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ORIGINAL

Nursing care in threatened preterm labor in the Obstetrics and Gynecology Department of a hospital

Cuidados de enfermería en amenaza de parto pretérmino del servicio de Gineco Obstetricia de un hospital

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ABSTRACT

The threat of preterm labor, a pathology endangering the lives of both mother and baby, affects one in ten births and is a serious public health issue. This research aimed to manage the nursing care process for a 35-year-old pregnant woman with a threat of preterm labor, using a purely qualitative approach in a single case study, applying the five stages of the nursing care process. In the assessment stage, Maryori Gordon's 11 functional patterns guide was used, identifying 10 nursing diagnoses based on NANDA-I Taxonomy II, prioritizing: labor pain, risk of maternal/fetal dyad alteration, and infection control. The care plan was developed using NOC and NIC classifications. During the implementation stage, nursing care focused on pain management, prenatal fetal status, and infection control. These were evaluated by comparing baseline scores with achievement scores, resulting in an updated care plan with changes scored at +1, 0, and +2. In conclusion, the nursing care process was managed, providing quality and humanized care to the patient.

Keywords: Threat of Preterm Labor; Nursing Care.

RESUMEN

La amenaza del parto pretérmino, patología que pone en riesgo la vida de la madre y el bebé, afecta a uno de cada diez nacimientos y es un problema grave de salud pública. El objetivo de esta investigación fue gestionar el proceso de atención de enfermería a una gestante de 35 años con amenaza de parto pretérmino, utilizando un enfoque netamente cualitativo, teniendo un tipo de estudio caso único aplicando el método del proceso de atención de enfermería en sus 5 etapas. En la etapa de valoración se aplicó la guía de los 11 patrones funcionales de Maryori Gordon, identificando 10 diagnósticos de enfermería en base a la taxonomía II de la NANDA-I, priorizados: dolor de parto, riesgo de la alteración de la diada materno/ fetal y PC infección; en la planificación se aplicó el plan de cuidados elaborado con la clasificación NOC y NIC, en la etapa de ejecución se brindó cuidados de enfermería relacionado a nivel del dolor, estado fetal prenatal y por último control de infecciones, las cuales fueron valoradas diferenciando la puntuación basal con la puntuación de logro, obteniendo como resultado un plan de cuidados actualizado con puntuación de cambio de +1, 0 y +2. En conclusión, se gestionó el proceso de atención de enfermería brindando un cuidado de calidad y humanizado a la paciente.

Palabras clave: Amenaza de Parto Pretérmino; Cuidados de Enfermería.

INTRODUCTION

According to the latest available statistics, 15 million babies are born prematurely each year worldwide, representing approximately one baby for every 10 births. In addition, during childbirth, nearly one million premature babies die each year due to complications during delivery. Globally, premature birth is the leading cause of death in children under five, a situation exacerbated by the fact that premature births are increasing in countries that collect statistical data (Perin et al., 2022).

Likewise, according to the Pan American Health Organization (2019), preterm births are a serious public health problem with a significant impact. First, they expose newborns to a series of complications from the beginning of their lives, which increases their morbidity and mortality and leads to health problems that can last into adulthood. Globally, the rate of premature births is estimated to be around 11 % (5 % in Europe, 18 % in Africa), meaning that 15 million children are born prematurely each year. A significant proportion of premature births are related to the living conditions of pregnant women, highlighting the importance of addressing the causes with a differentiated approach.

The incidence of premature birth worldwide is 11,1 %, ranging from 5 % to 15 %; in the US, it is 12 %, and this rate is increasing in other countries, possibly due to early induction by doctors, which is improving the chances of survival for premature newborns (Pacheco, 2018).

About premature births in Peru from January to October 2022, 27,383 preterm births were recorded, i.e., 0,10 % more than those registered for the same period in 2021, according to data obtained from the website of the live birth certificate registration system belonging to the Ministry of Health (Ministry of Health, 2022).

In turn, according to the 2020 demographic and family health survey, the main results indicate that of all births in Peru that year, 23 % were premature, and 6,6 % were low birth weight. 6 % of these births were premature and low birth weight, highlighting that

These babies are at greater risk of infection, early mortality, malnutrition, and attention deficit. (National Institute of Statistics and Informatics, 2021).

Similarly, in Lima, at the San Bartolomé Hospital, the preterm birth rate stood at 3,26 % in 2018. among the main comorbidities treated were some conditions present in the mother related to preterm birth, including anemia, urinary tract infection, excessive weight gain, high pre-pregnancy body mass index, preeclampsia, and premature rupture of membranes (Huarcaya et al., 2021).

Preterm labor is defined as a clinical condition characterized by regular uterine contractions with cervical changes occurring between 22 and 36,6 weeks of gestation in pregnant women with intact amniotic membranes (Cobo & Diago, 2020).

A baby born alive before completing 37 weeks of gestation is considered premature. Prematurity has subcategories based on gestational age: extremely premature < 28 weeks, very premature 28 to 32 weeks, and moderate to late premature 32 to 37 weeks. There are several reasons why babies may be born prematurely, including spontaneous labor or cesarean section due to medical indications (Perin et al., 2022).

Preterm birth (PTB) is a birth occurring between 22 and 36 weeks of gestation. It is considered a significant problem in modern obstetrics. It has also been associated with morbidity and mortality in newborns and infants, as well as various neurological disorders. Risk factors associated with PTP include multiple pregnancies, inadequate prenatal care, anemia, urinary tract infections, and cervicovaginal infections (Martínez et al., 2022).

The causes of preterm birth include intrauterine infection, uteroplacental ischemia, excessive uterine distension, cervical disease, abnormal allo-reaction, allergic phenomena, and endocrine disorders (Tacchino, 2018). On the other hand, risk factors include obstetric factors, maternal factors, sociodemographic factors, and external factors (Cobo & Diago, 2020).

The pathophysiology of preterm birth has multiple causes. It arises from a series of alterations in the baby or mother and pathophysiological events that lead to an increase in proinflammatory cytokines produced in the amniotic fluid (Chang, 2018).

According to Ruoti (2020), when talking about preterm labor, reference is made to uterine contractions that occur accompanied by changes in the cervix before 36 weeks of gestation. In addition, the symptoms reported by pregnant women include menstrual-like cramping in the lower abdomen, dull lower back pain, a feeling of heaviness in the pelvis, heavy vaginal discharge, and light vaginal bleeding.

Treatment for threatened preterm labor delays the onset of labor in order to administer a full course of corticosteroids and minimize the occurrence of respiratory distress syndrome. In addition, labor is delayed to reduce perinatal morbidity and mortality (Sant Joan de Déu Barcelona Hospital, 2022). On the other hand, tocolysis is administered with magnesium sulfate in a loading dose of 4 g over 20 to 30 minutes, followed by a maintenance dose of 1 g per hour for a maximum of 24 hours (Llerena, 2020).

Through the nursing care process (NCP), a patient-centered model is applied, generating greater autonomy, continuity in objectives, and determining the patient's progress. If there is a record, legal support will be possible, and information will be generated wholly and continuously so that it can be recorded to enable the

exchange and comparison of information. In addition, care is individualized under a written plan so that errors are reduced, as is the occurrence of repeated actions, and the patient is considered an active collaborator. Likewise, the professional can prioritize nursing actions, establish specific responsibilities, and plan and organize care (Villalba et al., 2021).

Given the importance of specialized nursing care, nurses must possess personal and professional qualities for the preservation, restoration, and self-care of life-based on the therapeutic relationship between nurse and patient. This highlights the need to reflect on the importance of specialization in nursing aimed at improving the quality of healthcare services to achieve outcomes such as discharge, satisfaction, and reduced hospital stays, as well as greater productivity, efficiency, and maintenance of service quality (De Arco et al., 2018).

METHOD

This study uses a qualitative approach, a single clinical case, and applies the scientific method of nursing care. This method allows nurses to provide care in a rational, logical, and systematic way, as indicated by Nájera et al. (2020); the generation of knowledge using the scientific method is fundamental in establishing the nursing care process, as well as in developing models and theories that support the work of this profession. In other words, research promotes the development of skills and the discovery of new facts in line with advances in technique, technology, and thinking. In addition, the subject of the study is a 35-year-old multiparous patient, 34 weeks pregnant, with a medical diagnosis of threatened preterm labor, selected at the convenience of the researchers.

The method used is the nursing process. For the assessment, the technique of observation, verbal information from the patient, physical examination, and medical history review were used. Marjory Gordon's 11 functional health patterns assessment framework was used for data collection. After critical analysis of the significant data, 10 altered functional patterns were identified.

Nursing diagnoses were formulated from NANDA I Taxonomy II, and the NOC and NIC taxonomies were used for the planning stage. After critical analysis of the significant data, 10 nursing diagnoses were formulated, considering NANDA Taxonomy II, with three being prioritized: labor pain, altered maternal/fetal dyad, and PC infection.

After the nursing care stage, the process was completed with an evaluation stage, which was carried out by comparing the final and baseline scores.

NURSING CARE PROCESS

Assessment

General Information. Name: C.R.A Age: 35 years old.

Days in hospital: 2 days.

Date of assessment: 10/03/2022 Hours of operation: 12 hours.

Medical diagnosis: pregnant woman at 34 weeks 4/7 according to ultrasound, threatened preterm labor/ urinary tract infection undergoing treatment for 3 days.

Reason for admission: a 35-year-old female patient was admitted by emergency presenting with lower abdominal pain and loss of amniotic fluid 18 hours ago, hospitalized in the gynecology and obstetrics department on a stretcher accompanied by technical staff and family members. She reports moderate contraction-like abdominal pain and is hospitalized with a medical diagnosis of threatened preterm labor.

Assessment according to Functional Health Patterns

Functional Pattern I: Perception – Health Control

The patient has no history of chronic diseases and/or surgical procedures, no allergies to medications or foods, is in fair health, does not consume harmful substances, and has received the second dose of the COVID-19 vaccine and the first dose of the tetanus vaccine. Currently, due to her condition, health condition, she is receiving tocolytic medication to reduce the risk of premature birth. The patient has had seven prenatal checkups.

Family history: parents have no history of chronic diseases, nor does her sister.

Functional Pattern II: Nutritional Metabolic

Patient weighing 55 kg, height 1,50 m, with a body mass index of 29,8 (overweight for gestational age); normal skin temperature; temperature 36,7°C, pink and moist mucous membranes; normal appetite, blood type O+, hemoglobin 15,5 g/dl, hematocrit 43 %, platelets 339 000 mm3, glucose 133 mg/dl, urea 19 mg/dl, creatinine 0,6 mg/dl.

Functional Pattern III: Elimination

Bladder elimination: spontaneous urination with cloudy and bloody appearance. Patient reports pain, burning when urinating, and feeling of needing to urinate continuously. The urine test revealed: cloudy appearance,

density 1,010, pH: 8, hematuric color, protein 2(++), leukocytes 25-30 xc, red blood cells >100 xc, germs 3(+++), epithelial cells 35-40 xcg/dl, blood 3(+++), pus (+++).

Bowel movements: patient with regular bowel movements (once a day).

Functional Pattern IV: Activity – Exercise

Respiratory activity: patient breathing spontaneously, oxygen saturation 95 %, respiratory rate 20 per minute, normal breath sounds. Circulatory activity: sinus tachycardia of 120 per minute, blood pressure 120/80 mm Hg, capillary refill < 2 seconds, with patent intravenous access in the left upper limb; self-care activity: degree of dependence 2, as the patient is in complete rest and requires assistance from staff for basic care; muscle tone and strength preserved.

Functional Pattern V: Rest – Sleep

Patient with altered sleep pattern, sleeps 4 hours during the night due to abdominal pain caused by uterine contractions. Denies taking sleeping medication.

Functional Pattern VI Perceptual-Cognitive

Patient lucid, oriented in time, space, and person, with a Glasgow scale of 15 points, no sensory alterations. Reports contraction-like abdominal pain with a VAS of 6 out of 10, assuming positions for pain relief, facial expression of pain evident.

Functional Pattern VII: Self-perception – Self-concept

Patient anxious, restless; concerned about her husband's accommodation as they are not from Cajamarca and have nowhere to stay, no money for food or medicine.

Functional Pattern VIII: Relationships – Role

Patient is a housewife, cohabiting, lives with her husband and son. Communicative, cooperative when asked questions necessary for the assessment.

Functional Pattern IX: Sexuality/Reproduction

Pregnant patient, 34 weeks pregnant, with an expected delivery date of 11/09/22; currently pregnant with her second child, no history of miscarriages, incomplete gynecological exams (only a PAP smear, with an ultrasound scheduled according to her check-up schedule). Breasts are soft with no lesions, symmetrical, no masses, nipples formed, hypo-secretive on stimulation, patient unaware of the technique and importance of breast self-examination. Gravid uterus, patient reports feeling fetal movements; genitals preserved: no evidence of vaginal bleeding.

Functional Pattern X: Adaptation – Tolerance to Situation and Stress

The patient reports feeling concerned about her health and lack of knowledge about her current illness, as well as anticipatory anxiety.

Functional Pattern XI: Values and Beliefs

The patient is Catholic and was baptized in her religion, which does not impose restrictions on her daily life.

Prioritized Nursing Diagnoses

First Diagnosis

Diagnostic Label

Labor pain (00256).

Defining characteristics: expressive behavior, facial expression of pain, altered heart rate and rhythm, uterine contractions, posture to relieve pain.

Related factors: inadequate knowledge about childbirth, perception of pain as negative, and fear of childbirth.

Population at risk: women in emergency situations during labor. Associated condition: prescribed restriction of mobility.

Diagnostic statement: labor pain related to inadequate knowledge about childbirth, perception of pain as negative, and fear of childbirth, evidenced by expressive behavior, facial expression of pain, anxiety, altered heart rate and rhythm, uterine contractions, and posture to relieve pain.

Second Diagnosis

Diagnostic Label

Risk of Maternal/Fetal Complications (00209). Risk factor: inadequate prenatal care.

Associated conditions: associated complications.

Diagnostic statement: risk to the mother-fetus dyad as evidenced by inadequate prenatal care associated with pregnancy complications.

Third Diagnosis

Diagnostic Label

PC Infection Definition: urinary tract infection is the growth of microorganisms in urine collected under sterile conditions in a patient with compatible clinical symptoms. If there are no symptoms, the isolation of bacteria in a urine culture is called asymptomatic bacteriuria and does not require treatment. Depending on the symptoms and the results of additional tests, a distinction can be made between acute pyelonephritis, upper urinary tract infection, cystitis, or lower urinary tract infection (Peréz et al., 2019).

Symptoms of a urinary tract infection may include pain or burning, frequent urination, feeling the need to urinate even though the bladder is empty, and blood in the urine (Centers for Disease Control and Prevention, 2022).

To diagnose a urinary tract infection, a urine sample is evaluated, such as a urine test to check for white blood cells, red blood cells, bacteria, and certain chemicals such as nitrites in the urine; a urine culture, which can be done to identify the bacteria and determine the best antibiotic for treatment. Blood tests such as a complete blood count and a blood culture are also considered (Medline Plus, 2022).

Causes: urinary tract infections are caused by microorganisms that affect the urinary tract (kidneys, ureters, bladder, or urethra), overwhelming the individual's defense system. The incidence of urinary tract infection in pregnant women is slightly higher than in the non-pregnant population, and its maternal and fetal repercussions are often severe.

The risk of progression to pyelonephritis is 40 % higher. It has also been associated with a higher incidence of preeclampsia, preterm birth, and low birth weight (Castillo & Apolaya, 2018).

Planification

Initial Diagnosis

Labor Pain (00256).

Nursing Results

NOC [2102] Pain Level

Indicators

Referred pain.

Duration of pain episodes facial expression of pain Agitation

Heart rate.

Nursing interventions

NIC [1410] Acute Pain Management Activities

Perform a thorough assessment of pain, including location, onset, duration, frequency, intensity, and factors that alleviate and exacerbate it.

Ask the patient about the level of pain that allows them to be comfortable and treat it appropriately, trying to keep it at or below that level.

Monitor pain using a valid and reliable measurement tool appropriate to age and communication ability (using the VAS scale).

Medication administration: nifedipine 10 mg orally every 15 minutes for four doses if uterine dynamics greater than or equal to 2 in 10, according to protocol.

Prevent or control side effects of medications.

Select and implement interventions tailored to the patient's risks, benefits, and preferences (e.g., non-pharmacological) to facilitate pain relief, as appropriate.

Second Diagnosis

Risk of Maternal/Fetal Complications (00209)

Nursing Results

NOC [0111] Fetal Status: Prenatal

Indicators

Fetal heart rate 120-160 beats per minute. Fetal ultrasound results.

Fetal movement frequency.

Nursing Interventions

NIC [6800] High-Risk Pregnancy Care.

Activities

Review the obstetric history to see if there are any risk factors related to pregnancy (prematurity).

Instruct the patient on the use of prescribed medications (tocolytics and antibiotics).

Instruct the patient on self-monitoring techniques (vital signs,uterine activity monitoring) as appropriate.

Provide information to identify signs and symptoms that require immediate medical attention (bright red vaginal bleeding, loss of amniotic fluid, unusual vaginal discharge, decreased fetal movement, four or more contractions per hour before 37 weeks of gestation, headaches).

Explain the fetal risks associated with preterm birth at various gestational ages.

Refer to the neonatal intensive care unit if premature delivery is anticipated.

Perform tests to assess fetal status and placental function (resting test and oxytocin stimulation test, biophysical profiles, and ultrasound tests).

Interpret medical explanations of test results and procedures.

Provide anticipatory guidance on possible interventions during the labor process.

Report deviations from normal maternal and/or fetal status immediately to the physician.

Document patient education, laboratory results, fetal test results, and patient responses.

Third Diagnosis

PC Infection.

Nursing Results

NOC [0703] Severity of Infection

Indicators

Temperature instability Pain Colonization of blood culture Colonization of urine culture Increased white blood cells.

Nursing Interventions

NIC [6540] Infection Control. Activities

Instruct the patient on the correct hand washing technique.

Wash hands before and after each patient care activity. Wear gloves as required by universal precautions.

Ensure aseptic handling of all intravenous lines. Encourage rest.

Encourage fluid intake as appropriate.

Administration of antibiotic treatment: cefazolin 1 g intravenously every 8 hours.

Execution

Table 1. Implementation of acute pain management for the diagnosis of labor pain

Intervention: Acute pain management (1410)		
Date	**Time**	**Activities**
03/10/2022	7:30 a.m.	Pain was thoroughly assessed, including location, onset, duration, frequency, and intensity, as well as factors that alleviate and exacerbate it.
	8:00 a.m.	Pain was monitored using a valid and reliable measurement tool appropriate to age and communication ability.
	9:00 a.m.-12 p.m. 4:00p.m. 6:00p.m.	The patient was asked about the level of pain that allowed her to be comfortable and treat it appropriately, trying to keep it at the same or lower.
	12:00 p.m.	Nifedipine 10 mg was administered orally every 15 minutes for four doses if uterine dynamics were greater than or equal to 2 on a scale of 0 to 4 at 10.
	12:00 p.m. 7:00 p.m.	The side effects of the medications were monitored. The medications were monitored.
	4:00 p.m.	Interventions tailored to the patient's risks, benefits, and preferences (e.g., non-pharmacological) were selected and implemented to facilitate pain relief, as appropriate.

Note: prepared based on the Nursing Interventions Classification (NIC).(Butcher, et al.,2018).

Table 2. Implementation of prenatal care for the diagnosis of risk of maternal/fetal disorders

Intervention: Prenatal care (6960)		
Date	**Time**	**Activities**
03/10/2022	7:30 a.m.	The obstetric history was reviewed to see if there were any risk factors related to the pregnancy (prematurity).
	8:30 a.m.	The patient was instructed on the use of prescribed medications (tocolytics and antibiotics).
	9:00 a.m.	The patient was instructed on self-monitoring techniques (vital signs, uterine activity monitoring) as appropriate.
	9:00 a.m.	Information was provided to identify signs and symptoms requiring immediate medical attention (bright red vaginal bleeding, loss of amniotic fluid, unusual vaginal discharge, decreased fetal movement, four or more contractions per hour before 37 weeks of gestation, headaches).
	02:00 a.m.	The fetal risks associated with premature births at various stages of pregnancy were explained.
	11:00 a.m.	Referred to the neonatal intensive care unit if premature delivery is expected.
	11:00 a.m.	Tests were performed to assess fetal status and placental function (resting test and oxytocin stimulation test, biophysical profiles, and ultrasound scans).
	04:00 p.m.	The medical explanations of the results of the tests and procedures were interpreted.
	10:00 a.m.	Advance guidance was provided on possible interventions during the birth process.
	12 m	Any abnormalities in the mother's and/or fetus's condition were reported to the doctor immediately.
	At every moment	The patient's education, laboratory results, fetal test results, and patient responses were documented.

Note: prepared based on the Nursing Interventions Classification (NIC). (Butcher, et al.,2018)

Table 3. Implementation of infection control measures for PC infection diagnosis

Intervention: infection control (0703)		
Date	**Time**	**Activities**
03/10/2022	10:00 a.m.	The patient was instructed on the correct hand washing technique.
	Every time we serve you	Hand washing was performed before and after each activity provided.
	Every procedure	Gloves were used as required by universal precautions.
	Every procedure	Aseptic handling of all intravenous lines was ensured.
	7:00 a.m. - 7:00 p.m. 8:00 a.m. - 12:00 p.m. - 4:00 p.m. - 6:00 p.m. 2:00 p.m.	Rest was encouraged. Fluid intake was encouraged. Antibiotic treatment was administered: cefazolin 1 g intravenously every 8 hours.

Note: prepared based on the Nursing Interventions Classification (NIC). (Butcher,et al.,2018)

Evaluate Result: Acute Pain Management (1410)

Table 4. Baseline and final scores for pain level outcome indicators

Indicators	Baseline score	Final score
Referred pain	3	1
Duration of pain episodes	3	1
Facial expression of pain	3	1
Agitation	4	3
Heart rate	3	3

Note: prepared based on the Nursing Outcomes Classification (NOC) (Moorhead et al., 2018)

Table 4 shows that the mode of the selected pain management outcome indicators for the diagnosis of labor pain before nursing interventions was 3 (moderate); after administration, the mode was 2 (substantial), corroborated by the same manifestations of labor pain with short episodes of relief followed by the onset of pain episodes, since analgesics were not used in the patient's condition, only tocolytics. The change score was +1.

Result: Prenatal Fetal Status (0111)

Table 5. Baseline and final scores for fetal outcome indicators: prenatal

Indicators	Baseline score	Final score
Fetal heart rate 120-160 beats per minute	5	5
Fetal ultrasound results	5	5
Fetal movement frequency	5	5

Note: prepared based on the Nursing Results Classification (NOC) (Moorhead etal; 2018)

Table 5 shows that the mode of the selected prenatal fetal status indicators for diagnosing the risk of maternal/fetal dyad alteration before nursing interventions was 5 (no deviation from the normal range). Chosen for the diagnosis of risk of maternal/fetal dyad alteration before nursing interventions was 5 (no deviation from the normal range); after the interventions, the mode was 5 (no deviation from the normal range), corroborated by the maintenance of the values using preventive measures to monitor the well-being of both the mother and the baby. The change score was 0.

Result: Infection Control (0703)

Table 6. Baseline and final scores for infection control outcome indicators

Indicators	Baseline score	Final score
Pain	4	5
Hemoculture colonization	2	4
Urine culture colonization	2	4
Increased white blood cells	2	4

Note: prepared based on the Nursing Results Classification (NOC) (Moorhead etal., 2018).

Table 6 shows that the mode of the outcome indicators for anxiety reduction selected for the diagnosis of anxiety before nursing interventions was 3 (sometimes demonstrated); after administration of the interventions, the mode was 4 (frequently demonstrated), corroborated by the slight improvement in symptoms of restlessness, nervousness, excessive worry, and sleep disturbance. The change score was +2.

RESULTS

For the assessment stage, data was collected primarily from the patient and secondarily from her medical records. Physical examination was used to collect both objective and subjective information. The information was then projected onto the assessment guide based on Marjory Gordon's 11 functional health patterns. The difficulty in this phase was due to concerns about her husband's socioeconomic conditions and her lack of knowledge about her illness.

During the diagnostic stage, significant data was analyzed according to the NANDA-I taxonomy, resulting in 10 nursing diagnoses, of which three were prioritized: acute pain, PC: infection, and anxiety. At this stage, it was challenging to identify the defining characteristics and related factors to prioritize the first diagnosis.

The planning stage involved developing a care plan based on the patient's problems and needs, considering the NOC and NIC taxonomies. An analysis was conducted to determine the nursing outcomes most relevant to the nursing diagnoses and ensure that the interventions were consistent with the outcomes. The outcome indicators had to be reanalyzed and adjusted. The difficulty in this stage was determining the score for the outcome indicators at both the baseline and final assessment due to the subjectivity involved in this determination.

In the implementation stage, the care plan was applied with the activities planned for each nursing diagnosis, assuming multidisciplinary teamwork. Data collection and assessment continued, along with the recording of nursing care, assuming full responsibility for implementing the plan. At this stage, no significant difficulties were encountered due to the nursing professionals' ability to carry out the activities of each intervention.

Finally, during the evaluation stage, a planned and systematic comparison was continuously made between the patient's health status and the expected results, allowing for feedback on each stage of the nursing care process. The difficulties encountered were the constant changes to the care plan due to the patient's health status.

DISCUSSION

Labor Pain

Labor pain is defined as the pain that occurs throughout the process of childbirth and is considered unique. Its development is different in each pregnant woman, with differences even between different parts of the same woman. Thus, the pain generated at the time of childbirth is classified among the most intense pains a woman can experience during her lifetime (Nájera et al., 2020).

The degree of pain experienced during childbirth is subject to factors such as the pregnant woman's pain tolerance, the position of the baby, the intensity of uterine contractions, how dilated the uterus is at the end of the first stage, and during the second stage, the dilation of the pelvic floor and vagina, and previous childbirth experiences (Nájera et al., 2020).

Likewise, pain during childbirth is the result of a series of physiological, emotional, psychological, and sociocultural stimuli that women experience, which cause each woman to perceive labor pain differently and with varying degrees of intensity, which also varies in the same pregnant woman between different births (Barrios et al., 2020).

The patient's pain is contraction-like and increases at times, evidenced by facial expressions, grimacing, restlessness, altered heart rate and rhythm, uterine contractions, and anxiety. The symptoms described coincide with those reported by Nájera et al. (2020), who points out that this pain is among the most intense experienced by women and will be subject to factors such as the pregnant woman's pain tolerance, the position of the baby, the intensity of the uterine contractions, the dilation of the pelvic floor and vagina, and previous childbirth experiences. Similarly, Barrios et al. (2020) point out that each woman perceives labor pain differently and with varying degrees of intensity, which also varies in the same pregnant woman between different births.

About inadequate knowledge about childbirth, Autor argues that this stems from limited access to information from the preconception stage, which can lead to unnecessary surgical interventions such as cesarean sections in the future, accompanied by medicalization, increasing the number of days of hospitalization and unjustified economic expenditure, which is often understood as a dehumanized birth. Nursing professionals play a key role in this process because they are responsible not only for providing care to help the pregnant woman adapt and prepare psychologically but also for providing information about childbirth, comfort, and confidence that leads to user satisfaction, thereby reducing the risk of maternal morbidity and mortality (Choez & Choez, 2021).

Regarding the perception of pain as negative and fear of childbirth, Cortez et al. (2020) indicate that "pain in labor" is considered one of the most significant, intense, and painful experiences in a woman's life, representing severe pain for most women. This perception can increase the presence of depression or anxiety in future pregnancies and, in the short term, can hinder the care of the newborn, increase the risk of hospitalizations, and/or cause problems in daily activities.

Faced with this fear of childbirth, nursing professionals provide care that goes beyond healthcare interventions, including support that generates empathy, trust, and security in the pregnant woman (Campos & Vàsquez, 2021).

Given her lack of knowledge about premature birth, the pregnant woman expressed anxiety, fear, and concern about complications for herself and her baby due to the intense pain she experienced before completing the gestation period. These symptoms are in line with Choéz and Choéz (2021), who argue that a lack of knowledge about childbirth arises from the preconception stage and can lead to unnecessary surgical interventions such as cesarean sections in the future. Meanwhile, anxiety and fear of childbirth contrast with Cortez et al. (2020), who indicate that labor pain is considered one of the most intense and painful experiences in a woman's life, and this perception can increase the presence of depression or anxiety in future pregnancies and, in the short term, can hinder newborn care.

The nursing care plan for pregnant women diagnosed with labor pain includes acute pain management with the following activities:

Monitoring to assess pain, taking into account its location, time of onset, duration, frequency, and intensity, as well as factors that will alleviate or intensify the pain. The VAS scale will be used to do this, providing a score between 0 (no pain) and 10 (unbearable pain). The intensity of labor pain must be assessed before and after any intervention that may cause pain. The pregnant woman can choose between images of faces ranging from smiles to grimaces of pain or between fruits of different sizes to communicate the intensity of her pain (Watson J., 2022).

The nursing specialist should consider administering nifedipine 10 mg orally every 15 minutes for four doses if uterine dynamics are greater than or equal to 2 in 10, this being the most common according to protocol.

This tocolytic inhibits the release of intracellular calcium deposits from the sarcoplasmic reticulum, reducing the concentration of cytoplasmic calcium and increasing calcium flow into the cell. It also hinders actin-myosin interactions, inhibiting myometrial contractions and leading to myometrial relaxation. This delays birth, allowing time for lung maturation and neuroprotection, reducing respiratory distress syndrome and cerebral palsy, and enabling the patient to be transferred to a referral center if necessary (Ruoti, 2020).

Regarding the prevention and control of drug side effects, it was considered that combination therapies lead to a greater number of adverse effects, so their use should be supported and carried out under the supervision of the mother. In cases like this, where combination therapy is introduced, intra-amniotic infection must be ruled out. Therefore, it is recommended to use a combination of nifedipine and atosiban. In addition, combination therapy should be avoided after 32 weeks of gestation (Sant Joan de Déu Barcelona Hospital, 2022).

At the same time, you should watch out for any adverse reactions that may occur following the administration of tocolysis, such as side effects in the mother (nausea, dizziness, hypotension, headache, or others), side effects in the baby (decreased blood flow to the uterus leading to decreased fetal oxygen saturation with the use of nifedipine, proven in animals but not in humans) (Arce et al., 2020).

Finally, interventions that are tailored to each of the risks, benefits, and preferences of the pregnant woman should be selected and carried out, such as not using pharmacological agents, in order to achieve pain relief. It is important to mention that using breathing techniques will help the pregnant woman to remain relaxed and allow her to react positively to the onset of pain, which will provide her with a sense of well-being and control because the increase in oxygen provides more strength and energy, both for the mother and the baby, so that the breathing technique becomes a reflex response to the pain experienced by the mother (American Pregnancy Association, 2023).

Alteration of the Maternal/Fetal Dyad

The alteration of the maternal/fetal symbiotic relationship is considered to be the result of comorbidity or a special condition related to pregnancy that may compromise health (Herdman & Kamitsuru, 2021).

The clinical picture of preterm labor, in this case, is characterized by the occurrence of regular uterine contractions with cervical changes, which also occur between 22,0 and 36,6 weeks of gestation in pregnant women with intact amniotic membranes (Cobo & Diago, 2020).

A baby born alive before 37 weeks of pregnancy is considered premature. Babies may be born prematurely due to spontaneous preterm labor or for medical reasons in order to plan the induction of labor or to advance delivery by cesarean section. Premature births occur for a variety of reasons.

Most occur spontaneously, but some are due to medical reasons, such as infections or other complications of pregnancy that require early induction of labor or delivery by cesarean section. Causes include multiple pregnancies, infections, and chronic conditions such as diabetes and high blood pressure. Many survivors face a lifetime of disability, including learning difficulties and visual and hearing problems (World Health Organization [WHO], 2023).

The patient under study has several signs that may pose a risk to her health, such as uterine contractions and urinary tract infections. These situations can lead to a threat of preterm birth, i.e., a birth that occurs between 22 and 36 weeks of gestation. It is considered a significant problem in modern obstetrics. It has also been associated with morbidity and mortality in Newborns and infants, as well as various neurological disorders. Risk factors associated with the risk of PTB include multiple pregnancies, inadequate prenatal care, anemia, urinary tract infections, and cervicovaginal infections (Martínez et al., 2022).

Given this situation, providing the patient with timely nursing care and attention is crucial. It is also important to guide possible warning signs for the patient and the fetus to identify any early changes or complications.

Risk factors for preterm birth are diverse, such as short cervical length, maternal obesity, history of preterm birth, advanced maternal age, history of previous cesarean section, short intergenetic period, long intergenetic period, and primiparity (Peralta et al., 2022).

In the review of obstetric history, factors related to pregnancy are examined. Obstetric history consists of collecting information about a woman's reproductive health, including data on menstrual periods, contraceptive use, previous pregnancies, breastfeeding, and menopause. In addition, information on reproductive system conditions, fertility problems, and complications during childbirth is sometimes included. This is also known as reproductive history (Artal, 2022).

The patient was instructed to use the prescribed medications (tocolytics) properly. When using tocolytic drugs, it is important to guide the patient so that she understands the objectives of the treatment and strictly follows the prescription criteria and contraindications, which may vary depending on the drug selected.

Likewise, monitoring parameters should be considered, and the appropriate healthcare personnel should be consulted for detailed information. In addition, the patient should be instructed on self-monitoring techniques for vital signs, which reflect the patient's hemodynamic status and are early indicators of possible dysfunctions or problems within the body. These vital signs are key to identifying deteriorating areas or those in optimal

condition. A numerical value represents each of the vital signs on these values; the healthcare professional will take specific actions. Vital signs include body temperature, respiratory rate, pulse, and blood pressure. Teaching and understanding these parameters are essential for the patient to monitor her health status adequately (Uniteco, 2022).

Uterine activity monitoring records physiological variables for both the fetus and the mother during pregnancy and childbirth. It is mainly used to monitor pregnancy and especially childbirth, to prevent and reduce the risk of hypoxia that the fetus may suffer during delivery. However, there are other reasons for monitoring pregnancy, one of which is to predict the success of labor induction. In clinical practice, different monitoring techniques are used, such as manual palpation, external tocodynamometry (TOCO), and intrauterine pressure (IUP) measurement (Sierra, 2020).

It is important to provide information to the patient so that she can identify the signs and symptoms that require immediate medical attention. According to Routi (2020), when talking about preterm labor, reference is made to uterine contractions that occur accompanied by changes in the cervix before 36 weeks of gestation. In addition, the symptoms reported by pregnant women include menstrual-like cramping in the lower abdomen, dull lower back pain, a feeling of heaviness in the pelvis, heavy vaginal discharge, and light vaginal bleeding (Castillo & Apolaya, 2018).

The fetal risks associated with premature births at different stages of pregnancy should be explained. Among the complications that occur in some cases of premature births, manifested in the short or long term, are respiratory distress syndrome, neonatal sepsis, hypoglycemia with metabolic acidosis, retinopathy, and even fetal death (Rosado, 2021). On the other hand, factors associated with complications include the mother's weight, height less than 1,50 meters, eating habits during pregnancy, and uterine conditions (Lestrade et al., 2020).

If premature birth is expected, referral to the neonatal intensive care unit (NICU) is necessary. When a baby is born prematurely and has health problems, they are admitted to the NICU, where they receive intensive care from a team of experts 24 hours a day. Most of these babies are admitted to the NICU within the first 24 hours after birth, and the length of their stay depends on their health status. Some babies only need to be in the NICU for a few hours or days, while others may need weeks or even months of specialized care (Gavin, 2019).

One of the activities is to perform tests to assess the fetal condition and identify the fetus's situation based on biochemical, biophysical, and biological parameters. If these parameters are normal, fetal well-being is considered to exist. In contrast, fluctuations in these parameters that lead to loss or compromise of the fetus's condition have been conceptualized as a non-reassuring fetal condition, replacing the classic term fetal distress, whose clinical signs are fetal tachycardia or bradycardia, the presence of meconium, or fluctuation in fetal movements (Gómez et al., 2022). The tests used to determine fetal status are as follows: Basal test or non-stress fetal monitoring, Oxytocin test, Fetal vibroacoustic stimulation, Fetal biophysical profile, and Doppler hemodynamic assessment (Vásquez et al., 2022).

Interpreting the results of tests and procedures involves understanding the purpose of electronic fetal monitoring, which is to reduce neonatal morbidity and mortality. Numerous studies have been conducted to identify fetal heart rate characteristics that allow for early suspicion or detection of fetal hypoxia/acidosis. Likewise, different methods have been developed to increase the detection of this event and thus be able to intervene at early stages to prevent adverse consequences such as encephalopathy, hypoxia, cerebral palsy, and even death. These tests are part of the group of fetal well-being tests and include fetal movement counting, biophysical profile, modified biophysical profile, Doppler velocimetry, and fetal monitoring (Villamil et al., 2022).

Providing anticipatory guidance about possible interventions during the birth process involves informing women about the possibility of scheduling a cesarean section. However, in most cases, a vaginal birth is the desired goal. In some situations, a cesarean section may be necessary due to problems related to the baby, the mother, or the baby's passage through the birth canal. Some of the reasons why a cesarean section may be required include ongoing or emerging health problems during pregnancy that increase the risks associated with a vaginal birth (Freeborn et al., 2022).

In cases where the baby's heart rate is abnormal, and test results indicate a significant problem, the woman is more likely to need an emergency cesarean section. Perinatal asphyxia is a condition that occurs when the fetus does not receive enough oxygen in the womb, or the baby experiences a lack of oxygen during labor or shortly after birth (Flickr, 2019).

The nursing record documents the education provided to the patient, the results of laboratory tests, fetal tests, and the patient's responses. Its purpose is to optimize communication among healthcare team members and ensure continuity of care. In addition, it provides legal support in the event of possible claims and allows for retrospective evaluation of the quality of care provided. It is important to note that patients can request access to this information.

They also serve as evidence of the care provided and compliance with instructions, which is legally relevant.

The technical health standard establishes standardized management of the basic content to be recorded, respecting the legal and administrative aspects of the healthcare process (Soza et al., 2020).

PC Infection

Urinary tract infections are characterized by the presence and multiplication of microorganisms in the urinary system, which can invade tissues and generally manifest themselves through the presence of bacteria in the urine. These urinary tract infections can cause both functional and morphological alterations. During pregnancy, these changes are more pronounced due to pyelocaliceal dilatation, which results in stasis and physiological changes such as pH variation and the influx of progesterone. As a result, urinary tract infections become the second most common pathology in pregnancy, after anemia (Oviedo, 2022).

According to Lalupú (2020), the most common symptoms of urinary tract infection in pregnant women are dysuria, i.e., pain or burning when urinating; pollakiuria, which is the sensation of needing to urinate frequently, cloudy and foul-smelling urine; bladder pain, and hematuria, which is the presence of blood in the urine.

Urinary tract infections are common during pregnancy. These infections are caused by microorganisms that damage the urinary tract and affect the person's immune system. In addition, this type of infection is more prevalent in pregnant women than in non-pregnant women, posing a risk to both the mother and the fetus. This can lead to a higher incidence of preeclampsia, preterm birth, and low birth weight (Castillo & Apolaya, 2018).

During pregnancy, urinary tract infections, including asymptomatic bacteriuria, cystitis, and acute pyelonephritis, are common complications. These infections occur due to anatomical and physiological changes experienced by pregnant women. Diagnosing and treating these infections early is essential to avoid possible sequelae for both the mother and fetus. Diagnosis is made by identifying a pathogen through a urine culture, with Escherichia coli being the most commonly found microorganism. Treatment consists of administering antibiotics, and the infection can be managed on an outpatient or inpatient basis, depending on the clinical situation (Barrios et al., 2020).

In the case of the patient under study, she was admitted to the hospital with a diagnosis of urinary tract infection. She presented symptoms such as spontaneous urination with a cloudy and bloody appearance, pain and burning when urinating, and increased urinary frequency. In addition, a positive result was obtained in the urine culture for urinary tract infection. As a result, she was treated with antibiotics. These symptoms match entirely those presented by Lalupú (2020) mentions dysuria, cloudy urine with a foul odor, bladder pain, and blood in the urine as the main symptoms of a urinary tract infection.

Researchers do not know what causes premature birth. However, certain conditions can increase the risk of premature birth, such as the following: vaginal infections, urinary tract infections, premature rupture of membranes, and hypertensive problems such as preeclampsia and anemia. (Murguia, 2021)

Instructing the patient on proper handwashing techniques is important, as correct handwashing will limit the transfer of pathogenic microorganisms between people. Thus, if healthcare personnel wash their hands before and after contact with each patient and after performing procedures, the bacterial spread is reduced, as the pathogenic germs that cause nosocomial infections are destroyed (Sánchez et al., 2020). In addition, gloves must be used with universal precautions.

Gloves should be worn whenever contact with blood, body fluids, secretions, excretions, and contaminated objects is anticipated or when touching mucous membranes and exposed skin (Maldonado, 2023).

It is essential to ensure aseptic handling of all intravenous lines, which involves introducing solutions into the bloodstream through a vein using an aseptic technique during the procedure. This involves properly cleaning the control cap and/or the saline-filled catheter cap to prevent contamination. It is essential to take precautions against infections due to poor aseptic technique when disinfecting the skin before bolus administration. It is also important to prevent the most common complications during intravenous therapy, such as extravasation, phlebitis, thrombophlebitis, infections, ecchymosis, and hematomas (Ministry of Health, 2021).

In addition, rest should be promoted in pregnant women facing risk situations that could compromise the health of the mother or baby. The rest can be relative or absolute, with the latter being more restrictive. In the case of absolute rest, the pregnant woman should only get out of bed to go to the bathroom. It is important to note that the duration of rest may vary and should be maintained until the woman receives new instructions from the specialist (Catena et al., 2022).

Adequate fluid intake is recommended during pregnancy, as changes occur in the woman's body, such as gradual weight gain. The total volume of water in a healthy woman's body increases from 6 to 8 liters. This additional fluid volume is distributed as follows: amniotic fluid, whose volume varies between 500 ml and 1200 ml; the placenta, composed of 85 % water, which facilitates the exchange of water, nutrients, oxygen, and waste with the fetus; and the expansion of plasma volume, which increases between 40 % and 50 % during pregnancy. The increase ensures adequate blood supply to the placenta without compromising other maternal organs and acts as a reserve in case of hemorrhage (Ospedyc, 2023).

As for antibiotic treatment, it is recommended to administer cefazolin 1 gram intravenously every 8 hours. Cefazolin is a bactericide that inhibits the third and final step of bacterial cell wall synthesis by specifically binding to proteins called PBPs, which are present in all bacterial cells. However, their affinity varies from one bacterial species to another. Once the antibiotic has been bound to these proteins, the bacterial cell wall synthesis is interrupted, and the bacteria undergo autolysis. (Vademecum, 2021)

CONCLUSIONS

Applying the nursing process facilitated nursing care to a patient at risk of preterm labor, allowing nursing care to be organized systematically, logically, and orderly with favorable results.

The nursing assessment was carried out using Marjory Gordon's 11 functional patterns assessment guide, which is a holistic, objective, and accurate tool for identifying relevant nursing diagnoses.

The nursing diagnoses selected according to the NANDA-I taxonomy showed the patient's current situation and potential problems and risks that could influence her progress. The nursing outcomes and care planning were established based on the NOC and NIC taxonomies, allowing for outcomes assessment.

Implementing the nursing care plan allowed the continued collection and assessment of new data. It kept the care plan permanently updated, which helped to resolve problems and meet needs. The patient's stable condition and improvement depended on favorable responses to nursing care and follow-up.

Finally, nursing professionals can manage the NANDA-I, NOC, and NIC interrelationships using a unified language that facilitates nursing work.

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The authors declare that there is no conflict of interest.

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