific World Journal*, 2014.
  12. Pandey, P., & Pandey, M.M. (2021). *Research methodology tools and techniques*. Bridge Center.
  13. Passacquale, G., Sharma, P., Perera, D., & Ferro, A. (2022). Antiplatelet therapy in cardiovascular disease: current status and future directions. *British Journal of Clinical Pharmacology*, 88(6), 2686-2699.
  14. d'Alessandro, E., Becker, C., Bergmeier, W., Bode, C., Bourne, J. H., Brown, H., & Scientific Reviewer Committee. (2020). Thrombo-inflammation in cardiovascular disease: an expert consensus document from the third Maastricht consensus conference on thrombosis. *Thrombosis and haemostasis*, 120(04), 538-564.
  15. Alkhaqani, A.L., & Ali, B.R.M. (2022). Evidence-based nursing care of patient with acute myocardial infarction: Case report. *International Journal of Nursing and Health Sciences*, 4(1),1-7.
  16. Sambu, B.M.H. (2018). Effect of a Training Program on Nurse's, knowledge, Attitudes and Practice regarding Nursing Care of Acute Myocardial Infarction in Medani Heart Center and Wad Medani Emergency Hospital, Gezira State, Sudan (2014-2017) (*Doctoral dissertation, University of Gezira*).
  17. Bårdsgjerde, E.K., Landstad, B.J., Hole, T., Nylenna, M., Gjeilo, K. H., & Kvangarsnes, M. (2020). Nurses' perceptions of patient participation in the myocardial infarction pathway. *Nursing Open*, 7(5), pp. 1606-1615.
  18. Toppo, M., Dungdung, A., Kumar, A. (2019). Effectiveness of teaching program regarding management of thrombolytic drug therapy in terms of knowledge and practice of staff nurses. *International Journal of Scientific Research*, 8(4), 51-52.
  19. Mohammed, R.G., Shower, O.A.E.G., & Mehany, M.M. (2019). Effect of teaching program on nurses' performance regarding drugs that affect blood coagulation in coronary care unit. *Assiut Scientific Nursing Journal*, 7(19), 26-36.
  20. Mohammed, S.J., Hamdan, A.S., Ali, A.M., Aaly, A.A., & Hadi, W.H. (2017). Assessment nurses' knowledge toward anticoagulation therapy for patients at blood disease ward in Teaching Hospital in Baghdad city. *Back to Cited Text*, (14).
  21. Skal, B., & Ahmed, S. (2021). Assessment of Nurse's Knowledge Concerning nursing

- care of the patients receiving thrombolytic therapy with Acute Myocardial Infarction at Coronary Care Unit in Al-Diwaniya Teaching Hospital. *Kufa Journal for Nursing Sciences*, 11(1), 1-7.
22. **Al-Mugheed, K.A., & Bayraktar, N. (2018).** Knowledge and practices of nurses on deep vein thrombosis risks and prophylaxis: A descriptive cross-sectional study. *Journal of Vascular Nursing*, 36(2), 71-80.
23. **Ahmed, B.M., Ali, H.A.E., & Allam, H.M. (2021).** Effect of designed guidelines on nurses' knowledge and performance for acute myocardial infarction patients who receiving Thrombolytic Therapy. *Indian Journal of Forensic Medicine & Toxicology*, 15(3).
24. **Yones, F., E., Ahmed, S., A., Abo El- Ata A., B., & Ahmed H., M., (2019).** assessment of nurses' performance regarding caring of patients on anticoagulant therapy In Port-Said Hospitals, *Port Said Scientific Journal of Nursing*, 6(3).
25. **Diaz-Quijano, F.A., Martínez-Vega, R.A., Rodriguez-Morales, A.J., Rojas-Calero, R.A., Luna-González, M.L., & Díaz-Quijano, R.G. (2018).** Association between the level of education and knowledge, attitudes, and practices regarding dengue in the Caribbean region of Colombia. *BMC Public Health*, 18(1), 1-10.
26. **Abd-Elhai Abd-Elghani Shetaia, S., Mostafa Ragheb, M., Saeed Mohamed, S., & EL-Sayed Ghonaem, S. (2023).** Effect of Training Program on Nursing Performance regarding Emergency Management of Acute Myocardial Infarction Patients. *Journal of Nursing Science Benha University*, 4(1), 95-113.
27. **Ismail, M., Khalil, N., & Sayed, A. (2017).** Coronary Care Nurses' Knowledge and Practice Regarding Management of thrombolytic therapy among acute myocardial infarction patients. Oral presentation.
28. **Ehsani, M., Farahani, M.A., Haghani, S., Khaleghparast, S., & Memar, M.M. (2022).** Assessment of knowledge and practice of cardiovascular nurses regarding warfarin. *Journal of Education and Health Promotion*, 11(1), 270.
29. **Bakr, A., Shehab, M.S., & El-Zayat, R.N. (2020).** Assessment of nurses' performance regarding care of patients undergoing cardiac catheterization. *Port Said Scientific Journal of Nursing*, 7(2), 57-77.