

ISSN: 2230-9926

#### **RESEARCH ARTICLE**

Available online at http://www.journalijdr.com



International Journal of Development Research Vol. 11, Issue, 09, pp. 50630-50634, September, 2021 https://doi.org/10.37118/ijdr.23039.09.2021



**OPEN ACCESS** 

## ACUTE MYOCARDIAL INFARCTION IN THE CONTEXT OF THE NURSE'S WORK: A REFLECTIVE STUDY

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#### ARTICLE INFO

# ABSTRACT

Article History: Received xxxxxxxx, 2021 Received in revised form xxxxxxxxxxxx, 2021 Accepted xxxxxxxx, 2021 Published online xxxxxxxxx, 2021

Key Words:

Myocardial Infarction; Acute myocardial infarction; Nursing; Nursing care.

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Acute myocardial infarction (AMI) is mainly defined by pain, which occurs with the decrease in blood flow, causing the obstruction of one or more coronary arteries, reducing the arrival of all oxygen that comes in large amounts needed by the heart cells. The nurse is often the first contact of these patients with the health service, thus, they can differentiate the signs and symptoms, suggestive of myocardial infarction, from other cardiovascular emergencies, as time is a key and determining factor for your prognosis. Objectives: Search for scientific evidence produced by nursing in the field of cardiology, aiming to expand nurses' knowledge regarding the immediate identification and care of Acute Myocardial Infarction. Methodology: This is an article reflecting on the scientific evidence that guides the actions used in the management of Acute Myocardial Infarction (AMI) and the dynamics of care performed by the Nurse. Results and Discussion: The study made it possible to raise important questions to answer the concern that emerged, and thus enable the development of practices aimed at the care provided by professional nurses. Patients who seek care in emergency or health units in general want to have their problems resolved immediately, significantly increasing the demand for emergency care in emergency care units. Conclusion: Nursing care and diagnoses raised in the research showed the need to systematize care. It is noted that systematizing care significantly improves routine and care for the family and the patient admitted to the intensive care unit and coronary care unit.

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*Citation: Bruno da Silva Lourenço, Niquelen Bianca Miller França, Leonardo Lima de Moraes dos Reis, Luciana Quagliane Ribeiro et al. 2021.* "Acute Myocardial Infarction in the context of the nurse's work: a reflective study.", *International Journal of Development Research*, 11, (09), 50630-50634.

# **INTRODUCTION**

The professional nurse is responsible for providing information, education and training for the local population of the unit where he/she works and for training to act with technical-scientific, ethical and humanistic competence in the care of people with myocardial ischemia, aiming to reduce pre- -hospital intervening in primary and secondary prevention (Mussi, Sampaio, 2009). It is estimated that acute myocardial infarction (AMI) remains the first isolated cause of death among chronic non-communicable diseases, with a proportional mortality rate of 9.1% in 1998 and 6.7% in 2009 (Pesaro, Serrano, Nicolau, 2014). AMI is the cellular necrosis of the cardiac musculature resulting from the imbalance between the supply of oxygen and blood nutrients and the physiological needs of the myocardium itself.

The vascular supply of the cardiac musculature is carried out by a set of coronary arterial vessels originating from the base of the aorta artery (Alves et al., 2013). In this sense, the nurse must have complete control over the signs and symptoms most present in AMI, which are intense precordial pain in tightening or crushing, pain radiating to the left upper limb, neck and/or jaw, and, occasionally, nausea, vomiting (Pesaro, Serrano, Nicolau, 2014). On physical examination, one may also notice the presence of a heartbeat with B3, B4 and the recent onset of a murmur. When AMI causes heart failure, increased venous distension occurs. Blood pressure may be elevated due to sympathetic stimulation or decreased due to decreased contractility, impending cardiogenic shock or medications (Alves et al, 2013). Early diagnosis is a key factor in reducing mortality and possible sequelae for the patient (Mansur et al., 2006). During the emergency approach to the user who presents symptoms and clinical signs suggestive of AMI, an organized and systematized history must be carried out in order to ensure comprehensive and individualized care for the subject. From this, it is plausible to build a care plan during the acute phase of the disease, so that it meets all basic human needs such as oxygenation/ventilation, circulation, perfusion, comfort and pain control, safety, psychosocial aspects and spiritual, among others subjective to each individual, thus aiming to reduce prehospital delay, intervening in primary and secondary prevention (Sampaio, Mussi, 2009). Nurses often face situations in which they need to make decisions about referring patients with chest pain to specialized services and exams. The evaluation of patients with chest pain should be performed through the clinical history: onset of pain, location, intensity, irradiation, duration and relief. It is essential to assess breathing and circulation to visualize signs of perfusion, level of consciousness and vital signs (Alves et al, 2013). The nursing team remains at the patient's side full time, who must be able to identify the factors that favor the development of acute myocardial infarction (Pereira, Cavalcante, Santana, 2011). According to Fontana et al (2011), another constant concern is the inefficiency of the public service, such as poor working conditions, equipment in poor conditions, lack of support services, system overload such as overcrowding and insufficient number of beds.

Historically, there are conceptual and practical distortions of care in the Emergency Room, as many users seek care without urgent or emerging needs. This has made the demand grow too much, consequently the waiting time increases, harming individuals who need immediate care (Silva *et al*, 2011). In view of these facts and discussions mentioned above, the intention of this research was to further discuss this topic, addressing it in a way that aims to help health professionals, significantly contributing to the reduction of complications resulting from AMI, bringing relevant publications on the subject. Thus, this study aims to seek scientific evidence produced by nursing in the field of cardiology, aiming to expand nurses' knowledge regarding the immediate identification and care of Acute Myocardial Infarction.

### **METHODS**

This is an article reflecting on the scientific evidence that guides the actions employed in the management of Acute Myocardial Infarction (AMI) and the dynamics of care performed by nurses. For this reflection, we opted for a study based on secondary sources of literature relevant to the subject, considering articles from national and international journals available in the scientific databases SciELO, Medline and Lilacs. Thus, it will make it possible to discuss the development or the 'state of the art' of the subject on screen, from a theoretical and conceptual point of view. Discussing issues that guide the care of patients with AMI will be of great importance so that nursing care is more qualified and the assisted patient receives everything necessary for their effective improvement of the condition.

## **RESULTS AND DISCUSSION**

Coronary Syndromes in the Emergency Scenario: Acute coronary syndromes (ACS) are characterized by an imbalance between the supply and consumption of oxygen and energy substrates by the myocardial cell. This results in ischemia of the myocardial tissue and, depending on the time of ischemia, necrosis. For this reason, early recognition and treatment are extremely important in this situation (Hamm et al., 2011). ACS represent the most severe manifestation of Coronary Artery Disease. The rupture or erosion of an unstable atherosclerotic plaque, determined by a series of complex mechanisms not yet fully understood, allows direct contact of thrombogenic elements contained within the lipid interior of the plaque with circulating platelets and coagulation factors, triggering a thrombotic response through two distinct pathways, in the first, the exposure of the subendothelial matrix promotes adhesion of circulating platelets to the interstitial collagen, culminating in the activation and formation of platelet thrombi (Nicolau et al., 2007). In the second, which occurs simultaneously with the formation of a platelet thrombus, the presence of tissue factor in the systemic

circulation activates the coagulation cascade, promoting greater thrombin synthesis, which provides greater stability to the thrombus (Hamm et al., 2011). Finally, intra-arterial thrombus formation leads to total or partial occlusion of the coronary arteries, with or without concomitant vasoconstriction, causing a severe and abrupt reduction in blood flow. Involving atheromatous plaque rupture, endothelial injury and inflammatory cascade, it has been considered the key element of pathophysiology (Bassand et al., 2008). ACS can also have atherosclerotic etiology, such as dissection, arteritis, congenital anomalies, myocardial bridge, cocaine abuse, Takotsubo syndrome stress-induced cardiomyopathy, (also called Takotsubo cardiomyopathy, or even broken heart syndrome) or complications of cardiac catheterization. It should also be remembered that clinical conditions are secondary causes of ACS, such as: severe anemia, sepsis, systemic inflammatory response syndrome (SIRS), hyperthyroidism, hypoxemia. (Hamm et al., 2011). The diagnosis of ACS is based on the clinical picture, changes in myocardial injury markers (troponin and CK-MB) and electrocardiographic changes (Santos et al., 2011). Regarding myocardial injury markers, troponin is the marker with the greatest sensitivity and specificity. Its rise and/or fall reflects damage to the myocardial cell. In patients with acute myocardial infarction (AMI), the elevation of troponin occurs approximately 4 hours after the onset of symptoms and may remain elevated for up to two weeks (Villela et al., 2012). According to the Brazilian Society of Cardiology AMI is the necrosis of myocardial cells due to inadequate oxygen supply to the heart muscle. It is caused by a reduction in coronary blood flow of sufficient magnitude and duration not to be compensated by organic reserves leading to ischemia and consequently necrosis (Piegas et al., 2009).

Acute ST-segment elevation myocardial infarction (STEMI) is the most severe event of ACS due to its high mortality impact. About 5% to 9% of patients end up evolving with cardiogenic shock and in this situation, mortality reaches 70%. The total occlusion of coronary arteries is the triggering factor most of the time, for this reason the primary objective in this situation is reperfusion therapy, pharmacological or mechanical depending on the context presented (Nicolau et al., 2007). The time of onset of symptoms is fundamental for the decision regarding the care to be provided. Patients with onset of clinical presentation and ST-segment elevation or presumably new left bundle-branch block within 12 hours should be referred for reperfusion therapy, either mechanical or pharmacological immediately (Piegas et al., 2009). Performing the ECG is also a very relevant procedure. If the patient presents dyspnea, immediately install oxygen therapy with a nasal catheter at 3 l/min only in the first three hours. Persist with O<sup>2</sup> only in patients with O<sup>2</sup> saturation below 90% (Mansur et al., 2006). It is of great importance that nursing is involved in all stages of care for patients with AMI, from entering the service to rehabilitation, however, there is still little knowledge produced by nurses in identifying and assisting AMI. In addition to reperfusion in AMI, it is essential that nurses have knowledge about the thrombolytics used, their mechanism of action and their adverse effects, in order to develop a plan of care, based on scientific knowledge that makes it possible to assist individuals in their particularities (Alves et al., 2013).

Difficulty in patient access to the emergency unit: It is known that the importance of coronary artery recanalization in the evolution of AMI with ST elevation directly depends on the recognition of signs and symptoms by patients and on the quick search for an emergency service. However, evidence shows that numerous factors are attributed to delays in seeking an emergency service (Franco et al., 2008). Many health users are unaware of the signs and symptoms of AMI, leading to a delay in the intervention of the pathology and, consequently, an increase in the probability of death and sequelae due to this delay in the start of treatment, as can be seen in studies subsequent ones. Bastos et al. (2012) highlights the importance of the time elapsed between the first symptoms of AMI until its care in an emergency service (delta T), justifying this conduct by the need for immediate reperfusion interventions, aimed at restoring the coronary blood flow, thus collaborating to increase the survival of these patients.

The studies presented show the importance of the length of care for patients with AMI, in which every minute lost becomes lifethreatening for them. It recommends that the time from the onset of symptoms to arrival at the hospital does not exceed two hours, with reperfusion with thrombolytics being indicated for six hours from the onset of symptoms and for primary angioplasty the time of 90 minutes. The study showed a median of 04h 30min from onset of symptoms to hospital care (Figueiredo et al., 2013). In the study by Franco et al (2008), it was found that the delta T had a median of 3h11min, which is not similar to the study by Figueiredo et al (2013), which showed in this research the comparison of the onset time of symptoms until hospital admission across four countries. It was found that the median delta T in the USA was 3h50min, in South Korea it was 4h40min, in Japan it was 4h50min and in England it was 2h50min. The delta T found in the research by Bastos et al. (2012) was  $9h54min \pm 18h9min$ , much higher than that reported in the study by Franco et al. (2012) and Figueiredo et al (2013). This fact can be explained by the occurrence of 84.61% of patients coming from other cities and by 26.92% of them having self-medicated before seeking the health service. However, observing the total number of patients residing in other locations, it was found that 31.8% of them are from the neighboring city, which is approximately 16 minutes by car from the studied emergency service.

A study carried out in Rio de Janeiro, involving patients diagnosed with AMI with ST-segment elevation (SST), showed that 67.7% arrived at the emergency room three hours after the onset of the first symptom and 8.4% after 12 hours. Another study carried out in Rio Grande do Sul showed that 88% of patients with AMI and SST sought emergency services within an hour, the average being from 3h59min to 2:55min. People who did not perceive chest pain as a cardiac event took longer to reach the health service than those who identified it (Bastos et al, 2012). These times, described in scientific studies, are still beyond those recommended by American Heart Association guidelines. A relevant finding to be discussed was the means of transport used by patients. Those who used the ambulance had a longer mean time compared to others, contradicting other studies in which the mean times from pain onset to presentation to emergency services were shorter. In addition, often the ambulance first transfers the patient to the nearest service, which is not necessarily specialized and does not have recommended resources for the care of patients suffering from AMI (Franco et al, 2008). As for Bastos et al (2012), the delta T of patients referred by ambulance was lower than those transported by car. This fact can be explained by the fact of looking for other health services, with a high delta T. As for the patients who called for an ambulance, the majority first sought other health services and, upon the presence of symptoms suggestive of AMI, the professionals of these establishments referred them to the emergency department for diagnosis and treatment. Another determining factor for the delay in seeking an emergency service, increasing the delta T, was the use of previous medications during chest pain crises. It was observed that most of the studied sample, with a previous history of AMI, performed self-medication (Franco et al, 2008).

For Bastos et al. (2012) it was found that patients with chest pain and irradiation to the MSE, epigastric region or chest discomfort had higher delta T when compared to those who reported these symptoms together with dyspnea and sudden sweating. Even though there is no significance between this finding, it can be said that patients with a greater number of symptoms sought the emergency service more quickly than those with mild or moderate symptoms. Three of the eight patients who were not aware of AMI symptoms took more than two hours to seek help, results similar to the study conducted in Pakistan in which patients' lack of knowledge about AMI symptoms increased by 1.82 times the chances of delays in seeking help. medical assistance and patients with delta T greater than six hours reported not having prior information about AMI symptoms (Figueiredo et al, 2013). Recognizing the signs and symptoms of AMI or having already gone through a previous experience of arterial disease significantly decreases delta T. The association between previous coronary artery disease (CAD) and symptoms present at admission were present in 71.43% of patients, suggesting that they were aware of such symptom and, therefore, arrived at the emergency service more quickly. Patients who believe their symptoms are related to their heart seek help more quickly than those who attribute their symptoms to other causes (Bastos et al, 2012). Patients who claimed to have knowledge about AMI symptoms were asked about the source of information. Most reported receiving this information in a hospital environment (Figueiredo et al, 2013). It was observed that time has a direct influence on the choice of treatment after the patient's hospitalization. Thus, it is possible to say that patients who are delayed in receiving specialized care have a worse prognosis when compared to those who receive treatment quickly. In this study, most patients progressed to hospital discharge and only two (3.85%) died. Comparing with the lethality of other studies, this was lower than the rates found (9.5% and 4.8%) (Bastos et al, 2012). Among the functions of nursing, educational practice emerges as the main health promotion strategy. Considering that the sick individual usually faces this stage of life with the presence of a family member, they should also be involved in aspects related to health education. Thus, the importance of the role of nurses is highlighted, as one of the main mediators of the teaching-learning process aimed at promoting health, focused on raising awareness of signs and symptoms of imminent cardiovascular events and valuing the immediate search for specialized care (Franco et al, 2008). Studies emphasize that the discussion of time plays a prominent role in nursing care for clients, who are generally exposed to a greater risk of death within the first hour after the onset of symptoms, therefore, before arrival at the hospital. The time interval between symptoms and care is a key factor for patient survival.

The vast majority of deaths occur within the first hour of the evolution of this pathology. Considering relevant the benefit of the use of therapy with thrombolytics and time dependent. Delay in the treatment of patients with suspected AMI is a determining factor to minimize the chances of survival. Difficulties in accessing the emergency service is also another critical factor, as they contribute to increase the time elapsed until admission, and consequently, contributing to an increase in lethality. The delay in choosing transport to get to an emergency unit is also linked to the fact that the patient does not recognize the characteristic signs and symptoms of AMI. The health education carried out by the nursing team has an extremely important role, since the nurse has the role of health education, guiding the population regarding disease prevention and also clarifying the characteristic signs and symptoms. Addressing the proper use of means of transport in the face of an acute myocardial infarction is also a role of nursing. Thus, with the combination of these factors, the chances of sequelae and deaths decrease. It is important to direct society's attention to the mobile emergency care service, as it favors society better mobility and technological apparatus available in the existing mobile unit, but the care of these professionals must be improved so that the user has the care in an adequate unit.

The pain of the patient with symptoms of infarction: The person with chest pain is usually taken by surprise when symptoms appear. Excluding, of course, patients with Coronary Artery Disease and using systematic medication. The intensity of the symptoms causes certain apprehension in the person and countless questions that lead to mental and cognitive organization to seek understanding of the situation (Araújo & Marques, 2007). Pain is symbolically related to suffering. The suffering that accompanies this pain seems to permeate the social imagination, determining itself based on a schematic dualism, separation and idealizations about the two genders in which, at a given moment, female and male conditions identify themselves stronger or weaker, from according to the tasks, roles and social positions constructed and assumed in their respective spaces of community relations (Mussi & Pereira, 2010). Based on the speeches not only from the research by Mussi and Pereira (2010), but also from the study by Araújo and Marques (2007), it is possible to show that the family also has an important meaning for the person, as it generates at this moment an extra factor. of worry. This may be a factor that contributes to increased adrenergic discharge, which may

result in increased myocardial work and, consequently, increased oxygen consumption, generating increased pain. The increase in both oxygen consumption and pain can extend the infarcted area and lead to further complications, such as ventricular arrhythmias, low cardiac output due to left ventricular failure and/or cardiogenic shock (Araújo & Marques, 2007). It is extremely important for the team working in the emergency room, giving greater emphasis to the professional nurse, that professionals know how they are seen by the patient in the moment of their distress, at the moment they receive care during the peak of AMI symptoms. With this perception, the professional can devote some time to attend to aspects related to the patient's psychospiritual needs as well (Araújo & Marques, 2007). Pain has been valued in recent years and many authors consider it the fifth vital sign. Measurement scales were created and validated in order to quantify and qualify pain, and are widely used, although pain is characterized as a subjective, individual phenomenon influenced by sensitive and emotional elements (Paim, Azzolin, Moraes, 2012).

It was observed in the study by Gouvêa et. al. (2015), that the population of the municipality surveyed knew how to recognize the vocation of the reference hospital for the care of patients with heart problems, as it was the most sought after environment for care (71.2%) and a higher proportion of critically ill patients (61.3% of patients with infarction) and with a history of coronary artery disease (88.9%), when compared to care in other emergency services, diverging from other studies. According to Caveião et al. (2014), in relation to care, all nurses participating in the study reported prioritizing the care of patients who complain of chest pain and perform the nursing assessment in these situations. In the category Using a new protocol, nurses evaluated the use of the instrument, addressing the positive and negative aspects. Regarding the positive aspects, all reported that the use of the protocol provided better conditions to lead to therapy and care for patients with chest pain. The instrument used provided priority in the care of ACS and AMI, provided a clearer identification of risk factors, and was easy to apply (Vieira et al, 2016). The STM method suggests that the maximum waiting time between arrival at the emergency unit and risk classification does not exceed 10 minutes. In this study, the average time for classification was 12.2 minutes, being significantly longer in hospitals (14.7 minutes) when compared to emergency care units (5.9 minutes). In another study, 82.2% of patients were classified in less than 10 minutes. There is also a reference in the literature of an average waiting time for risk classification of 5 minutes. (Gouvêa et al, 2015). Professional training, dedication and theoretical and practical knowledge make the difference in patient care. When the team is trained, empowered and motivated, care is provided more quickly and agilely, which consequently generates adequate and quality patient care (Caveião et al, 2014). The wait for screening observed in this study was longer than those found in the literature. A study carried out in the United Kingdom suggests that the participation of the nurse responsible for the triage, with the execution of other activities in the emergency unit, may be related to longer waiting times. There is a clear need to implement a protocol to assess and classify chest pain, as when the nurse indicates the ECG after the risk classification, it speeds up the process and avoids delaying the diagnosis. Confirming this need, the Brazilian Society of Cardiology considers it essential that the diagnosis of AMI through the ECG is carried out within 10 minutes of the patient's arrival, the golden time for the beginning of the appropriate therapy. Thus, as the protocol is institutionalized, the roles of the health team members are well defined and supported. Due to the relevance of chest pain, its social and economic importance, studies related to the construction of nursing protocols are still scarce, especially in the case of acute emergency situations and, particularly, for ACS, which justifies the deficient analysis of data regarding the role of nurses in relation to patients with this symptomatology in emergency services (Vieira et al, 2016). Patients classified as high priority were associated with 39 times greater probability of dying than those with low priority. Additional efforts are needed so that the risk classification is disseminated in the assistance and specific care protocols are developed or implemented to ensure adequate care for serious conditions.

This will enable not only the rationalization and improvement of care for patients treated in emergency units, but also the substrate for further research on the subject. Health institutions must make efforts to provide conditions and demand that professionals comply with the established time for both risk classification, ECG performance and medical care. Only then will users obtain all the benefits of the MTS, especially those with greater risk, in order to ensure more efficient and effective care (Gouvêa et al, 2015). It is worthwhile to report that the ECG, capillary blood glucose and StO2 are extremely important and should be performed by professional nurses, in order to speed up care. Mistakenly, nurses do not even inspect and measure those mentioned above in pre-service. It ends up letting slip reversible situations. There is also a shortage of professionals, not due to a lack of professionals in the market, but the lack of hiring, which ends up overloading the professionals in the emergency care unit. Manchester's classification is complete, however it is very extensive. This increases the service time and harms others waiting for service. A standardized classification can be carried out, without using the orange color for that. The studies highlighted the need for the existence of a protocol even today. Working with protocols helps to support and streamline the care of patients affected with a heart attack. Having a protocol for each situation is important and serves as a guide in the emergency care units.

## CONCLUSION

Throughout the work, the importance of the nurse in the emergency care unit was verified. The work performed by nursing in risk classification, the relevance of the care offered to patients with signs and symptoms suggestive and confirmed of AMI and the existing diagnoses for this pathology. The study made it possible to raise important questions to respond to the concern that emerged, and thus enable the development of practices aimed at the care provided by professional nurses.Patients who seek care in emergency or health units in general want to have their problems resolved immediately, significantly increasing the demand for emergency care in emergency care units. The nurse who works in an emergency care unit must be able to carry out an assessment in the risk classification. However, it is extremely important that you be offered training for possible situations involving other pathologies with symptoms similar to those of acute myocardial infarction. Mastering the health protocol and immediate actions that need to be taken is extremely important for the nursing team, as it helps to minimize the chances of sequelae and death of patients affected by AMI and also supports the organization of the work of the nursing team. It is believed that it has been possible, during this research, to mainly provide nurses with an understanding of the importance of knowing more about the pathophysiology of AMI and existing protocols, so that when faced with a case of AMI, they can know how to deal with the framework and what are your skills as a professional nurse. By identifying the scientific evidence, analyzing the factors addressed by these same evidences and proposing the necessary interventions for patient care by nurses, scientific articles produced by nursing in the field of cardiology were sought, regarding the immediate identification of Acute Myocardial Infarction and your care. Studies have shown that professionals should publish more about their experience and the use of their unit's protocols for correct and fast functioning in cases of coronary artery disease. The creation of the care network, the insertion of illustrative protocols addressing the main signs and symptoms and actions that need to be taken immediately, are techniques that can improve nursing care, in order to contribute to reducing the number of deaths from AMI. The training of nursing professionals is also something that should be sought, improved and encouraged so that there is user and worker satisfaction in the health unit. Therefore, we defend that it is necessary to expand the knowledge surrounding the conduct to be followed in the face of a case of infarction in the emergency, coronary and intensive care unit, carrying out studies that seek the circumspection of nurses in face of the infarcted patient in the emergency care unit: an integrative review, actions to be followed and ways to facilitate access to and care for the

client in need of care and correct identification of the presented symptoms.

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