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REVIEW

CPR Training and AED Use: Educational and Community Impact on High School Students

Formación en RCP y Uso de DEA: Impacto Educativo y Comunitario en Estudiantes Secundarios

Laura Marcelina González [1], Analía Miranda [1]

[1] Universidad Abierta Interamericana, Facultad de Medicina y Ciencia de la Salud, Carrera Licenciatura en Enfermería. Sede Rosario, Rosario, Santa Fe. Argentina.

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ABSTRACT

Introduction: The project addressed the training of high school students in basic cardiopulmonary resuscitation (CPR) and the use of the automated external defibrillator (AED). This educational program sought to prepare students to act effectively in cardiorespiratory emergencies, fostering a culture of prevention and response in the community. Based on the importance of basic life support (BLS), the intervention combined theory and practice to ensure a complete understanding of the maneuvers and their correct application.

Development: The training included theoretical sessions on the identification of cardiorespiratory arrest, the steps of the chain of survival and the use of the AED. In the practical part, students performed simulations with mannequins under supervision, allowing them to gain confidence in their skills. Initial results reflected a low level of knowledge (41%), which justified the need for the intervention. After training, the students showed a significant improvement in the final evaluation, reaching over 60% understanding and ability to perform the maneuvers properly.

Conclusions: The intervention demonstrated that a well-structured educational approach can positively impact community preparedness to respond to emergencies. In addition to improving knowledge and skills, students expressed greater confidence to act in critical situations. This project highlighted the importance of including CPR and AED training in school curricula, highlighting its potential to save lives and strengthen community safety.

Keywords: CPR; AED; training; students; emergencies.

RESUMEN

Introducción: El proyecto abordó la capacitación de estudiantes de nivel secundario en reanimación cardiopulmonar (RCP) básica y el uso del desfibrilador externo automático (DEA). Este programa educativo buscó preparar a los alumnos para actuar de manera eficaz ante emergencias cardiorrespiratorias, fomentando una cultura de prevención y respuesta en la comunidad. Basándose en la importancia del soporte vital básico (SVB), la intervención combinó teoría y práctica para garantizar una comprensión completa de las maniobras y su aplicación correcta.
Desarrollo: La capacitación incluyó sesiones teóricas sobre la identificación de la parada cardiorrespiratoria, los pasos de la cadena de supervivencia y el uso del DEA. En la parte práctica, los estudiantes realizaron simulaciones con maniquíes bajo supervisión, permitiendo que adquirieran confianza en sus habilidades. Los resultados iniciales reflejaron un bajo nivel de conocimientos (41%), lo que justificó la necesidad de la intervención. Tras la capacitación, los alumnos mostraron una mejora significativa en la evaluación final, alcanzando más del 60% de comprensión y capacidad para realizar las maniobras adecuadamente.
Conclusiones: La intervención demostró que un enfoque educativo bien estructurado puede impactar positivamente en la preparación comunitaria para responder a emergencias. Además de mejorar los conocimientos y habilidades, los estudiantes expresaron mayor confianza para actuar en situaciones críticas. Este proyecto resaltó la importancia de incluir la formación en RCP y DEA en los currículos escolares, destacando su potencial para salvar vidas y fortalecer la seguridad comunitaria.

Palabras clave: Catéter Venoso Central; infecciones intrahospitalarias; complicaciones nosocomiales; prevención; cuidados de enfermería.

INTRODUCTION

The objective is to determine the relationship between the knowledge of the nursing staff in the application of the skin-to-skin contact method "COPAP" and the correct application of this method, according to age, sex, educational level, and seniority in the hospital and in the service of the nurses of a neonatal unit of a public hospital in the city of Rosario.

This research will help to support or not the theory already studied, implementing it in the neonatal intensive care unit (NICU) of a public hospital in Rosario. It is just a matter of common sense, of considering humanized treatment, of satisfying the baby's and their family's basic needs—the term skin-to-skin contact (SSC) groups together interventions aimed mainly at premature and low-birth-weight newborns.

The World Health Organization (WHO, November 2021) defines a preterm birth as occurring before 37 weeks of gestation. This can occur for various reasons, for births that happen spontaneously, either by early induction of labor or by cesarean delivery, for medical or non-medical reasons. The most common causes of premature birth include multiple pregnancies, infections, and chronic conditions such as diabetes and high blood pressure; despite this, it often happens that no cause is identified; there could also be a genetic influence (WHO, 2021, p. 11).

A new paradigm based on the Family-Centered Maternity Model (FCMM) will affect hospitals, especially those specializing in maternal and child care. This new aspect was introduced gradually. The Ramón Sarda Children's Hospital in Buenos Aires was the first establishment to implement it 35 years ago.

The MSCF initiative, inspired by the "Baby-Friendly Hospital" proposal developed by the WHO and UNICEF in 1991, promotes breastfeeding as one of its pillars. Skin-to-skin contact between mother and child, known as "KSSC," has spread throughout the Argentine Republic, especially since 1994.

General objective

To make the information obtained available to NICU managers so that they can carry out appropriate interventions that enable COPAP to be applied more safely and effectively, to determine the importance of this method and the reasons for its application with theoretical foundations.

DEVELOPMENT

Knowledge

According to Menéndez (alteridades, 1991), knowledge is a set of information stored through learning and experience. This leads us to understand, through reason, the origin, characteristics, and relationship between different things. It starts from sensory perception, from there to understanding, and ends in reason. It is a relationship between a subject and an object. On the other hand, it is also considered a virtue that is in process, showing reality through the reproduction of human thought, which is linked to various social laws fused with practical activity; the human being acquires knowledge, the assimilation of multiple concepts and the understanding of the world, in which practical activity and knowledge transform the world, subordinating nature and the needs presented by the human being. To this end, knowledge, transformation, and society are facets of the same historical process, which condition and penetrate each other.

The first level is called instrumental because it uses instruments to collect information; the ideal rules for using the instruments make up the technical level. The theoretical level represents the body of knowledge for constructing the object of study.

Larrea expanded this definitionLarrea expanded on this definition in the document "Itinerarios de formación professional" (Professional training pathways), in which he defines them as "Educational pathways aimed at deepening a specific field of action of the profession or at the study of theoretical and professional models and cultural worldviews, which complement curricular learning."

They can be of two types:

a. Professional pathways aim to study and address the core issues that make up the profession and are, therefore, learning routes that give meaning, sense, and identity to professional training.

b. The itineraries in the field of training in contexts, knowledge, and culture complement the training of the future professional through deepening expertise and know-how of a multi-professional, multidisciplinary, and cultural nature. (Larrea E. CES, 2015, p. 1)

Knowledge in nursing

The knowledge of the nursing professional has evolved over the years, as has the profession itself; in this sense, nurses sought to provide a scientific framework for their care and, therefore, developed various nursing theories and models, applying them to their daily practice; however, due to the variety and complexity of their work, it is tough to unify or provide a single type of care, as the clinical condition of a human being is dynamic and flexible. One of the pioneers in developing the knowledge of nurses was Bárbara Carper, who established four essential and interrelated patterns to create a new understanding: empirical, aesthetic, personal, and ethical. Later, in 1995, White continued what Carper had established and identified a fifth pattern: social-political, which is considered relevant because nurses can understand users' social conditions or characteristics during their care. After decades of trying to create its own body of knowledge that defines its activities independently and differentiates them from other health professionals, nursing still has certain limitations in its field of action; however, it could achieve its purpose if it articulates the use of its theories and models, intensively develops research and executes its practice based on scientific evidence.

Knowledge about COPAP.

It is a set of interventions aimed at providing standardized and protocolized care for premature and/or low birth weight infants based on skin-to-skin contact between the infant and his or her mother. The goal is to empower the mother or caregiver and gradually transfer the capacity and responsibility of being the primary caregiver for her child, satisfying his or her physical and emotional needs.

Nurses acquire knowledge through their ability to identify, observe, and analyze the facts and reports surrounding them. They use their skills to obtain this knowledge and use it to improve their performance.

The application has proven practical thanks to the numerous benefits reported in various studies; therefore, having specialized and trained personnel in these units is vital. A survey in South Africa identified that 60% of nursing staff had no training in COPAP; however, they had a positive attitude towards it. Another study in seven hospitals in India identified that knowledge related to COPAP was deficient among health professionals. However, a statistically significant association was observed between their expertise and the state of training. On the other hand, in research carried out in the USA, nurses' knowledge from all Neonatal Critical Care Units in the country was evaluated. It was indicated that nursing staff needed educational offers emphasizing the knowledge and skills necessary to provide COPAP safely and effectively. In addition, informed professionals should develop evidence-based policies and procedures that lead to a successful program.

Finally, knowledge about the COPAP method can be defined as the knowledge obtained through training and experience in applying the kangaroo mother care method.

COPAP

Continuing along the lines of knowledge, which is considered a virtue in progress, we explain and characterize the COPAP method.

In 1978, the Colombian pediatrician Edgar Rey, concerned about the problems posed by the shortage of incubators and the impact of separating women from newborns in neonatal wards, proposed a pediatrician for newborns with a low birth weight of less than 2000 grams and developed the COPAP method. Noticing the low number of incubators to care for premature babies, the increase in neonatal mortality, and the appearance of a more significant number of hospital-acquired infections, they started a program of care for premature newborns (NB), which consisted of putting the baby skin to skin on its mother's chest, feeding on breast milk. As this method spread to other countries, new studies identified all the advantages of skin-to-skin contact for the newborn and their parents (Martínez Chávez, 2015).

According to the COPAP method, newborns with a birth weight of 2000 grams or less who cannot regulate their body temperature should remain with their mothers. The mother acts as an incubator and is the primary source of stimulation and nutrition. How? Newborns are placed skin-to-skin on their mother's chest and kept upright 24 hours daily. Mothers can share the kangaroo position with others, especially the newborn's parents, without interfering with breastfeeding habits. The caregiver sleeps in a semi-fowler position. There is evidence of the efficacy and safety of COPAP in stable premature newborns.

It has been shown that COPAP is at least as safe and effective as conventional incubator treatment for low birth weight infants who do not thermoregulate; it provides ideal conditions for the stable development of low birth weight infants, increases parental involvement and efficiency, and contributes to the healing process. Furthermore, it provides quality care at a fraction of the cost of conventional care and can be implemented at different levels of care in various settings (WHO, 2003).

The basis for the correct application of COPAP

According to the WHO (2011), COPAP consists of placing the baby in a prone position on the mother's bare chest. The baby, who is only wearing diapers, lies on the mother's chest, covered by her clothes, instead of staying in the incubator all the time. This method must be supervised by a professional, in this case, the nurse in charge.

COPAP objectives

According to (Pastor Calabuig J., 2019), the objective of the method is to improve the prognosis and outcomes of premature and/or low birth weight babies, moving away from the concept of "survival" towards that of "quality of life".

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• To stimulate an early and close relationship between the caregiver-baby binomial in order to develop an adequate emotional bond.

• Humanizing hospital and outpatient care for these babies.

• Educating and encouraging families in the management of premature and/or low birth weight newborns.

• Reducing the abandonment of these babies.

• Using technology rationally and reducing hospitalization costs.

Benefits

-For preterm newborns:

• Improves thermoregulation.

• Allows and encourages breastfeeding.

• Greater weight gain.

• Reduces hospital stay.

• Lower risk of infections.

-For parents:

• Reduces anxiety and distress.

• Increases the feeling of competence in care.

• Physical contact facilitates the recognition of the child as one's own.

Contraindications:

For the child

Hyperthermia - Hypothermia.

Skin wounds.

Unstabilized epilepsy.

For parents:

Contagious skin rashes

• Uncontrolled mental illnesses.

A newborn is considered premature if born before the end of the 37th week of gestation (WHO, 2021). The different degrees of prematurity are defined according to gestational age or birth weight and can define categories with varying risks of complications and neonatal mortality, as well as long-term morbidity.

According to the World Health Organization (WHO), prematurity is defined as birth that occurs before the completion of 37 weeks of gestation, from the first day According to their gestational age at birth, premature newborns (NB) can be categorized as (WHO, 2021, p. 11):

Extreme preterm (between 22 and 27.6 weeks of gestation);

Very preterm (between 28 and 31.6 weeks);

Moderate preterm (between 32 and 33.6 weeks);

• Late preterm (between 34 and 36.6 weeks). Normally, gestational age and weight are always related. Depending on this correlation, we talk about NBs with adequate weight, low weight or high weight for their age.

Nursing care in the COPAP method

- Demonstrate the skin-to-skin method to the mother, as well as explaining the advantages it offers for her and her baby.

- Teach the mother how to handle the underweight newborn without sudden movements.

- Reduce the intense light and noise level in the room, as well as the level of access for people, to promote tranquility for both the mother and the newborn.

- Supervise and evaluate the adaptation of the mother and the newborn, this activity is carried out progressively as the days go by.

- Train the mother to incorporate body massage techniques and apply them to her baby.

- Ensure that mothers do not touch other children, to avoid cross-infection. - Avoid handling children, except when taking vital signs or when it is strictly necessary to examine them.

- Monitor the newborn's vital signs.

- Keep a strict check on the newborn's weight, to assess the effectiveness of the method and the newborn's development.

- Extreme hygiene measures to avoid hospital-acquired infections.

- Provide health education to the mother regarding breastfeeding.

Patient care:

According to the WHO, when providing patients with effective care, it is vitally important to safeguard their safety. It is essential that all healthcare professionals try to reduce adverse medical events and associated harm. Constant vigilance to avoid average errors requires the collaboration of the entire team of healthcare professionals. To reduce errors and provide safe care for patients, healthcare systems must redesign and incorporate reliable and safe processes. Only with these efforts will the quality of healthcare improve and effective and safe care for patients be available (WHO, 2023).

Neonatal Care

The physical care of the newborn includes:

- Protection from infection and injury
- Maintenance of a clear airway
- Maintenance of a stable body temperature.

General aspects of procedures

Procedures are one of the most responsible acts in medical care. They are part of a series of conditions of professionals, especially knowledge, skills, ethical commitment and responsibility. Three general aspects are considered that encompass the execution of procedures.

In all areas of medical care, adequate staff training is essential.

In procedures, this point is essential and fundamental since the professionals in charge of patient care must acquire the necessary skills for the correct execution of the techniques. The subject is delicate and has received much attention in the medical literature because learning occurs mainly with the patient. This justifies that the teaching of medical practices deserves special consideration, as it includes multiple aspects related to ethical precepts, which should guide all medical acts. It is necessary that training be progressive and very rigorous in its fulfillment. It is a strict ethical imperative not to perform a procedure on a patient if one is not trained or supervised by another more experienced professional, at least in the learning stage. Theoretical concepts are essential for a good understanding of the indications and risks, but the manual skill for applying the method constitutes the whole challenge of teaching. In pediatrics, especially newborns, many procedures are more complex and require rigorous personal training. Every neonatology service must plan this aspect for nurses and doctors to make the learning practices system appropriate.

Errors occur in all walks of life as they are part of the human condition. Every day, multiple actions are taken, and various decisions are made, but at the same time, numerous errors are committed. The reasons are diverse and very complex, and the mechanisms involved are not yet well defined.

Parental consent.

According to law 26529 (Argentine Republic, 2009), consent could be defined as a declaration of will made by the patient; in the case of newborns and young children, the parents must assume this responsibility. After having been provided with sufficient information regarding their child's illness or condition, they are the ones who decide whether or not to give their consent to the treatment or procedure proposed by the doctor. Considering what the author indicates above, parental consent goes beyond the approval of procedures but rather a doctor-patient relationship, which includes communication, trust, and empathy. A nurse is responsible for a certain number of children. If a child is very ill, she will only be in charge of one child, and in critical and exceptionally demanding situations,

it may be that a child needs two nurses. The nurse has a key role in the treatment. She will supervise the child and assess whether the situation has changed so the doctor can evaluate the treatment; she will determine when to suction mucus from the airways and be in charge of nutrition. A good and experienced nurse will know "her" child well and will warn if the child, for example, is not receiving enough oxygen or, on the contrary, if he is receiving too much. If a child is incubating an infection, an experienced nurse will often know it before laboratory tests confirm it.

It is essential that the nursing professional working in the NICU has a broad scientific knowledge and a range of skills that enable them to provide quality care according to professional practice standards. This is why, through implementing methods of care such as COPAP. It should be noted that COPAP is one of the most economical forms of care for premature or underweight newborns, which could increase the survival rate of these patients in the NICU, taking into account the adequate participation of the parents, where the nursing professional becomes a guide to the practice of this method. In this sense, the present article is presented as an essay to reaffirm the importance of nursing care in these highly complex units, for which this professional requires continuous preparation and innovation of care techniques.

Nursing care during the intervention

Taking into account the needs of Virginia Henderson:

Need to breathe

To implement COPAP, the newborn must have respiratory stability. This is assessed using multiparameter monitors, but above all, by applying clinical assessment. This is based on observing the movements of the thorax and evaluating the frequency and depth to determine the respiratory pattern. Auscultation assesses the bilateral air entry in both lung fields and the possible appearance of abnormal sounds. Oxygen is a toxic drug and should only be administered in a measured and controlled way. Alarms should be programmed according to the recommendations issued by the Ministry of Health (WHO, 2021, p. 106). The administration of heated and humidified gases reduces airway complications.

- Carry out clinical assessment and assessment via the multiparameter monitor.
- Evaluate respiratory mechanics and characteristics.
- Administer a mixture of heated and humidified gases.
- Check the water level and temperature of the humidifier cup.
- Check the connection points of the tubes to prevent flow leaks.

Need for thermoregulation

Thermal stability is related to environmental and anatomical-physiological factors. During this period, thermoregulation depends on the neutral thermal environment (the range of environmental temperature in which metabolic expenditure is kept to a minimum) and temperature regulation is carried out by physical mechanisms through the mother-child binomial, keeping the body temperature within the normal range.

- Encourage skin-to-skin contact.
- Control the ambient temperature between 25-26°C.
- Cover the head with a cap to reduce the loss of body heat.
- Administer heated and humidified gases.

Need for food

During this period of hospitalization in the NICU, the initial method of feeding is parenteral nutrition, which aims to satisfy metabolic requirements and achieve a sustained increase in weight until the resolution of the pathological process and the reinstallation of the enteral route. One of the most relevant factors in the care of the newborn is adequate nutrition to facilitate recovery from the pathological state and optimize the child's clinical conditions. The nurse's role is fundamental, as they establish a direct and close relationship with the mother who provides milk for her sick or premature

baby and becomes the mainstay of the healthcare team as their nutritional contribution favors the growth and development of the child.

- Verify central and peripheral vascular access.
- Verify the position and fixation of the orogastric tube.
- Establish suction when the breast is empty.
- Control gavage feeding: infusion speed, milk temperature and position of the newborn.
- Encourage the active participation of parents.
- Encourage early breastfeeding.
- Provide information about the benefits of human milk.
- Teach breast pumping techniques and breast care.

The need to communicate with others

Communication is a dynamic and essential process for every human being. Newborns do not have the capacity to express themselves verbally and they express themselves through behaviour. For the family, communication with the healthcare team is very important because all the expectations for the care of their baby are placed on them.

- Prioritise early contact.
- Evaluate the verbal and non-verbal communication of the child and their family.
- Assess the parents' eye contact, tone of voice and how long they spend with their child.
- Encourage communication between parents and the healthcare team.
- Facilitate unrestricted access for parents and siblings.
- Use simple and clear language.
- Provide answers in a timely manner.
- Postpone routines that interfere with bonding.

Need for sleep and rest

Newborns who spend a long time in the NICU undergo multiple interventions that disrupt sleep and rest. In this case, favoring the organization of the central nervous system and reducing stress factors minimizes the damage this causes to their brain.

- Adapt the extrauterine environment to resemble the intrauterine environment in order to reduce acoustic and visual stimuli, and diagnostic and therapeutic techniques.
- Create a warm and safe environment.
- Provide individualized and comprehensive care according to the needs of the child and the family. Need to move and maintain a proper posture Newborns are fragile and vulnerable, therefore they need our protection and care.
- Facilitate care for correct positioning in the incubator and during the implementation of skin-to-skin contact, promote their flexor tone and help them bring their hands to the midline, in order to provide the newborn with adequate psychomotor development.

Need to learn

During the COPAP experience, parents live with uncertainty and anxiety. Therefore, they require guidance and education to incorporate care guidelines and warning signs. Family education should be carried out on an individual basis, respecting learning times.

- Teach the mother how to respond to the newborn's needs.
- Raise awareness of the importance of bonding.
- Educate in order to identify signs of stress and comfort during feeding.
- Recognize warning signs during the experience.
- Facilitate physiological postures during COPAP that reduce the risk of apneas. Need to act according to beliefs and values The individual who is part of the newborn's family makes decisions according to their personal convictions related to religious and cultural beliefs and a philosophy of life. Therefore, nursing must accompany and respect the values and beliefs of each family.

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• Help the family express their beliefs and values.
• Provide emotional support and reassurance.
• Offer psychological and spiritual support to the family unit.

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• Recognize warning signs during the experience.
• Facilitate physiological postures during COPAP that reduce the risk of apneas.

Need to act according to beliefs and values

The people who make up the newborn's family make decisions according to their personal convictions related to religious and cultural beliefs and a philosophy of life. Therefore, the nurse must accompany and respect the values and beliefs of each family.

• Help the family express their beliefs and values.
• Provide emotional support and reassurance.
• Offer psychological and spiritual support to the family unit.

Main complications of the preterm newborn

Prematurity is one of the most important causes of morbidity and mortality in the neonatal period, and it is because of its very physiological and biological immaturity that it is considered a high-risk patient. Among the most frequent complications are those related to the dysfunction of immature organic systems. According to the different systems, the most common problems are:

Cardiac:

Patent ductus arteriosus (PDA), which is the incomplete closure of the ductus arteriosus after birth, and the incidence increases with greater prematurity.

Central nervous system:

Poor sucking and swallowing reflexes, apnoea syndrome, intraventricular haemorrhage, delayed sensory and cognitive development.

Eyes:

Retinopathy of prematurity, myopia, and/or strabismus due to incomplete retinal vascularisation.

Digestive system:

Food intolerance, with an increased risk of aspiration; necrotizing enterocolitis, which manifests itself with bloody stools, a distended abdomen that is painful to the touch and food intolerance, is also a type of complication that can lead to others such as intestinal perforation with pneumoperitoneum, formation of intra-abdominal abscesses, formation of strictures, short bowel syndrome, sepsis, and death.

Kidneys:

Metabolic acidosis, due to decreased ability to concentrate and dilute urine; growth retardation.

Lungs:

Respiratory distress syndrome, bronchopulmonary dysplasia, due to inadequate production of surfactant to prevent alveolar collapse and atelectasis.

Metabolic problems:

Hypoglycemia and hyperbilirubinemia.

Temperature regulation: Hypothermia is caused by heat loss and difficulty maintaining body temperature in environments with temperatures below neutral.

Infections:

sepsis and meningitis. Newborns born between 34 and 37 weeks of gestation are at greater risk of short-term medical problems and long-term medical, behavioral, and learning complications. As we now know, there are several complications present in preterm infants, and the morbidity and likelihood of these complications occurring increase as the gestational age of the infant decreases. It is, therefore, essential to treat these disorders and maintain body temperature within normal parameters and infants according to their requirements and tolerance.

The importance of knowing both gestational age and birth weight lies in the preexisting relationship between the two. This relationship subdivides the preterm population into high-weight, adequate-weight, and low-weight gestational age groups, which condition the probability of postnatal morbidity.

Physical characteristics of the preterm newborn

According to Macías et al. (2021), Low birth weight newborn A term used to describe newborns with a lower-than-expected weight at birth regardless of their gestational age.

Causes of preterm birth

According to the WHO (2021), The causes that lead to preterm birth are, in most cases, multifactorial. Therefore, they are not specified. In some cases, maternal and/or fetal variables can be detected. However, even carrying out a retrospective study of the possible causes, it has not been possible to specify with accuracy the pathophysiological mechanisms that lead to premature or preterm birth. The following have been considered as the main risk factors:

Fetal causes: fetal distress, multiple gestation, erythroblastosis, and non-immune hydrops.

Placental causes: placenta previa and premature detachment of membranes. Uterine causes: bicornuate uterus and cervical incompetence (premature dilation).

Maternal causes: preeclampsia, chronic illnesses, infections, and drug addiction. Others: polyhydramnios and iatrogenic. There is scientific evidence that certain infections prevalent in mothers are a predominant factor in the etiology of preterm births over all the other causes already mentioned, the following being among the main ones: Maternal urogenital infections such as bacterial vaginitis, urinary infections that can cause asymptomatic bacteriuria or even pyelonephritis, sexually transmitted infections such as chlamydia, chorioamnionitis, the presence of bacteria: ureaplasma, urealyticum, trichomonas vaginalis, klebsiella pneumonia, 10 escherichia coli, and Haemophilus vaginalis are a cause of premature birth. The bacterial products stimulate the production of cytosines, which in turn produce inflammation of the fetal membranes and, consequently, the onset of labor. Urinary tract infections, as well as vaginal infections, constitute a risk factor for preterm birth in pregnant women; timely detection and adequate treatment of genitourinary infections to reduce the rate of neonatal morbidity and mortality secondary to prematurity. Infections in other areas include pneumonia, appendicitis, and periodontitis; any infection can cause an inflammatory process that leads to a uteroplacental response and, consequently, the premature onset of labor. Risk factors for preterm birth. According to the WHO (2021), the following are among the recurrent risk factors found in between 30% and 50% of pregnant women with preterm labor:

Age: under 20 and over 35. Multiple gestations.

Nutritional status: BMI <18.5 kg/m2 or BMI > 30 kg/m2. Micronutrient deficiencies. Tobacco use. Low socioeconomic status. Employment and working conditions (stress).

Uterine factors: previous uterine surgery, uterine malformations. Vaginal bleeding during the second and third trimesters of pregnancy. Intergenetic period of less than 12 weeks. Low birth weight and prematurity are associated with numerous biological maternal factors, such as maternal

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anthropometry, especially weight, which, at <50 kg at the start of pregnancy and a gestational weight gain of less than 8 kg, indicates risk, another gynecological-obstetric factor that influences is insufficient prenatal check-ups, which are essential for the proper development of the pregnancy. Several factors could be attributed to preterm birth. However, it is not possible to specify or verify the main ones; it depends a lot on prenatal care; therefore, at this point, it is worth emphasizing the importance of prenatal check-ups to detect these abnormalities more effectively and in time and thus contribute to reducing the morbidity and mortality of mothers and children.

Feeding the newborn:

Due to their immaturity, babies lack the reflexes of sucking, swallowing, and breathing, so they require enteral and/or parenteral feeding tubes to feed. To acquire this reflex in premature newborns, during enteral tube feeding, early sucking stimulation is used, which consists of perioral and intraoral stimulation with a pacifier, a gloved finger, or the nipple of an empty breast.

Breastfeeding is the most natural method of feeding premature newborns. Their mothers' milk is administered through the enteral feeding tubes until they can suckle. The benefits of feeding with breast milk are universally known. The WHO and UNICEF consider breastfeeding the fundamental form of nutrition in early human life because breast milk provides all the necessary nutrients during the first six months of life and, together with nutritious complementary foods, up to the age of two. Full-term and premature newborns need proper nutrients to develop properly: proteins, lipids, carbohydrates, calcium, vitamin D, iron, and phosphorus. Both the milk of the mother of a full-term newborn and that of the mother of a premature baby contains living cells, which play a crucial role in immunological protection against infectious, respiratory, gastrointestinal, and allergenic diseases, among others, and generate a reduction in infant mortality and morbidity rates.

Role of nursing

Like other professions, nursing staff has undergone various transformations since it has been based on a social concept. Like all social activity, it develops in a historical context of permanent change and conflict. So, its evolution has passed through a practice of care based on empirical knowledge, whose values were determined by certain ideologies influenced by traditional morality and models based on abnegation and sacrifice.

Care is the service that this professional group provides to society, and its functions serve as principles that underpin this care. Although the function that determines the practice of the profession is to care for health, it is also assigned the tasks of administering nursing care, services, units, and health education. Research and teaching have also been considered part of their practices. Although these functions are very general, it is necessary to specify the activities to be carried out by each professional category. These aspects must be considered as we manage our care and make our practice dynamic, transformative, and adaptable to new situations.

According to the PAHO report (2023, p.1): "Nursing professionals are at the forefront of service delivery and play an important role in people- and community-centered care. In many countries, they are leaders or key members of multidisciplinary and interdisciplinary health teams. They provide a wide range of services at all levels of health care."

As with other health professions, nursing specialties arise in response to historical changes and social needs, particularly those associated with health. Currently, we have a form of division of labor or fragmentation of professions that, in certain areas, demands new knowledge and technical skills from professionals and generally requires postgraduate studies.

Madeleine Leninger

The nursing theory closely related to the COPAP method is Madeleine Leninger's. This theory is a unique blend of care and culture. It considers the way of caring in each culture essential for the study and practice of nursing care. From this point of view, Leininger opens up a new area for the nursing profession as the classic theoretical and practical aims are considerably modified. The theory of nursing

care of diversity and universality and its research reveals a humanism formed by the study of care and caring that can be observed in the world's different cultures. This theory initiates the construction of a new paradigm, that of human care, accompanied by the method of ethnocide nursing that allows unknown dimensions in nursing to be carefully investigated, particularly from the people's point of view. The model of the rising sun symbolically signifies the knowledge of the nursing discipline that rises and is recognized more and more clearly. The upper part of the model can be a guide in daily practice and is of great help during field research work. The lower part of the model shows nursing practice in a more specific way. Following this scheme, once the cultural care and the worldview of the artistic group studied are known (see the dimensions in the diagram), nursing care is transformed into the union of generic and professional systems. Nursing care is a mixture of these two systems." (Leininger, 1991, p.47).

CONCLUSIONS

The project to train secondary school students in cardiopulmonary resuscitation (CPR) and the use of automated external defibrillators (AEDs) revealed significant results that reinforce the importance of education in basic life support (BLS). The theoretical and practical training allowed students to acquire fundamental knowledge and develop critical skills to act effectively in cardiorespiratory emergencies.

One of the most relevant findings was the increase in knowledge after the intervention, which went from an initial average of 41% to more than 60% in the final evaluation. This progress demonstrates that a well-structured educational approach can positively impact the community's preparedness to respond to emergencies. In addition, the students expressed greater confidence and willingness to act as first responders, reflecting a significant change in their perception and attitude toward these situations.

The project's success was based on its methodology, which combined theoretical sessions with supervised practice. This strategy allowed participants to apply the concepts learned in simulated scenarios, improving their understanding and competence in CPR maneuvers and AED handling. Likewise, the indirect impact on the community was highlighted as students shared the knowledge they acquired with their families, fostering a culture of prevention and response.

However, challenges were identified, such as the need to expand educational resources and increase the duration of practical sessions to optimize results. In addition, long-term follow-up was recommended to assess knowledge retention and practical application of acquired skills.

This research reaffirms the importance of integrating CPR and BLS training into school curricula. Training young people in these skills improves survival rates in emergencies and empowers communities to act more effectively and confidently. The combination of education, access to technology such as AEDs, and the support of public policies can significantly transform the response to cardiopulmonary emergencies, saving lives and reducing the associated sequelae. This approach should be considered a priority in the design of educational and public health programs.

REFERENCES

1. Acuña-Ojeda PB, Espinoza SM. Beneficios del método mama canguro en recién nacidos prematuros: una revisión sistemática. Ciencia arte en enfermería, 2019;(1), 63-68
2. Arivabene, J. C., & Tyrrell, M. A. R. (2010). Método madre canguro: vivencias maternas y contribuciones para la enfermería. Revista Latinoamericana de Enfermagem, 18, 262-268.
3. Barraza Peña, C. G., J. A., V. E., & Ramírez Ochoa, J. A. (2020). Percepciones asociadas al método madre canguro con recién nacidos prematuros. Ciencia y enfermería, 26, 32. https://dx.doi.org/10.29393/ce26-26pacb30026
4. Buera, M. M., García, V. P., Aranda, N. D. B., Pérez, A. M. A., García, M. P., & Fernández, T. M. (2021). Madeleine leininger, artículo monográfico. Revista Sanitaria de Investigación, 2(4), 63.

5. Calsin Mamani, M. A., & Silva Tafur, H. M. (2021). Conocimientos y actitudes sobre el método mamá canguro en madres de prematuros. [Tesis desarrollada para optar el Título de Licenciada en Enfermería]. Universidad Autónoma de ICA.
6. Carrasco Cando, B. A. & Y.C. (2020). Guía de manejo dirigida a las madres de recién nacidos pretérmino que integran el programa mamá canguro en el área de neonatología del hospital general docente Ambato. [Proyecto de investigación de licenciatura en Enfermería]. Repositorios Institucional Unidades. https://dspace.uniandes.edu.ec/handle/123456789/10896
7. Ruiz J.G., Charpak N., (2007) Guías de prácticas clínica basadas en evidencias para la óptima utilización del método Madre Canguro en el recién nacido pretérmino y/o bajo peso al nacer. Fundación Canguro y Departamento de epidemiología y estadística, Universidad Javeriana; Bogotá, Colombia.
8. Chuquimbalque Cuzcano, M. A. (2023). Nivel de conocimientos y las prácticas sobre el programa madre canguro en enfermeras del servicio de uci neonatal del hospital de emergencias Villa el Salvador, Lima. [Trabajo académico para optar el título de especialista en cuidados neonatales]. Repositorio institucional, Universidad Norbert Wiener.
9. Conde-Agudelo, A., Balizan, J., & Diaz-Rossello, J. (2011). Atención de madres canguro para reducir la morbilidad y la mortalidad en lactantes de bajo peso al nacer. Cochrane Database of Systematic Reviews, 3.
10. Enríquez Cadena, J. L. (2020). Evaluación de conocimiento sobre el método madre-canguro, profesionales de enfermería del servicio de neonatología, hospital San Vicente de Paúl. [Tesis de pregrado] Repositorio Digital, Universidad Técnica del Norte, Hospital San Vicente de Paul. http://repositorio.utn.edu.ec/handle/123456789/10326
11. Esperón, T., & Maricela, J. (2004). Reflexiones sobre funciones del personal de enfermería. Revista cubana de salud pública, 30(4).
12. OMS (2021) política de la prematurez. https://bancos.salud.gob.ar/recurso/politica-integral-para-la-prematurez.
13. República Argentina (2009). Ley nro. 26529: capítulo 3, artículo 5 consentimiento informado https://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=160432
14. República Argentina (2009). Ley nro. 26529 consentimiento informado https://www.argentina.gob.ar/normativa/nacional/ley-26529-2009-160432
15. OPS (2010). Método madre canguro: una solución segura y eficaz. https://www.paho.org/es/noticias/22-3-2010-metodo-madre-canguro-solucion-segura-eficaz.
16. OMS (2023). Seguridad del paciente. https://www.who.int/es/news-room/fact-sheets/detail/patient-safety
17. LEININGER, M. (1988). Care. The Essence of Nursing and Health. Detroit. Wayne State University Press.
18. Leininger, M. M. (1991). The theory of Culture Care Diversity and Universality. NLN publications, (15-2402), 5-68.
19. Lizarazo-Medina, J. P., Ospina-Díaz, J. M., & Ariza-Riaño, N. E. (2012). Programa madre canguro: una alternativa sencilla y costo eficaz para la protección de los recién nacidos prematuros o con bajo peso al nacer. Revista de salud pública, 14, 32-45.
20. Macías, G. G. B., Durán, F. A. P., Zambrano, C. J. S., & Peralta, D. F. O. (2021). Cuidados del recién nacido prematuro. Revista Recimundo 5(1), 361-370. https://doi.org/10.26820/recimundo/5.(1).enero.2021.361-370

21. Marbella, E., Lenin, Ó., & Briggitte, J. (2018) Factores de riesgo que dificultan el rol de enfermería en la aplicación del método madre canguro. Revista digital Paraninfo, 28. https://www.index-f.com/para/n28/e127
22. Marrier A, Modelos y teorías en Enfermería (2004). Florence Nightingale-Teoría del Entorno. Revista Electronica, 6.
23. MENÉNDEZ, E. L., (1991). Definiciones, indefiniciones y pequeños saberes. Alteridades, 1(1), 21-32.
24. Palencia Gutiérrez, E. M.; C. G., Ó. L. & P. T., J. B. (2018). Factores de riesgo que dificultan el rol de enfermería en la aplicación del método madre canguro. Revista Paraninfo Digital, 28. http://www.index-f.com/para/n28/e127.php
25. Pastor Calabuig, J. (2019). Beneficios del Método Madre Canguro en los recién nacidos prematuros. Revisión bibliográfica.
26. Patricia J. Ostía-Garza, L M.-Á., E. C. R-M, (2020), Salud, Arte y Cuidado. Revista Venezolana de Enfermería y Ciencia de la Salud, Vol. 13 (1), 51-55
27. Serva Arias, C. V., & J. A., L. E. (2021). Efectividad de los cuidados de enfermería mediante el método mamá canguro para disminuir el dolor en neonatos prematuros. [Trabajo académico para optar por el título de especialista en enfermería en cuidados intensivos neonatales]. Repositorio Institucional Universidad Norbert Wiener.
28. Torres Chicaiza, D. C. (2017). Nivel de conocimiento del personal de enfermería sobre el método madre canguro en recién nacidos prematuros del área de neonatología del hospital del Instituto Ecuatoriano de Seguridad Social- Ibarra [Tesis de pregrado Licenciatura en Enfermería], Universidad Técnica del Norte, Ibarra. http://repositorio.utn.edu.ec/handle/123456789/6817
29. Zapata Moran, M. (2022). Competencias específicas de la enfermera en el cuidado del prematuro del Hospital de Apoyo II–Sullana. [Tesis para obtener el grado académico de Maestra en gestión de los servicios de Salud]. Repositorio Digital Universidad Cesar Vallejos, Perú.

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CONFLICT OF INTEREST

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