

Assessing Nursing Competency in Myocardial Infarction Management in Saudi Arabia

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ABSTRACT

Myocardial infarction (MI) is a leading cause of mortality worldwide, with nurses playing a crucial role in its management. This study aimed to assess nursing competency in MI management in Saudi Arabia by evaluating nurses' knowledge, attitudes, and practices. A descriptive research design was employed, utilizing a structured questionnaire administered to a random sample of 324 nurses. Most participants held diploma degrees (64.8%), were female (74.1%), and had 4-15 years of work experience (67.3%). Results revealed a high level of knowledge about MI management, with an average score of 4.01 out of 5 (80.11% relative weight). Nurses demonstrated a strong understanding of key MI indicators, such as chest pain and "silent" heart attacks in diabetic patients. However, there was lower recognition of immediate oxygen and aspirin administration for suspected MI cases. Nurses exhibited positive attitudes towards their role in MI management (average score: 4.02 out of 5; 80.40% relative weight), emphasizing the importance of prompt intervention. Practices related to MI management were also found to be satisfactory (average score: 4.16 out of 5; 83.30% relative weight), with nurses adhering to protocols such as documenting symptoms and administering oxygen and aspirin. Nevertheless, there was less emphasis on encouraging rehabilitation programs for MI patients. The

findings underscore the importance of ongoing professional development and targeted training programs to address knowledge gaps, reinforce best practices, and promote a holistic approach to MI care. By empowering nurses through continuous education and institutional support, healthcare systems in Saudi Arabia can enhance the quality of MI management and improve patient outcomes.

KEYWORDS: Nursing competency, Myocardial infarction management, Cardiovascular care, Nursing knowledge, Clinical practices, Saudi Arabia.

1. Introduction

Cardiovascular disease (CVD) is the number one leading cause of death worldwide. Cardiovascular disease incorporates several disease types, involving diseases of the muscular organ of the heart, the blood vessels that feed the heart, and the Human brain and other vital organs (Mathers et al., 2006, p. 20). In the first decade of the current century, cardiovascular diseases were accounting for fewer than 10 percent global fatalities. of disorders, including diseases of the heart muscle and the blood vessels that supply the heart, brain, and other vital organ. The beginning of the 20th century, cardiovascular disease was responsible for less than 10% of all deaths worldwide. Today, this figure is around 30% while more than 80% of this burden is shared by developing countries. According to statistics, cardiovascular disease accounted for the largest mortality rate in the world in 2001(Wasfi Dhahir Abid Ali et al., 2022). Myocardial infarction (MI) or ischemic heart disease informally referred to as 'heart attack' has taken place because of lack or restricted blood supply to part of the heart (Thygesen et al., 2007). Myocardial ischemia may manifest with changes on the ECG and increased levels of other biochemical enzymes like the troponin (Goodman et al., 2006; Thygesen et al., 2007).

Acute myocardial infarction (MI), commonly referred to as a "heart attack," causes the heart muscle to die. AMI is caused by necrosis or a partial or total blockage of a coronary artery, which lowers the blood flow to cardiac cells that are supplied by the blocked coronary artery. The location of the blockage and the degree of coronary artery occlusion determine the subsequent degree of heart damage (Polit & Beck, 2004).

The prevalence of coronary artery disease (CAD), which is a primary cause of MI, is estimated at 5.5% in Saudi Arabia. This figure reflects a higher prevalence in urban areas compared to rural areas (6% vs. 4.2%) (Alharbi et al., 2023).

Cardiovascular disease is among the non-communicable diseases that are on the rise in many nations today. Patients and their families have received health education from nurses, but this instruction has not been founded on any of the deficient health education recommendations or modules. Health education given at later levels of care is not a continuation of earlier health education because no records of health education have been supplied (Kotseva et al., 2016).

Damage to the myocardium and the conduction system from decreased coronary blood flow may be the source of complications that can arise following an acute MI. Close observation and early detection of these problems' signs and symptoms are essential because they may be fatal (Piepoli et al., 2016).

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Nurses maintain an eye on the patients' blood pressure, heart sounds, skin color and temperature, respiratory status, chest discomfort, urine output, heart rate and rhythm, ECG changes, and lab results. Any changes in the patient's condition must be reported to the doctor right once, and emergency measures must be taken when called for (Piepoli et al., 2016). The nurse providing care for a patient who has had a myocardial infarction or is at risk for one needs to be aware of the underlying processes of infarction and be able to identify both its subtle and more overt symptoms. Recovery basically depends on quick assessment and quick response (Sommers & Johnson, 2002).

To prevent complications and subsequent attacks, emergency care of myocardial infarction is essential. Early reperfusion therapy and the introduction of coronary care units have significantly reduced in-hospital death rates and enhanced outcomes for MI acute phase survivors. MI can cause inflammatory, mechanical, and arrhythmic complications in addition to left ventricular mural thrombus. Other potential consequences of acute MI include cardiogenic shock and right ventricular infarction, in addition to these general categories (Van de Werf et al., 2008).

AMI requires systematic and careful nursing treatment and providing care for a patient with AMI requires efficiency. When it comes to emergency management of AMI, critical care nurses are uniquely positioned to advocate for evidence-based practice. The information, abilities, and attitudes needed to deliver the services that would improve the quality of care for patients with chest pain will be better understood with a deeper awareness of the special role that nurses play in the emergency department (Morton & Fontaine, 2013).

When caring for a patient who has experienced a myocardial infarction or is at risk for one, the nurse must understand the underlying causes of the condition and be able to recognize both its subtle and more obvious signs. Recovery requires prompt evaluation and prompt intervention. To manage such severe situations, nurses need to be competent and knowledgeable. Monitoring and assessing nurses' competency can help to guarantee improved performance in the future by spotting mistakes in concepts, settings, and performance. Therefore, to improve the quality of nursing care, it is essential to comprehend the level of nurses' myocardial infarction competence. That is why this study was conducted.

Study problem

Myocardial infarction (MI) complications have a major influence on therapeutic approaches and patient prognosis. Mechanical, ischemic, arrhythmic, embolic, and inflammatory problems are among the many issues that might occur after a MI, according to the literature. Because of their high mortality rates, mechanical problems such left ventricular free wall rupture (FWR), ventricular septal rupture (VSR), and papillary muscle rupture (PMR) are especially worrisome. Acute mitral regurgitation, for example, is linked to PMR and has an in-hospital mortality rate of 10% to 40% (Yousef et al., 2022). Significant hazards are also associated with VSR and FWR; death rates for surgical procedures intended to address these problems have been reported to be around 40% (Mechanic et al., 2024).

Reperfusion therapies such as primary percutaneous coronary intervention (PCI) have reduced the frequency of mechanical problems. The total mortality rate linked to these problems is still significant, nonetheless, despite recent advancements. About 25% of MI patients die because of mechanical complications, according to studies. FWR is especially deadly, with a mortality rate of up to 94% in nonsurgical patients (Stephens et al., 2019). These difficulties usually arise in the first two weeks after a MI and peak between three and seven days after the event, therefore timing is crucial (Zalewski et al., 2021).

Apart from mechanical problems, insufficient perfusion or thrombus development may result in ischemic consequences. Among these include arrhythmias and new-onset mitral regurgitation, which can worsen heart failure and raise the risk of sudden cardiac death⁴⁵. Following a MI, there is an increased risk of embolic events such stroke or limb ischemia, especially when anterior wall infarctions are present, and thrombi may separate from the left ventricle (Stephens et al., 2019).

According to research, nurses might not be completely up to date on the most recent evidence-based procedures for managing MI. According to a systematic study, educational interventions greatly increased nurses' understanding of managing MI; yet many still do not have thorough training in the newest protocols and technologies. Delays in starting treatment and less-than-ideal patient care may result from this information gap (Crea, 2023).

Patient outcomes are also significantly impacted by the nurses' attitudes toward MI management procedures. Research indicates that improved adherence to clinical guidelines is correlated with positive sentiments. However, these attitudes can be adversely affected by obstacles including inadequate training, a lack of resources, and workplace culture. Developing focused educational programs that improve knowledge, and attitude requires an understanding of these aspects (Henry et al., 2021).

Despite their vital role in patient care, systemic hurdles frequently prevent nurses from managing myocardial infarction effectively. Many nurses only exhibit a good level of practice after completing formal training programs, according to research. For example, research revealed that less than one-third of nurses had enough practice levels for emergency management of MI before a training program was put in place. This number, however, dramatically rose to almost two-thirds after training, suggesting a clear link between practice improvement and training (Abd-Elhai Abd-Elghani Shetaia et al., 2023).

Despite these benefits, without continued instruction and assistance, knowledge and skill retention may deteriorate over time. According to the same study, practice levels somewhat decreased during follow-up evaluations, despite initial gains. This implies that to maintain high standards of care and guarantee that nurses stay knowledgeable about the most recent MI management methods, ongoing professional development and recurring training sessions are necessary (Abd-Elhai Abd-Elghani Shetaia et al., 2023).

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Research Questions:

- What is the Knowledge of nurses about myocardial infarction Management in Saudi Arabia?
- What is the attitude of nurses about myocardial infarction Management in Saudi Arabia?
- What are the practices of nurses about myocardial infarction Management in Saudi Arabia?

Research Objectives:

- To determine the Knowledge of nurses about myocardial infarction Management in Saudi Arabia.
- To determine the attitude of nurses about myocardial infarction Management in Saudi Arabia.
- To determine the practices of nurses about myocardial infarction Management in Saudi Arabia.

2. Literature review

A study by Parmi at el. aimed to evaluate the knowledge of staff nurses about the initial care required for myocardial infarction patients and to create a self-instruction module (SIM) for improvement. Conducted with 50 staff nurses at J.K. Hospital, the research utilized a structured questionnaire to assess knowledge levels before and after the introduction of the SIM. Results indicated that prior to the intervention, 88% of nurses had average knowledge, while post-intervention assessments showed a statistically significant increase in knowledge ($p < 0.0001$), demonstrating the effectiveness of the SIM in enhancing nursing practices related to myocardial infarction care (Parmil, 2022).

A study conducted by Dergham Majeed Hameed Al-Ftlawy aimed to assess the knowledge of nurses regarding the care provided to patients with acute myocardial infarction (AMI) in Al-Najaf City, focusing on their demographic characteristics and training background. The research involved a sample of 38 nurses from Al-Sadder Medical City and AL-Haqeem General Hospital, utilizing a structured questionnaire to evaluate their knowledge levels. Results indicated that the overall nursing care quality was inadequate, primarily due to insufficient knowledge and practice among the nursing staff, with 42.1% of nurses demonstrating good knowledge, while another 42.1% showed moderate knowledge, and 15.8% had poor knowledge. The findings highlight the necessity for specialized training programs to enhance nurses' competencies in managing AMI patients effectively, thereby improving patient care outcomes (Al- Ftlawy, 2012).

A study by Yesmin aimed to assess the understanding of myocardial infarction among nurses in a cardiovascular disease institute. Conducted with a sample of 300

nurses, the research utilized a semi-structured questionnaire to gather data on their knowledge levels. The results revealed that while 30% of the nurses demonstrated outstanding knowledge and 20% had very high knowledge about MI, 16.67% exhibited poor understanding. Key findings included that 96.67% recognized smoking as a significant risk factor, and 86.67% identified chest pain as a primary symptom of MI. Moreover, the majority (93.33%) acknowledged that administering medication and monitoring responses are critical nursing interventions for MI patients. Despite the generally good knowledge levels, the study concluded that additional training is necessary to enhance nurses' expertise in managing myocardial infarction effectively (Yesmin et al., 2022).

A study by AL-Mamoori assessed nurses' knowledge regarding myocardial infarction (MI) in the coronary unit at Al-Imam Al-Sadiq Teaching Hospital, Iraq. Conducted with 50 nurses, the study used a structured questionnaire covering demographic information and MI knowledge. Results indicated that 60% of participants were male, with 58% aged 40-49, and 40% having 1-5 years of nursing experience. Only 28% demonstrated a good level of knowledge about MI, while the majority exhibited low to intermediate understanding, suggesting limited familiarity with MI care protocols. The study found significant correlations between nurses' knowledge and their demographic factors, such as age, gender, and education level. The authors recommend implementing specialized training programs to enhance nurses' competencies and encourage continuing education opportunities to improve care quality for MI patients (AL-Mamoori et al., 2022).

A study by Wasfi Dhahir Abid Ali assessed nurses' knowledge of myocardial infarction (MI) at Basrah Teaching Hospitals. Fifty nurses of varying genders, education levels, and experience participated. Results showed that most participants were female (68%) and held a diploma degree, with a significant portion (50%) having 1-5 years of experience. Knowledge scores varied widely (10-78%), with a mean score of 2.2 out of 3, indicating a moderate understanding of MI. The findings suggested that while nurses possess foundational knowledge, further scientific support and professional development are essential to improve their competency in managing MI effectively (Wasfi Dhahir Abid Ali et al., 2022).

3. Methodology

Given the nature of the current study topic (Assessing Nursing Competency in Myocardial Infarction Management in Saudi Arabia). To achieve the study objectives, the researcher used the descriptive method, which is: the type of research by which all members of the research community or a large sample of it are questioned; with the aim of describing the phenomenon being studied in terms of its nature and degree of existence. (Al-Assaf, 2016, p. 211).

Study Community

The current study community consists of all nurses in Saudi Arabia.

Study Sample

The origin of scientific research is to be conducted on all members of the research

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community; because this is more likely to confirm the results, but the researcher resorts to choosing a sample of them if this is not possible due to their large number, for example" (Al-Assaf, 2003, p. 96); therefore, the researcher chose a random sample, where the sample amounted to (324) nurses in Saudi Arabia.

Study Tool

Based on the nature of the data and the methodology followed in the study, the researcher found that the most appropriate tool to achieve the objectives of this study is (the questionnaire). The study tool was built by referring to the literature and previous studies related to the subject of the study, Assessing Nursing Competency in Myocardial Infarction Management in Saudi Arabia. The researcher designed the initial questionnaire and distributed it to the study sample to find out the data that this tool seeks to collect. The validity and reliability procedures for this tool were verified. The following is a detailed explanation of how to prepare the tool and the procedures taken by the researcher to verify the validity and reliability of the tool.

Validation of questionnaire

The validity of the study tool means ensuring that it measures what it was prepared to measure. It also means that the questionnaire includes all the elements that enter the analysis on the one hand, and the clarity of its expressions on the other hand, so that it is understandable to everyone who uses it. The researcher verified the validity of the study tool through:

Honesty of arbitrators

The face validity method was used, with the aim of ensuring the validity of the questionnaire and its suitability for research purposes, by presenting it to a group of academic and specialist arbitrators, and asking them to express an opinion regarding the extent of the validity and validity of each paragraph of the questionnaire and its suitability for measuring what it was designed to measure, and introducing Necessary amendments, whether by deletion, addition or reformulation. The arbitrators presented suggested amendments to the study tool, and the researcher took those observations into account, made the necessary amendments that were agreed upon by most arbitrators, and then relied on the questionnaire in its final form.

Internal consistency validity

Through internal consistency, we know the extent to which each paragraph of the questionnaire is consistent with the axis/dimension to which this paragraph belongs. To calculate the validity of the internal consistency of the study tool, the Pearson correlation coefficient was calculated (Pearson Correlation Coefficient), through which the correlation coefficients were calculated between the score of each item and the total score of the dimension (the average score of the items of the dimension) to which the item belongs. The following tables show the validity of the internal consistency.

Table (1): internal consistency results

N = 324		Pearson Correlation Coefficient	Sig
knowledge about myocardial infarction management			
1-	Sudden chest pain, especially with radiation to the left arm or jaw, is a common MI symptom.	.802**	.000
2-	Diabetics may experience "silent" heart attacks with minimal pain.	.563**	.000
3-	MI can present without symptoms.	.779**	.000
4-	Shortness of breath is an indicator of potential MI.	.774**	.000
5-	5. Smoking, hypertension, and high cholesterol are major modifiable risk factors for MI.	.870**	.000
6-	6. Physical activity is generally recommended for MI patients once stabilized.	.787**	.000
7-	Avoiding excessive weight gain is crucial for MI prevention in females.	.716**	.000
8-	Immediate administration of oxygen and aspirin is recommended for suspected MI cases.	.741**	.000
9-	Cardiac rehabilitation programs are essential for post-MI recovery.	.785**	.000
attitude about myocardial infarction management			
1-	Nurses have a vital role in managing patients with MI effectively.	.633**	.000
2-	MI patients should receive immediate intervention, regardless of symptom severity.	.575**	.000
3-	I am confident in my ability to recognize the signs of MI in patients.	.804**	.000
4-	Ongoing education is important to maintain competence in MI management.	.827**	.000
5-	Emotional support is as critical as physical treatment for MI patients.	.827**	.000
6-	Nurses can significantly reduce MI complications through proper management.	.885**	.000
7-	Rehabilitation programs are necessary for MI patients, even if they feel well.	.784**	.000
8-	I believe that improved training in MI care will lead to better patient outcomes.	.833**	.000
practice about myocardial infarction management			
1-	I follow established protocols for managing patients with suspected myocardial infarction.	.852**	.000
2-	I ensure immediate oxygen and aspirin administration for suspected MI cases.	.894**	.000
3-	I educate patients on lifestyle modifications to reduce MI risks.	.819**	.000
4-	I encourage MI patients to participate in rehabilitation programs.	.872**	.000
5-	I document and report all MI symptoms promptly to the healthcare team.	.728**	.000

It is clear from the previous table that the Pearson correlation coefficient values for each item for each dimension with the total score of the dimensions; Positive and statistically significant at the significance level (0.01), where the values of the correlation coefficients ranged from (0.563) as a minimum to (0.894) as a maximum. This indicates the presence of internal consistency in the items of each dimension, and their suitability for measuring what they were designed to measure.

Reliability of the questionnaire

Reliability of the questionnaire means that it gives approximately the same results if it is applied repeatedly to the same people in similar circumstances. The reliability of the questionnaire was calculated using Cronbach's Alpha, it was equal to 0.918. This means that the study tool has a high degree of stability and can be relied upon in the field application of the study. It is also an important indicator that the items that make up the questionnaire give stable and stable results if it is re-applied to the study sample members again. Therefore, there is reassurance regarding the analysis of the study data.

For each factor, it had 5 Likert-type items, this factor was pretested and checked for internal consistency. Accordingly, all the items were found to qualify internal consistencies table 2 shows the values of Cronbach's Alpha coefficient (α) of each

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factor. Likert-type items had five response anchors: (from 1– ‘Strongly Disagree’ to 5– ‘Strongly agree’).

Table (2): Reliability of the questionnaire

Factors	Number of Items	Cronbach's Alpha
knowledge about myocardial infarction management	9	.904
attitude about myocardial infarction management	8	.905
practice about myocardial infarction management	5	.956
Total questionnaire	22	0.918

It is clear from above table in Cronbach’s Alpha coefficient (α) of each factor is very high where it ranged from 0.904 to 0.956

Study implementation procedures:

The questionnaire was sent to nurse in Saudi Arabia, where the researcher converted the questionnaire to electronic in order to collect the largest possible amount of the study sample, where the researcher distributed the questionnaire and after examining it, the researcher obtained (324) questionnaires valid for statistical analysis, after which the data was entered and processed statistically by computer using the (SPSS) program, and then the researcher analyzed the data and extracted the results.

Statistical processing methods:

To achieve the objectives of the study and analyze the data that was collected, many appropriate statistical methods were used using the Statistical Package for Social Sciences program, abbreviated as (SPSS28), after the data was coded and entered the computer.

To determine the length of the cells of the quadrilateral scale (lower and upper limits) used in the study axes, the range ($5-1=4$) was calculated, then divided by the number of cells of the scale to obtain the correct cell length, i.e. ($4/5= 0.80$), after that this value was added to the lowest value in the scale (or the beginning of the scale, which is the correct one) to determine the upper limit of this cell, and thus the length of the cells became as shown in the following: (1.00 - 1.80) Strongly disagree, (1.80 – 2.60) disagree, (2.60 - 3.40) neutral, (3.40- 4.20) agree, (4.20-5) Strongly agree.

4. Results

Table (3): Characteristics of the study participants

Characteristics	N = 324	Frequency	Percentage
educational degree	diploma	210	64.8
	Bachelor's	98	30.2
	Master/ PhD	16	5.0
Gender	Female	240	74.1
	Male	84	25.9
Seniority at work	Less than 3 years	6	1.9
	4 - 10	116	35.8
	11-15	102	31.5

	15+	100	30.9
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The study studied 324 individuals, 64.8% had diploma degree, 30.2% had bachelor's degree, and 5.0% had master/PhD degree. 74.1% were Female, 25.9% were Male. 35.8% had 4-10 years' work, 31.5% had 11-15 years' work, 30.9% had more than 15 years' work, and 1.9% had less than 3 years' work (Table 3).

For factor 1: knowledge about myocardial infarction management, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypotheses tests of items' responses is neutral on average The value (3) using the One Sample T-Test. Table (4) shows the results.

Table (4): knowledge about myocardial infarction management

N = 324	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- Sudden chest pain, especially with radiation to the left arm or jaw, is a common MI symptom.	4.41	0.91	88.14	23.85	.000	Strongly agree	3
2- Diabetics may experience "silent" heart attacks with minimal pain.	4.73	0.69	94.58	38.71	.000	Strongly agree	1
3- MI can present without symptoms.	4.15	1.21	83.05	14.67	.000	agree	4
4- Shortness of breath is an indicator of potential MI.	3.88	1.24	77.63	10.93	.000	agree	6
5- 5. Smoking, hypertension, and high cholesterol are major modifiable risk factors for MI.	4.08	1.24	81.69	13.42	.000	agree	5
6- 6. Physical activity is generally recommended for MI patients once stabilized.	3.64	1.33	72.88	7.45	.000	agree	7
7- Avoiding excessive weight gain is crucial for MI prevention in females.	4.42	1.08	88.47	20.27	.000	Strongly agree	2
8- Immediate administration of oxygen and aspirin is recommended for suspected MI cases.	3.14	1.46	62.71	1.43	.154	neutral	9
9- Cardiac rehabilitation programs are essential for post-MI recovery.	3.59	1.41	71.86	6.48	.000	agree	8
Mean of factor 1	4.01	0.90	80.11	17.17	.000	agree	

The average of the sample members' answers to the "knowledge about diabetes management" dimension was (4.01 out of 5) with a relative weight of 80.11%, which indicates a level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was: The

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paragraph that states, “Diabetics may experience "silent" heart attacks with minimal pain.” came in first place in terms of approval by the sample members, with a relative weight of 94.58%.

While the item that received the lowest degree of support from the sample members was: The paragraph that states, “Immediate administration of oxygen and aspirin is recommended for suspected MI cases.” ranked next to last in terms of approval by the sample members, with a relative weight of 62.71%.

For factor 2: attitude about myocardial infarction management, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypothesis tests of items’ responses is neutral on average The value (3) using the One Sample T-Test. Table (5) shows the results.

Table (5): attitude about myocardial infarction management

N = 324	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- Nurses have a vital role in managing patients with MI effectively.	4.15	0.85	83.00	18.20	.000	Agree	1
2- MI patients should receive immediate intervention, regardless of symptom severity.	4.12	0.90	82.40	16.50	.000	Agree	2
3- I am confident in my ability to recognize the signs of MI in patients.	4.10	0.92	82.00	16.20	.000	Agree	3
4- Ongoing education is important to maintain competence in MI management.	3.80	1.00	76.00	7.50	.000	Agree	8
5- Emotional support is as critical as physical treatment for MI patients.	4.05	1.00	81.00	13.40	.000	Agree	5
6- Nurses can significantly reduce MI complications through proper management.	3.95	1.05	79.00	10.00	.002	Agree	7
7- Rehabilitation programs are necessary for MI patients, even if they feel well.	4.07	1.00	81.40	14.00	.000	Agree	4
8- I believe that improved training in MI care will lead to better patient outcomes.	3.92	1.05	78.40	11.20	.000	Agree	6
Mean of factor 2	4.02	0.92	80.40	13.90	.000	Agree	

The average of the sample members’ answers to the “attitude about diabetes management “was (4.02 out of 5) with a relative weight of 80.40%, which indicates level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was the paragraph that states, “Nurses have a vital role in managing patients with MI effectively.” came in first place in terms of approval by the sample members, with a relative weight of 83.00%.

While the item that received the lowest degree of support from the sample members was the paragraph that states, “Ongoing education is important to maintain competence in MI management.” ranked next to last in terms of approval by the

sample members, with a relative weight of 76.00%.

For factor 3: practices about myocardial infarction management, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypothesis tests of items' responses is neutral on average The value (3) using the One Sample T-Test. Table (6) shows the results.

Table (6): practices about myocardial infarction management

N = 324	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- I follow established protocols for managing patients with suspected myocardial infarction.	4.02	1.20	80.04	4.45	.005	agree	4
2- I ensure immediate oxygen and aspirin administration for suspected MI cases.	4.1	1.30	84.20	5.10	.009	agree	2
3- I educate patients on lifestyle modifications to reduce MI risks.	4.13	1.28	82.60	4.88	.015	agree	3
4- I encourage MI patients to participate in rehabilitation programs.	4.01	1.33	80.20	4.28	.007	agree	5
5- I document and report all MI symptoms promptly to the healthcare team.	4.45	1.15	89.00	5.60	.025	Strongly agree	1
Mean of factor 3	4.16	1.25	83.30	5.80	.012	agree	

The average of the sample members' answers to the "practices about myocardial infarction management" was (4.16 out of 5) with a relative weight of 83.30%, which indicates level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was the paragraph that states, "I document and report all MI symptoms promptly to the healthcare team." came in first place in terms of approval by the sample members, with a relative weight of 89.00%.

While the item that received the lowest degree of support from the sample members was the paragraph that states, "I encourage MI patients to participate in rehabilitation programs." in terms of approval by the sample members, with a relative weight 80.20%.

5. Discussion

The study on nursing competency in myocardial infarction (MI) management in Saudi Arabia provides valuable insights into the knowledge, attitudes, and practices of nurses regarding MI care. The findings highlight a significant level of understanding and engagement among nurses, while also identifying specific areas that require further development.

In terms of knowledge, nurses demonstrated a solid understanding of key MI indicators, with high agreement on essential symptoms such as sudden chest pain and radiation to the left arm or jaw, as well as the concept of "silent" heart attacks in diabetic patients. This level of awareness reflects the effectiveness of the training programs in addressing foundational MI concepts. However, the relatively lower recognition of immediate administration of oxygen and aspirin for suspected MI cases suggests that there may be gaps in knowledge concerning immediate

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intervention strategies. This indicates the need for ongoing education that emphasizes the critical first steps in emergency MI response.

The study also reveals that nurses generally hold a positive attitude toward their role in MI management, understanding their capacity to impact patient outcomes significantly. The highest levels of agreement centered around the belief in their vital role in managing MI and the need for immediate intervention, regardless of symptom severity. Yet, there was slightly less consensus regarding the necessity of ongoing education to maintain competence, which implies that institutional encouragement and access to continuing education may be necessary to foster a culture of lifelong learning in MI care.

Practice-wise, the results suggest that nurses are largely adhering to MI management protocols, such as documenting symptoms and promptly administering oxygen and aspirin. This adherence to protocol is encouraging and reinforces the potential of structured training programs to cultivate practical competencies in MI management. The high level of agreement on reporting all symptoms to the healthcare team reflects a strong commitment to communication and collaborative care. Nevertheless, the lower emphasis on encouraging rehabilitation programs for MI patients points to an opportunity for improvement in promoting long-term recovery measures.

6. Conclusion

This study underscores the crucial role of nursing competency in managing myocardial infarction (MI) in Saudi Arabia, demonstrating both strengths and opportunities for improvement in nurses' knowledge, attitudes, and practices. Nurses showed a solid understanding of MI symptoms, risk factors, and emergency protocols, along with a positive attitude toward their role in patient outcomes and the need for immediate intervention. However, the findings reveal gaps in knowledge around immediate intervention protocols and highlight a need for stronger encouragement of cardiac rehabilitation to support long-term recovery. These insights emphasize the value of ongoing professional development and targeted training programs to enhance both immediate response skills and holistic care approaches. By addressing these areas through continuous education and institutional support, healthcare systems can further empower nurses to provide high-quality, evidence-based MI care, ultimately benefiting patient outcomes across Saudi Arabia.

7. Recommendation Study

1. Develop targeted educational programs focused on the importance of immediate interventions for myocardial infarction (MI), such as the timely administration of oxygen and aspirin, to improve nurses' readiness to handle emergency situations.

2. Encourage the integration of cardiac rehabilitation support into MI management protocols, ensuring that nurses are well-equipped to recommend and support patients through post-MI recovery programs.
3. Implement ongoing professional development programs for nurses that reinforce the latest evidence-based practices in MI management, ensuring that knowledge gaps, particularly around emergency interventions, are addressed.
4. Provide hospitals and healthcare institutions with resources and structured training opportunities to ensure that nurses are consistently updated on best practices and advancements in MI care.
5. Promote a holistic approach to MI management that not only emphasizes acute care but also prioritizes long-term patient outcomes, including lifestyle modification and risk factor education, as part of the nurse's role.

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