Nursing care process for patients with acute myocardial infarction: a case study

Proceso de atención de enfermería en paciente con infarto agudo al miocardio: estudio de caso

Processo de cuidados de enfermagem em doentes com enfarte agudo do miocárdio: um estudo de caso

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Abstract

Introduction: Coronary heart disease (CHD) is the leading cause of death worldwide due to non-communicable disease risk factors such as sedentary lifestyle, smoking, poor stress management, dietary habits and others; these modifiable factors could slow the progression of the disease. **Objective:** To design and evaluate a nursing care process for a patient with acute myocardial infarction admitted to a hospital in Chihuahua, Mexico, in order to provide timely and efficient care in addition to high quality care, during his hospital stay to improve his future quality of life. **Methodology:** Case study of a 37-year-old male with acute myocardial infarction and a history of hereditary hypercholesterolemia. Care was planned by nursing assessment with a focus on functional health patterns, using nursing taxonomies to develop diagnostic labels, expected

outcomes and nursing interventions. Prior informed consent was obtained, and anonymity was maintained. **Results:** The diagnostic labels, that is, acute pain, decreased cardiac output and risk of decreased cardiac tissue perfusion provided the following outcomes: pain, adverse psychological response, cardiac pump effectiveness and cardiac tissue perfusion. The main interventions that gave effective results in meeting patient needs were acute pain management, arrhythmia management and thrombolytic therapy. **Conclusions:** The creation of care plans based on the use of evidence-based taxonomies that allow critical thinking about the needs and physiological responses of the patient with this pathology is essential.

Keywords: Myocardial infarction; Nursing care; Emergency department; Taxonomy (DeCS).

Resumen

Introducción: La enfermedad coronaria representa la principal causa de muerte en el mundo como consecuencia de los factores de riesgo para las enfermedades no transmisibles, como sedentarismo, tabaquismo, mal manejo del estrés, hábitos alimenticios, entre otros; estos factores modificables podrían frenar el avance de la enfermedad. **Objetivo:** Diseño y evaluación de un proceso de atención en enfermería a paciente con infarto agudo de miocardio en un hospital de Chihuahua, México, para ofrecer atención oportuna, de calidad y eficiente durante su estancia hospitalaria para mejorar su calidad de vida futura. **Metodología:** Estudio de caso en masculino de 37 años con infarto agudo al miocardio, con antecedentes de hipercolesterolemia familiar, mediante valoración de enfermería con enfoque de patrones funcionales de salud, se planificó el cuidado a través de las taxonomías de enfermería para la elaboración de etiquetas diagnósticas, resultados esperados e intervenciones de enfermería, previo consentimiento informado y respeto de anonimato. **Resultados:** Las etiquetas diagnósticas dolor agudo, disminución del gasto cardíaco y riesgo de disminución de la perfusión tisular cardíaca, proporcionaron los resultados: dolor: respuesta psicológica adversa, efectividad de la bomba cardíaca y perfusión tisular: cardíaca, las principales intervenciones efectivas ante las necesidades del paciente fueron: Manejo del dolor: agudo, manejo de la arritmia, y terapia trombolítica. **Conclusiones:** Es indispensable la creación de planes de cuidados bajo el uso de taxonomías fundamentadas, los cuales permiten el pensamiento crítico de las necesidades y respuestas fisiológicas del paciente que presenta esta patología.

Palabras clave: Infarto al miocardio; Atención de enfermería; Urgencias; Taxonomía (DeCS).

Abstrato

Introdução: A doença coronária representa a principal causa de morte no mundo, como consequência de factores de risco de doenças não transmissíveis, tais como o sedentarismo, o tabagismo, a má gestão do stress, os hábitos alimentares, entre outros; estes factores modificáveis poderiam retardar a progressão da doença. **Objetivo:** Concebemos e avaliámos um processo de cuidados de enfermagem a um doente com enfarte agudo do miocárdio num hospital de Chihuahua, México, a fim de fornecer atendimento oportuno e eficiente, além de atendimento de alta qualidade, durante sua internação hospitalar para melhorar sua qualidade de vida futura. **Metodologia:** Estudo de caso de um homem de 37 anos de idade com enfarte agudo do miocárdio, com antecedentes de hipercolesterolemia familiar, através da avaliação de enfermagem com enfoque nos padrões funcionais de saúde, os cuidados foram planeados através de taxonomias de enfermagem para o desenvolvimento de rótulos diagnósticos, resultados esperados e intervenções de enfermagem, com consentimento prévio informado e respeito pelo anonimato. **Resultados:** Os rótulos de diagnóstico,

ou seja, dor aguda, diminuição do débito cardíaco e risco de diminuição da perfusão do tecido cardíaco, forneceram os seguintes resultados: dor, resposta psicológica adversa, eficácia da bomba cardíaca e perfusão do tecido cardíaco. As principais intervenções que foram eficazes para atender às necessidades dos pacientes foram: controle da dor aguda, controle da arritmia e terapia trombolítica. **Conclusões:** É fundamental a criação de planos de cuidados baseados em taxonomias que permitam um pensamento crítico sobre as necessidades e respostas fisiológicas dos doentes com esta patologia.

Palavras-chave: Enfarte do miocárdio; Cuidados de enfermagem; Emergência; Taxonomia (DeCS).

Introduction

Ischemic heart disease is the leading cause of death worldwide, accounting for 16 % of all deaths. In 2019 [1], 8.9 million of these deaths were reported, an increase since 2000, when it was 2 million, according to the World Health Organization (WHO) [2]. In Mexico, there were more than 1,100,000 deaths in 2021 [3], of which 220,000 were due to heart disease, 78 % of which were due to acute myocardial infarction (AMI). These figures could be reduced through a culture of prevention and awareness of risk factors. Data from the National Institute of Statistics and Geography (INEGI) for 2022 [4] show that every 4.3 minutes a person dies from an AMI, which is the main cause of healthy life years lost due to premature death and disability. Currently, according to preliminary figures from INEGI, for the period January to March 2024, heart disease is the leading cause of death in Mexico, accounting for 27 % of deaths, also leading in the state of Chihuahua and in other mexican states [5].

AMI is the most severe form of ischemic heart disease, often caused by atherosclerosis. It is characterized by necrosis of cardiac tissue due to prolonged ischemia caused by an abrupt reduction in coronary blood flow affecting the myocardium [6-8]. It is clinically manifested by an oppressive and intense precordial pain [9] lasting 20 minutes or more, which may radiate to the left arm, jaw or abdomen. Electrocardiographic changes, with or without ST-segment elevation, may also occur,

affecting the therapeutic approach, together with changes in cardiac biomarkers such as troponins, dyspnea and, to a lesser extent, syncope [10-11].

In the case of AMI with ST segment elevation (AMISTE), complications depend on the ischemia time and the efficacy of reperfusion treatment [9-11]. Risk factors include modifiable risk factors such as non-communicable diseases ([NCD], hypertension, diabetes mellitus), smoking, dyslipidemia, overweight or obesity, poor diet and sedentary lifestyle, and non-modifiable risk factors such as sex, which is more common in men under 45 than in women, and family history, such as hereditary hypercholesterolemia [12-14].

Early recognition of the signs and symptoms of AMI is essential to ensure prompt treatment, reduce complications and improve patients' future quality of life. The Nursing Care Process (NCP) [15] is fundamental to the care of patients with AMI as it provides a structured five-step approach: assessment, diagnosis, planning, implementation and evaluation. Tools such as Margory Gordon's Functional Health Patterns (FHP) [16] and the North American Nursing Diagnosis Association (NANDA) taxonomy [15] are used to identify needs and diagnoses, prioritize care using Current State Outcome Assessment (AREA model in Spanish) [17], and identify goals using Nursing Outcomes Classification (NOC) [18] and interventions using Nursing Interventions Classification (NIC) [19]. This comprehensive process aims to provide timely and efficient care, improve the patient's quality of life, and facilitate recovery and social reintegration. In this case study, an NCP was designed and evaluated for a patient with AMI admitted to a hospital in Chihuahua, Mexico, in order to provide timely, quality and efficient care during his hospital stay and to improve his future quality of life. The importance of multidisciplinary work and family support to facilitate the patient's social reintegration was highlighted.

Methodology

A clinical case was carried out, based on the scientific method of nursing care practice, i.e. the NCP [16], with the support of the assessment of the Gordon's 11 FHP [17], which made it possible to obtain information about the patient's state of health; Subsequently, nursing diagnoses were made according to the NANDA taxonomy [16], using the AREA Model to rank the diagnostic labels with the highest priority, (Figure 1).

Figure 1. Critical thinking network using the AREA Model, 2024.
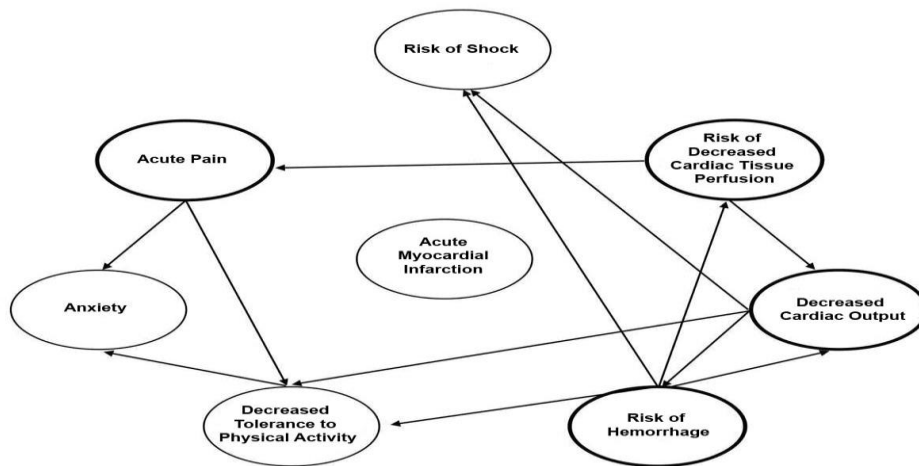
Source: Own development

Subsequently, the nursing objectives were selected according to the NOC taxonomy [18] and interventions using the NIC [19] to determine the expected outcomes according to the activities performed. The data collection was carried out in accordance with the regulations of the mexican general health law on health research [20], with prior informed consent as stipulated in Article 21, with the anonymity and privacy of the persons being treated protected at all times as stipulated in Article 16 and considered low-risk research as stipulated in Article 17.

Case presentation

The patient was a 37-year-old male, married, father of three children, on whom his family is financially dependent because he is the only worker. Family history: his father died of AMI, his mother has hereditary hypercholesterolemia, he is the youngest of three brothers, one of whom has

had two AMI, and he also has a history of hereditary hypercholesterolemia. Personal history of 3 previous AMI with placement of 7 stents, 2 stents in the first percutaneous coronary intervention (PCI) in the anterior descending and first diagonal arteries, 3 stents in the second infarction, restenosis of the first diagonal and circumflex arteries and in the last AMI presented 2 years ago with placement of 2 stents in the right coronary artery. Although familial hypercholesterolemia was diagnosed 6 years before, he reported no other diseases.

The clinical signs began when he was exercising. He showed oppressive pain in the precordial area radiating to the left arm and jaw and, being familiar with the symptoms, he sought medical attention. In order to receive the initial assessment, he had to be taken by ambulance to a public hospital in Chihuahua. The above-mentioned symptoms occurred along with profuse diaphoresis, where he vomited twice with gastrointestinal content. During the examination the patient had the following vital signs: Heart rate of 117 beats per minute (bpm), respiratory rate of 27 breaths per minute (rpm), oxygen saturation of 91 %, blood pressure of 140/90 mmHg, temperature of 35.5°C, electrocardiogram (ECG) results showed ST segment elevation and code red (emergency and immediate care) was activated. The laboratory results showed a troponin of 1071.4 ng/ml, coagulation times with prothrombin times (PT) of 11.9 seconds, partial thromboplastin time (PTT) of 29.50 seconds, international normalized ratio (INR) of 1.04, hemoglobin 14 g/dl, hematocrit 40%, potassium 4.5 mmol/L, total cholesterol 700 g/dl, low density lipoprotein (LDL): 400 mg/dl, triglycerides 300 mg/dl. The physician was looking for previous diseases and allergies, which were denied. Antiplatelet therapy was started with acetylsalicylic acid 300 mg orally and clopidogrel 300 mg orally, enoxaparin 20 mg intravenously (IV) and 20 mg subcutaneously (S.C.), fibrinolytic therapy with tenecteplase 40 mg bolus, buprenorphine 150 mcg (IV) and ondansetron 8 mg (IV). After fibrinolytic treatment, reperfusion was observed by ST segment depression on the ECG.

Evaluation by interventional cardiology was requested and therefore the patient was referred to the hemodynamic unit for PCI.

During the PCI, a total occlusion with stent restenosis in the anterior descending artery and ulcerated plaque in the obtuse marginal artery was seen, so a stent was placed over the stent in the anterior descending artery to optimize flow, and another stent was placed in the obtuse marginal ulcerated plaque. The procedure was completed without complications, the patient was notoriously distressed since this was his fourth cardiovascular event, and a discussion was held with him and his family about treatment alternatives for his underlying diagnosis.

The following is the Marjory Gordon's FHP assessment:

Perception and Health Management Pattern: He referred to acceptance of his illness, mentioned having suffered 3 previous acute myocardial infarctions with placement of 7 stents, the diagnosis of the underlying pathology was made 6 years ago, for this reason he had a healthy lifestyle, physical activity 5 to 6 times a week, aerobic and anaerobic exercise, he complied in time and form with the treatment established by the cardiologist. He expressed concern for his family, his children, his father and his future as his condition makes him susceptible to acute myocardial infarction. The established treatment has not helped to maintain LDL cholesterol levels within normal parameters and the treatment to be followed is a drug that is not available at the second level hospital at the moment.

Nutritional and Metabolic Pattern: He presented with a weight of 80 kg, height of 1.78, body mass index (BMI) of 25.2 kg/m2. He had a good diet with a balanced intake of all food groups. He presented with vomiting of gastro-biliary contents in the gymnasium where he started with symptoms and another on arrival at the hospital unit, complete dentition according to his age, soft abdomen with peristalsis present. He remained fasting on the first day when the percutaneous

coronary intervention was performed. He did not report any food allergies or intolerances during the assessment.

Elimination Pattern: When admitted to the hospital with profuse diaphoresis, 30 minutes after admission he presented spontaneous urination in a urinal with a volume of 300 ml of amber color.

Activity and Exercise Pattern: He had the capacity for independent self-care with limited activity and exercise patterns due to the pain and instability he was experiencing, his resting habits had changed, he reported that he could not rest due to his symptoms. He was weak in his upper and lower limbs. He had a respiratory rate of 26 rpm, dyspnea on minimal exertion, and saturation of 92 % without supplemental oxygen. Auscultation revealed ventilated lung fields with vesicular murmurs at the apices and bases. The patient had a symmetrical chest, heart rate 117 bpm, blood pressure 140/95 mmHg, decreased distal pulses, arrhythmic central pulses, no edema, capillary filling >2 seconds and chest pain. Electrocardiogram results showed ST segment elevation in leads DI, aVL, V3, V4 and V5.

Sleep and Rest Pattern: He reported no difficulty falling asleep, sleeping for 8 hours at a time, taking naps when he had the opportunity. He worked in the mornings and went on vacation once a year. He denied the use of stimulant drugs.

Cognitive and Perceptual Pattern: On the neurological level, the patient obtained a Glasgow Scale score of 15 points, oriented in his three spheres, reported feeling anxious and fearful, his vision was not altered, with normal hearing, without language barriers, he reported oppressive pain in the chest with an intensity of 7 on a pain analogue scale.

Self-Perception and Self-Concept Pattern: The patient expressed hopelessness and uncertainty about his current state of health.

Role and Relationship Pattern: The person was married, living with his wife and three children; so, due to his hospitalization his role as a provider changed. However, he counted on a strong family and friends support network.

Sexuality and Reproductive Pattern: The patient reported that he had never had a testicular or prostate examination. He had 3 minor children.

Adaptation and Stress Tolerance Pattern: He showed that he was under constant stress due to his current condition, found it difficult to control his stress and refused to seek psychological help. Whenever he experienced an AMI event, he was very anxious and uncertain, fearful, apprehensive, worried and anxious.

Values and Beliefs Pattern: The person was an individual dissatisfied with his life; he said he could not visualize a near future and was worried about dying and leaving his family; moreover, he belonged to the Catholic religion.

Results

In the nursing assessment, guided by the FHP and the AREA Model, the diagnostic labels found were prioritized to provide solutions to the actual or potential problems presented by the patient. Initially, alterations in the cognitive and perceptual pattern were identified, which had a direct impact on the pattern of adaptation and tolerance to stress, sleep and rest, self-perception and self-concept, due to the family history of hypercholesterolemia and ischemic heart disease, in addition to previous PCI. To address this need, the diagnostic label Acute Pain (00132) was developed, (Table 1).

Table 1. Care plan: Acute pain (00132), 2024

NURSING DIAGNOSIS Domain: 12 Comfort. Class: 1 Physical comfort.	Acute pain (00132) related to the damage, manifested by diaphoresis, expressive behavior, facial expression of pain, pain intensity reported using a standardized pain scale that reports pain characteristics in a standardized way.				
Focus of diagnosis: pain. NURSING OUTCOMES: Domain: V Health and Quality of Life. Domain: V Symptomatology.	Severe deviation from normal range 1	Substantial deviation from the normal range 2	Moderate deviation from the normal range 3	Slight deviation from the normal range 4	No Deviation 5
Outcome: 1306 Pain: adverse psychological response.	Initial Assessment			Final Assessment	
Indicators 130605 Anxiety: 130624 Pessimism about the future: 130627 Restlessness: 130622 Anger at the disabling effects of pain:	1 2 1 1			4 4 4 4	

NURSING INTERVENTIONS

1410 Pain management dolor: Acute.	2210 Administration of pain relief medication	5310 Giving hope
▪ Make a comprehensive assessment of the pain, including location, onset, duration, frequency and intensity, as well as factors that relieve or aggravate the pain.	▪ Check history of allergies to medications. ▪ Determine the choice of analgesic (narcotic, non-narcotic or non-steroidal anti-inflammatory drug) according to the type and intensity of pain. ▪ Administer analgesics before pain-producing procedures or activities.	▪ Explain to the patient that their current situation is temporary. ▪ Encourage therapeutic relationships with relatives.

ASSESSMENT: The analogue pain scale was used to assess the patient on admission to the emergency area, thus, giving a result of 9 on the scale of 10, oppressive type, with radiation towards the chest and jaw, on admission to the hemodynamic the patient reported pain of 4 on the scale of 10, oppressive type in the chest; prescribed analgesics were administered, providing relief of symptoms. During the administration of the medication, a dialogue was established with the patient to create a bond of trust and security with the medical team providing care, the pain decreased significantly, and the patient reported feeling safe and calm.

Source: Own development.

Secondly, we observed clinical alteration in the activity and exercise pattern due to ST-segment elevation shown in the ECG, accompanied by elevated cardiac biomarker results and the symptomatology reported by the patient. All this translates into AMISTE. The damage to myocardial tissue required coordinated and specific actions for successful thrombolytic therapy and percutaneous coronary intervention. The activities were achieved by developing care plans

according to the diagnostic labels: Risk of Decreased Tissue Perfusion (00200) and Decreased

Cardiac Output (00029), (Tables 2-3).

Table 2. Care plan: Decreased cardiac output (00029), 2024

NURSING DIAGNOSIS Domain: 4 Activity and rest. Class: 4 Cardiovascular and pulmonary responses.	Decreased cardiac output (00029), associated condition: alteration in preload.			
Focus of diagnosis: cardiac output. NURSING OUTCOMES: Domain: II Physiological Health. Class: E Cardiopulmonary.	Severe deviation from normal range 1	Substantial deviation from the normal range 2	Moderate deviation from the normal range 3	Slight deviation from the normal range 4	No Deviation 5
Outcome: 0400 Effectiveness of the heart pump	Initial Assessment		Final Assessment	
Indicators 040010 Arrhythmia: 040012 Angina:	1 1		5 5	

NURSING INTERVENTIONS

4090 Management of arrhythmia

- Check for ECG changes that increase the risk of arrhythmia development (e.g. arrhythmia, ST segment, ischemia and QT interval monitoring).
- Facilitate the completion of a 12-lead ECG analysis when appropriate.
- Place and maintain an intravenous line as appropriate.

ASSESSMENT: The interventions were able to detect early changes in ECG analysis results. A 12-lead ECG was able to identify the location of the probable infarct zone. Intravenous access was used to administer the necessary measures, such as drugs and fluids to counteract the arrhythmias and the sensation caused to the patient.

Source: Own development.

Table 3. Care plan: Risk of decreased cardiac tissue perfusion (00200)

NURSING DIAGNOSIS Domain: 4 Activity and rest Class: 4 Cardiovascular and pulmonary responses	Risk of decreased cardiac tissue perfusion (00200), associated condition: hyperlipidemia.				
Focus of diagnosis: tissue perfusion. NURSING OUTCOMES: Domain: II Physiological Health Class: E Cardiopulmonary	Severe deviation from normal range 1	Substantial deviation from the normal range 2	Moderate deviation from the normal range 3	Slight deviation from the normal range 4	No Deviation 5
Result: 0405 Cardiac tissue perfusion	Initial Assessment			Final Assessment	
Indicators					
040509 Electrocardiogram results:	2			4	
040510 Cardiac biomarkers:	2			4	
040511 Coronary angiography results:	2			4	
040506 Nausea:	1			5	
040506 Vomiting:	1			5	

NURSING INTERVENTIONS

6680 Vital signs monitoring

- Monitor blood pressure, pulse, temperature, pain and respiratory status as appropriate.
- Monitor oxygen concentration by pulse oximetry.

- Explain all procedures to the patient and relatives.
- Obtain informed consent from the patient.
- Prepare thrombolytics in accordance with internal protocol.
- Take blood samples.
- Administer thrombolytics according to specific administration guidelines.

4270 Thrombolytic therapy management

- Continuous monitoring of heart rate, vital signs, pain level, cardiorespiratory sounds, neurological status, peripheral perfusion.
- Watch for signs of hemorrhage.
- Prepare the patient for transfer to definitive care (e.g. cardiac catheterization laboratory, intensive care unit).

ASSESSMENT: Adherence to the procedures made it possible to restore coronary circulation, and the patient was able to identify the side effects of the drugs administered, thus helping to identify possible complications. The patient was able to see that the established procedures were carried out on time and in the correct manner, and thanks to this, he had another chance to live, as he and his family expressed it.

Source: Own development.

Discussion

With the objective of designing and evaluating a nursing care plan for a patient with AMI in the emergency department, it was found that the use of the NANDA-I, NOC and NIC taxonomies provides nursing with tools to guide care through scientifically and evidence-based interventions. In addition, identifying and prioritizing the patient's needs allows minimizing future complications, in this clinical case those associated with AMISTE.

In addition, identifying and prioritizing the patient's needs can minimize future complications, in this clinical case those associated with ST-segment elevation myocardial infarction. Consequently, it was found that the NANDA-I diagnostic labels for risk of decreased cardiac tissue perfusion and acute pain were consistent with the findings of previously described authors [21-22], which are consistent with the interventions described above, such as pain management, haemodynamic monitoring with 12-lead ECG, sampling, medication management, in this case fibrinolytic therapy, supplemental oxygen if required, and very importantly, recognition by nursing staff of adverse effects, medication side effects and possible risks of the intervention. Regarding the risk of decreased cardiac output, no similarity was found with the findings of other authors, which is relevant in this study because the main artery of the heart is completely occluded, which leads to a decrease in blood supply to the left ventricle and therefore a decrease in cardiac contractility, which significantly affects cardiac output.

The Mexican Institute of Social Security, through the Clinical Practice Guidelines on Nursing Interventions for the Care of Adults with AMISTE, updated in 2018 [23], mentions that nursing intervention is necessary to provide quality care, which must be safe, risk-free, timely and effective for the patient with AMI, based on current literature. The promotion and improvement of care in the emergency department according to established protocols are priority elements in the care, prognosis and recovery of patients with this pathology.

In another context, it is important to note that the use of nursing taxonomies is useful to address the diverse needs of patients with a wide range of pathologies. However, the information provided by the taxonomies may be insufficient for specific activities such as the administration of drugs, especially thrombolytic therapy in this clinical case, and it is therefore essential to promote continuous and updated training for the correct management of these drug therapies.

Conclusions

Implementation of the NCP is essential to identify the needs of patients with AMISTE and to respond quickly to potential complications, thereby improving their physical and mental health and facilitating their reintegration into daily life with minimal sequelae. In this case study, an initial care plan was developed and implemented for a patient with AMISTE. which improved his health and reduced his life-threatening risks. It is essential to develop care plans based on scientific evidence, using taxonomies and applying critical thinking for the appropriate management of AMI. In addition, the NCP provides a standardized language for nursing professionals, ensuring informed, quality care that is responsive to patients' needs.

Conflict of interest

The authors declare that there is no conflict of interest.

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Bibliogrpahic References

1. Organización Mundial de la Salud (OMS). Las 10 principales causas de defunción. [Internet]. OMS; 2020 [cited 01 dec 2023]. Available at: Available at: https://www.who.int/es/news-room/fact-sheets/detail/the-top-10-causes-of-death
2. Organización Mundial de la Salud (OMS). Enfermedades cardiovasculares. [Internet]. OMS; 2021 [cited 01 dec 2023]. Available at: https://www.who.int/es/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)
3. Secretaria de Salud (SS). Cada año, 220 mil personas fallecen debido a enfermedades del corazón. [Internet]. Gobierno de México; 2022 [cited 02 dec 2023]. Available at:https://www.gob.mx/salud/prensa/490-cada-ano-220-mil-personas-fallecen-debido-a-enfermedades-del-corazon
4. Instituto Nacional de Estadística y Geografía (INEGI). Estadísticas de defunciones registradas de enero a junio del 2022. Comunicado de prensa [Internet]. 2023 [cited 01 dec 2023]:1. Available at: https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2023/DR/DR-Ene-jun2022.pdf
5. Instituto Mexicano del Seguro Social (IMSS). Código infarto, cuida tu corazón. [Internet] Gobierno de México; 2021 [cited 02 dec 2023]. Available at: https://www.gob.mx/imss/articulos/codigo-infarto-cuida-tu-corazon
6. Guía Sociedad Europea de Cardiología (ESC). Sobre el diagnóstico y tratamiento del síndrome coronario agudo sin elevación del segmento ST. Rev Esp Cardiol [Internet]. 2021 [cited 09 oct 2024];74(6):436-473. Available at: https://www.revespcardiol.org/es-guia-esc-2020-sobre-el-articulo-S0300893221000890

7. Instituto Mexicano del Seguro Social (IMSS). Protocolos de atención integral - Enfermedades cardiovasculares - Código infarto [Internet]. 2022 [cited 09 oct 2024];1-74. Available at: https://www.imss.gob.mx/sites/all/statics/profesionalesSalud/investigacionSalud/historico/programas/06-pai-codigo-infarto.pdf

8. Sánchez-Delgado J, Sánchez-Lara N, Pavón-Rodríguez Y, Castro-Vega Z. Infarto agudo de miocardio y factores de riesgo predisponentes. Revista Finlay [Internet]. 2023 [cited 09 oct 2024];13(4):394-403. Available at: https://revfinlay.sld.cu/index.php/finlay/article/view/1282/2327

9. Centro Nacional de Excelencia Tecnológica en Salud (CENETEC). Guía de práctica clínica, Diagnóstico y tratamiento del infarto agudo de miocardio con elevación del segmento ST. Evidencias y Recomendaciones. Catálogo maestro de guías de práctica clínica [Internet]. México; 2021 [cited 09 oct 2024]. Available at: http://www.cenetec-difusion.com/CMGPC/GPC-IMSS-357-21/ER.pdf

10. Gómez FC, Díaz EA, Lara ML, Maldonado AJ, Rangel PF, Vázquez OL. Infarto agudo de miocardio como causa de muerte. Análisis crítico de casos clínicos. Revista de la Facultad de Medicina UNAM [Internet]. 2021 [cited 28 nov 2023];64(1):49-59. Available at: https://doi.org/10.22201/fm.24484865e.2021.64.1.08

11. Valladares CF, Hernández LN, Pérez AC, León VG, Torres AC. Infarto agudo de miocardio con elevación del segmento ST. Guía de práctica clínica. Rev. Finlay [Internet]. 2022 [cited on 09 oct 2024];12(3):364-386. Available at: http://scielo.sld.cu/scielo.php?pid=S2221-24342022000300364&script=sci_arttext&tlng=pt#B1

12. Stoll M, Dell'Oca N. Genética de la hipercolesterolemia familiar. Revista uruguaya de cardiología [Internet]. 2019 [cited 03 dec 2023];34(3):324-332. Available at: http://www.scielo.edu.uy/pdf/ruc/v34n3/1688-0420-ruc-34-03-239.pdf

13. Dattoli-García CA, Jackson-Pedroza CN, Gallardo-Grajeda AL, Gopar-Nieto R, Araiza-Garaygordobil D, Arias-Mendoza A. Infarto agudo de miocardio: revisión sobre factores de riesgo, etiología, hallazgos angiográficos y desenlaces en pacientes jóvenes. Arch Cardiol Mex [Internet]. 2021 [cited 01 dec 2021];91(4):485-492. Available at: https://doi.org/10.24875/ACM.20000386.

14. Yusuf S, Joseph P, Rangarajan S, Islam S, Mente A, Hystad P, et al. Modifiable risk factors, cardiovascular disease, and mortality in 155 722 individuals from 21 high-income, middle-income, and low-income countries (PURE): a prospective cohort study. Lancet [Internet]. 2020 [cited 03 dec 2023];7(395):795-808. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8006904/

15. Herdman H, Kamitsuru S, Takáo C. NANDA. Diagnósticos enfermeros. Definiciones y clasificación 2021-2023. Edición hispanoamericana. 12 ed. España: Elsevier. 2018.

16. Gordon M. Manual de diagnósticos de enfermería. 11va ed. México D.F.: McGraw-Hill Interamericana de España. 2007.

17. Elsevier Connect. NANDA-I, NIC, NOC: uso en la planificación de los cuidados y el modelo AREA [Internet]. Elsevier; 2022 [cited 10 oct 2024]. Available at: https://www.elsevier.com/es-es/connect/nanda-i-nic-noc-vinculos-y-uso-en-la-practica-clinica

18. Moorhead S, Swanson E, Marion J. Clasificación de resultados de enfermería (NOC). 7ma. ed. España: Elsevier. 2024.

19. Wagner CH, Butcher HK, Clarke MF. Clasificación de intervenciones de enfermería (NIC). 7ma ed. España: Elsevier. 2024.

20. Secretaría de Salud (SS). Reglamento de la ley general de salud en materia de investigación para la salud. Diario oficial de la federación [Internet]. México; 2014 [cited 03 dec 2023]. Available at: https://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGS_MIS.pdf

21. Méndez-Ortiz J, Portilla-Rivera H, Mejía-Jiménez E. Vista del rol del profesional de enfermería en infarto agudo de miocardio (IAM) y factores asociados. CEI Boletín informativo [Internet]. 2021 [cited 02 dec 2023];8(1):150-151. Available at: https://revistas.umariana.edu.co/index.php/BoletinInformativoCEI/article/view/2567/2832

22. Utrilla L, Novella M, Loras M, Catalán M, Puerta A, Pastor P. Caso clínico infarto agudo de miocardio (IAM). Plan de cuidados de enfermería a una paciente con IAM. Revista Sanitaria de Investigación [Internet]. 2021 [cited 01 dec 2023];2(12). Available at: https://revistasanitariadeinvestigacion.com/caso-clinico-infarto-agudo-de-miocardio-iam-plan-de-cuidados-de-enfermeria-a-una-paciente-con-iam/

23. Instituto Mexicano del Seguro Social (IMSS). Guía de práctica clínica. Intervenciones de enfermería en la atención del adulto con infarto agudo de miocardio con elevación del segmento ST. [Internet]. México; 2018 [cited 01 dec 2023]. Available at: https://www.imss.gob.mx/sites/all/statics/guiasclinicas/672GER.pdf.