Original Article

Multidisciplinary team perceptions about the implementation and safety of early mobilization for newborns in post-operative care

Entendimento da equipe multiprofissional sobre a mobilização precoce e a segurança da sua aplicação em neonatos no pós-operatório

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ABSTRACT | BACKGROUND: Early mobilization can be a therapeutic intervention that can prevent long-term consequences from prolonged bed rest in post-operative newborns. **OBJECTIVE:** Describe the knowledge of the healthcare professionals in the Newborn Intensive Care Unit (NICU) about early mobilization and its safety for post-operative infants. **METHODS:** This research is an analytical descriptive cross-sectional study with mixed methods, performed by analyzing a questionnaire given to NICU health professionals. **RESULTS:** The sample was composed of 31 professionals, of which 64.5% affirm that they know what early mobilization means, most of whom defined the intervention in terms of motor activity, 83% believe it is beneficial, 77.4% consider early mobilization safe. However, 90% of the professionals showed concerns for possible adverse events, the most cited being device dislodgment and hemodynamic decompensation. The majority stated that early mobilization should be avoided when concerned about hemodynamic instability or the type of surgery. Approximately 71% affirm that they did not receive educational training for implementing early mobilization. **CONCLUSION:** This study showed the need for more training and education about early mobilization for professionals and the establishment of evidence-based institutional protocols.

KEYBOARD: Newborn. Early mobilization. Post-operative. Multiprofessional team. Patient security.

RESUMO | INTRODUÇÃO: Neonatos no pós-operatório com repouso prolongado no leito estão sujeitos a consequências a longo prazo, sendo a mobilização precoce uma possibilidade de intervenção terapêutica. **OBJETIVO:** Descrever o entendimento dos profissionais de saúde de uma unidade de terapia intensiva neonatal (UTIN) cirúrgica sobre mobilização precoce e quanto consideram segura a aplicação em neonatos no pós-operatório. **METODOLOGIA:** Trata-se de um estudo analítico descritivo de corte transversal, através de uma abordagem quanti-qualitativa, com resposta de questionário semi-estruturado pelos profissionais de saúde da UTIN. **RESULTADOS:** A amostra foi composta por 31 profissionais. Destes, 64,5% afirmam saber o que é mobilização precoce, sendo que a maioria relacionou sua definição à atividade motora; 83% acredita haver benefícios. Em relação à segurança, 77,4% considera segura a aplicação da mobilização precoce, porém 90% acredita que podem ocorrer eventos adversos, sendo mais citados: perda de dispositivos e descompensação hemodinâmica. A maioria dos profissionais descreveu que não deve ser realizada a mobilização precoce a depender da cirurgia e em instabilidade hemodinâmica. Aproximadamente 71% afirmaram não ter recebido treinamento para a prática de mobilização precoce. **CONCLUSÃO:** Observou-se necessidade de treinamento da equipe sobre a temática e a instituição de protocolos institucionais.

PALAVRAS-CHAVE: Neonatologia, mobilização precoce, cuidados pós-operatório, equipe multiprofissional, segurança do paciente.

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Introduction

Newborns in the neonatal intensive care unit (NICU) for post-operative care can experience prolonged bed rest due to intensive therapy that can involve resuscitation and emergency interventions to promote stabilization and ensure survival.[1] However, it is known that prolonged bed rest within 24 to 48 hours can lead to asymmetrical weakness in all limbs, decreased tendon reflexes, developmental delay, increased hospitalization time, weight loss, increased risk for mortality, and negative musculoskeletal, cardiovascular, respiratory, integumentary, or cognitive consequences.[2,3]

For this reason, it is recommended that, as soon as a patient is clinically stable, rehabilitation interventions should be prioritized, including early mobilization, since complete bed rest is no longer a recommended practice in intensive care units (ICU).[1] Early mobilization is defined as a rehabilitation intervention within the first 48 to 72 hours upon admission to an ICU, as long as there are no contraindications to this intervention.[2,4] This therapeutic option is considered viable for pediatric patients, with beneficial results.[2,4]

The multidisciplinary team understanding of this topic is directly related to the team's involvement in its application. Considering that it is not only a physical therapy intervention, it is important to have every aspect of the hemodynamic controlled and the allowance to awakening and spontaneous movements to promote the early mobilization. Some authors state that there is a lack of team knowledge and an underestimate of the incidence of acquired weakness in ICU due to bed rest.[1,5]

Therefore, the objective of this study was to describe the understanding of healthcare professionals from a surgical NICU about early mobilization and how safe this intervention is for post-operative neonates, as well as describe what the team's current clinical practices is, what are the benefits and possible contraindications, and what the team has noted adverse events during the implementation of early mobilization.

Methods

An analytical descriptive cross-sectional study was conducted, using both quantitative and qualitative data. The study was performed in NICU at a pediatric hospital in Salvador, Bahia, Brazil, specializing in neonates' post-operative care with congenital malformations.

All professionals who directly assisted in the care for post-operative neonates in the NICU were eligible to participate in the study. The inclusion criteria were at least 6 months of experience in the specialty. In this study, the sample was doctors, nurses, physical therapists, and nursing assistants. Those who chose to participate signed the ethical, informed consent.

This study was approved by the ethical board from "Maternidade Climério de Oliveira – UFBA" and received approval number 4,398,854 on November 13, 2020. The data collection occurred from January to February 2021. We evaluated through a semi-structured questionnaire, composed of closed-ended questions about sociodemographic information and the subject of the study, as well as 5 open-ended questions about early mobilization. The professionals themselves answered the questionnaires. We named each professional from A to Z and then A1 to A5 to ensure privacy.

Descriptive statistics were used to analyze the data, with the categorical variables being expressed in absolute values and percentages- n (%). The open-ended questions were analyzed according to Bardin[6] and, when it involved a specific category, we analyzed it through proportions. The data was recorded in tables and graphs in Microsoft Office Word and Excel.

Results

We contacted 38 professionals in the NICU, of which 3 were excluded due to their time of experience and 4 declined to participate, resulting in 31 answered questionnaires. The sociodemographic information is displayed in Table 1.

For the definition of early mobilization, 64.5% answered "yes," while 32.3% answered "no," and 3.2% left the question unanswered. 83% of the participants described their understanding of early mobilization (Table 2).

Most of the participants (70.9%) responded that they were not trained on early mobilization, while 29% affirmed that they did receive training. Amongst them, 88.8% state that they received sufficient training to ensure safe interventions. Regarding the answer about the knowledge of any protocol unit, 77.4% stated that they did not know it.

When questioning the interprofessional team actions regarding early mobilization of infants in the post-operative unit, 90.3% of the participants described their interventions (Table 3).

When addressing the benefits of early mobilization, 83% of participants in the study believed that early mobilization is beneficial for this population, while 7% disagreed with the existence of benefits, and 10% did not answer or select both "yes" and "no." Table 4 summarizes the benefits cited by 74.1%.

In answer to the safety of implementing early mobilization in this population, 77.4% believed that it is safe to perform early mobilization, 16.1% responded that it is not safe, and 6.4% did not respond or selected both "yes" and "no." 90% from the sample believed that it is possible to have adverse events while 3% did not believe so, and 7% did not answer this question.

The adverse event cited by 87% included the following: dislodgement of invasive equipment or accidental extubating (48.3%); hemodynamic, respiratory, and neurological decompensation (38.7%); risk of injuries, lesions, or fractures (12.9%); increased pain (12.9%); rupture of surgical incisions or dehiscence (9.6%); pulmonary embolism (9.6%); cardiac dysrhythmias (6.4%); waste of excessive energy (3.2%); pneumothorax (3.2%); seizures (3.2%); falls (3.2%); secretions (3.2%). Of the sample, 4 professionals (A, J, L, A5) indicated the need for safety while mobilizing the infant, and 2 professionals (6.4%) emphasized the importance of proper training of the team members (A1, W). 12.9% of the participants chose not to answer this question.

The answers in which the professionals state that the early mobilization in neonate post-operative should not be performed are summarized in Table 5. Unfortunately, only 83.8% of the participants chose to answer this question.

Table 1. Sociodemographic information of the participants

Variables	Category	Absolute Frequency (n)	Relative Frequency (%)
Sex	Feminine	26	83.8%
	Masculine	04	12.9%
	No answer	01	3.2%
Profession	Medical Doctor	05	16.1%
	Nurse	09	29.0%
	Physical Therapist	07	22.5%
	Nursing Assistant	10	32.2%
Years since graduating	Less than 5 years	05	16.1%
	5 to 10 years	16	51.6%
	More than 10 years	08	25.8%
	No answer	02	6.4%
Specialization	Yes	25	80.6%
	No	05	16.1%
Type of Specialization	NICU	11	35.4%
	Neonatologist	05	16.1%
	Resident	01	3.2%
	Inpatient Physical Therapist	01	3.2%
	Pediatrics and Neonatology	02	6.4%
	Neonatal and Pediatric Physical Therapist	01	3.2%
	Orthopedic Traumatology	01	3.2%
	Obstetrical and Neonatal Nursing	01	3.2%
	No answer	02	6.4%
Years of neonatology experience	6 months to 1 year	05	16.1%
	2 to 3 years	02	6.4%
	3 to 4 years	04	12.9%
	More than 4 years	13	41.9%
	More than 10 years	07	22.5%

Table 2. Categories that arose from the answers of the participants in this study regarding the definition of early mobilization

Motor movement – 25.8%
"They are exercises performed to increase or improve muscular strength" E
"Motor stimulation" J
"Basically, a physical intervention with the objective of preventing the deleterious effects of prolonged bed rest and its future effects" K
"Early mobilization include strategies for movement and positioning performed early to promote the function and development of the neuro psychomotor system" M
"Early mobilization would be a way to move the infant" P
"To move the patient, change positioning early after a surgical procedure to decrease or avoid pressure ulcers" Q
"Actions that aim to produce muscular movement, even if passive, reducing pressure injuries caused by immobility" W
"Osteomyoarticular mobilization withing the patient's organizational" A1
Timing of the intervention – 19.3%
"The adequate stimulus performed immediately after the first instant in which the main injury was 'resolved' or 'stabilized,' after the safety criteria have been satisfied" L
"The act of changing the position precociously (within 24 hours of life)" N
"To move the infant before it is necessary" R
"Early mobilization is to move the patient the soonest possible according to their hemodynamic limitations to contribute to an improvement of respiratory and circulatory functions" T
"To anticipate the independent mobilization of the patient's clinical state" X
"When you perform early mobilization to promote the infant's development" A5
Patient profile – 12.9%
"The handling of care given to a patient in a grave health state" A
"It is an immediate intervention to an individual who is in a critical state on mechanical ventilators" C
"To stimulate patients in long periods of internment or on mechanical ventilation to help in their recovery" G
"Prevent any delays in the neurodevelopment of the infant independent of the causative factor" Z
Benefits – 12.9%
"It is a combination of activities for the patient in the ICU, the care with muscular frailty while on mechanical ventilation to prevent respiratory, muscular complications, etc." F
"It improves muscular, respiratory, and peripheral strength decreases hospitalization time and use of mechanical ventilation" I
"It serves to increase the patient's muscular strength and physical function, thus decreasing hospitalization time" O
"Mobilization interventions focused on preventing motor alterations and decreased strength in hospitalized patients" Y
Positioning – 9.6%
"Containing and organizing the baby's position" D
"I believe that it is the moving of the infant, change of positioning, positioning them in the mother's lap" S
"The early implementation of the positioning to minimize thrombotic events among other negative events" A3
Safety – 3.2%
"Interventions combined with the multidisciplinary team to ensure the safety of the infant." H

Table 3. Categories that arose from the answers of the interprofessional team regarding their early mobilization interventions in the post-operative neonatal unit

Positioning – 38.7%
"The use of nesting, bands, and positioning" D
"I believe that it occurs when I change the patient's position" E
"Change of positioning, alleviating pressure sites" G
"I believe that it is the action of adjusting the patient in bed safely and avoiding destabilization of the newborn" H
"Through adequate positioning, optimizing the median line and physiological flexion and the stimulus of neurodevelopment" M
"Performing position changes in the body limbs and trunk, as well as mild motor physical therapy" N
"Using cushioning to alleviate pressure sites, changing positions, elevating inferior body members with pillows, change of cervical position" O
"Positioning in bed, changing positioning..." P
"Changing positioning, rotating the oximeter, rotating blood pressure cuff sites" Q
"Alleviating pressure in members, rotating the head, elevating the inferior members" S
"Adequate positioning in bed, change of position" T
"The mobilization is performed prioritizing the central region (scapular and pelvic), seeking better positioning" Y
Safety of the movement – 25.8%
"Immediate intervention in critical patients in the hospital unit" A
"To take the needed measures and follow the unit's protocols" B
"Performed safely" C
"First, to consider the hemodynamic condition of the patient when performing the positioning and mobilization" J
"Several levels of mobilization exist according to the individual medical state of the patient (surgical + medical history)" K
"Early mobilization done by 4 hands is related to improved functional prognostics and decreased incidences of pressure injuries as a complication" A1
"Minimum handling" A3
"We generally handle with four hands so that it is favorable to the patient and does not generate instability but rather benefits" A5
Motor movement – 9.6%
"Through sensory and motor stimuli performed through various methods during interventions" L
"Performing the neuropsychomotor activities based on the patient's age" X
"Performing motor stimuli: articular movements, weight distribution, hip flexion, stretches, ankle dorsiflexion movement, tactile stimuli, vestibular stimuli..." Z
Hygiene care – 6,4%
"Hygiene, position changes, respiratory care, etc., and the vital signs which are important" F
"Taking needed care measures, nursing, monitoring, hygiene, position change, temperature control" I
Lack of knowledge or lack of clinical practice – 6.4%
"I do not have knowledge regarding the subject" V
"I perform it very little" W
Monitoring the patient – 3.2%
"Monitoring, observing for bleeding" R

Table 4. Summary of benefits cited by professional participants in the study

Benefits cited	Absolute frequency (n)	Relative frequency (%)
Prevention of pressure injuries	08	25.8%
Improved cardiovascular, respiratory, and muscular conditions	06	19.3%
Prevention of neuropsycomotor developmental delays	04	12.9%
Decreased mechanical ventilation time	03	9.6%
Reduced risk for complications	03	9.6%
Improved recovery of post-operative patients	03	9.6%
Decreased hospitalization time	02	6.4%
Decreased inflammation with improved scarring	02	6.4%
Prevention of improper or asymmetrical positioning	02	6.4%
Prevention of edema	02	6.4%
Improved physical function	02	6.4%
Improved mobility	02	6.4%
Improved bone density	02	6.4%
Increased comfort	02	6.4%
Pain control	02	6.4%
Reduced infections	01	3.2%
Prevention of pulmonary collapse	01	3.2%
Decreased prolonged sedative usage	01	3.2%
Prevention of lesions	01	3.2%
Reduced neurological residual effects caused by immobility	01	3.2%
Improved muscular strength	01	3.2%
Increased gastric peristalsis	01	3.2%
Improved weight gain	01	3.2%
Favors muscular tension relief	01	3.2%
Lack of knowledge about topic	01	3.2%

Table 5. Conditions cited by participants in the study in which early mobilization should not be performed for post-operative neonates

Conditions in which early mobilization should not be performed	Absolute frequency (n)	Relative frequency (%)
Hemodynamic and clinical instability	13	41.9%
Risk of imminent death	13	41.9%
Seriousness of medical condition	12	38.7%
Type of surgery	12	38.7%
Cardiac surgery	3	9.6%
Esophagoplasty	3	9.6%
Orthopedic surgery	1	3.2%
Laparoscopy	1	3.2%
No or Not sure	3	9.6%
Premature newborns with gestational age under 32 weeks and/or low-birth weight (less than 1100g)	2	6.4%
Ventilated and sedated	2	6.4%
Severe hypothermia	1	3.2%
Pulmonary hypertension	1	3.2%
Risk of gastric evisceration or dehiscence of sutures	1	3.2%
No condition warrants immobilization (for some situations, only mobilization for pressure relief)	1	3.2%

Discussion

Understanding the definition of early mobilization and training the team

Most of the professionals (64,5%) report knowing the concept of early mobilization. The definition of the literature regarding early mobilization in pediatrics4 is the combination of active and/or strengthening exercises appropriate for development within an interval of 48 to 72 hours after being admitted to a pediatric intensive care unit (PICU), in the absence of contraindications and within safety criteria established, considering increasing levels of mobility adequate for neurological development of children in serious medical conditions.

Over half of the participants (58%) reported similar concepts to what is found in literature, but there is still not much clarity about the timing for initiating this mobilization, since some participants believe that the term "early" refers to "before it becomes necessary" (R, N – Table 4).

About 26% of the individuals seem not to comprehend the concept of early mobilization because they refer to information regarding benefits, positioning, and safety of the patient as the definition, without counting the 16% of the participants who did not answer this question. Koo et al.[5] utilized a questionnaire to evaluate the understanding of 311 medical professionals and physical therapists' understanding of early mobilization in adults and their perceptions about the barriers or facilitators regarding this practice. More than half of the participants affirmed having a lack of knowledge or training for early mobilization on mechanically ventilated patients. The physical therapists felt more trained and informed than the doctors, but they depended on medical orders to initiate early mobilization. About 39% of the physical therapists believe that their abilities and knowledge were insufficient.[5]

This information agrees with this study in that 70.9% of the participants affirm that they did not receive training for early mobilization. Therefore, it seems to justify the difficulty in describing the definition regarding early mobilization since many of the participants did not receive specific training, leading to a misunderstanding of definition and acting.

Multidisciplinary team early mobilization action for post-operative neonates

The category that the professionals most cited was repositioning (38%), while only 9.6% described exercise movement as the act of mobilizing. The literature considers passive repositioning as an activity of "not mobilizing" and muscle strengthening exercises and activities of physical function as "mobilization."[1,7] A study considered activities for passive range of motion (ROM), active ROM, and active or passive repositioning as part of early mobilization. However, they differed in mobilization activities such as sitting at the edge of the bed, sitting to standing, transfers, ambulation, and play.[8] Another study showed that the change of position of the newborn is important to maintain musculoskeletal integrity and avoid contractures and deformities.[9] Therefore, it is reasonable to justify the diverging concepts from the participants regarding what actions are encompassed in early mobilization.

Some professionals (A5 and J – Table 5) reinforced their professional action regarding patient safety, not necessarily mentioning interventions, but regarding the technique such as moving "with four hands" and repositioning, in addition to passive articular motion.

Some professionals described their action of early mobilization as monitoring and hygiene care (9.6%). No scientific evidence was found to support these findings as professional actions of early mobilization. In addition, about 6% stated a lack of knowledge about the subject or little experience with early mobilization, while 9% of the participants did not respond to this section. These findings may reflect the lack of protocols for early mobilization in the work unit or knowledge thereof, as 77.4% of the participants cited. This corroborates with findings in the literature that affirm the lack of protocols and written guidelines and lack of knowledge of the multidisciplinary team in this issue to be barriers for the implementation of early mobilization.[5,10]

The literature shows that implementing a study program, engagement, and implementation and evaluation of early mobilization in a PICU involving the training of the whole team resulted in greater professional adherence to early mobilization while increasing the amount of mobilization performed after the program.[8]

Choong et al.[1] described a practical guideline about early mobilization in pediatric care, with a multi-professional team expert that describes this schema care as "ABCDEFGH," where A is for attention in analgesia and avoiding the high level of sedation and allows the awakening, B is for allowing spontaneous breathing, C is for controlling sedation and analgesia, D is avoiding delirium, E is early mobilization and exercising, F is for familiar involvement, G is for good nutrition and H for humanity.[1] This recommendation highlights the paper of the multidisciplinary team in the early mobilization, considering the development, the individuality of each child, the gradual progression of exercising for 30 minutes, once per day, divided into intervals, until it is possible to increase frequency, duration, depending on the functional objectives stablished.[1]

Considering the unique factors of the newborn, the professionals must pay attention to signs of the neonate's development before implementing early mobilization, including autoregulation, physiological stability, signs of approximation or retraction, and signs of stress and pain.[9,11] Another recommendation is the maintenance of their regulation state using some interventions associated with mobilization, such as non-nutritive suctioning, contention, positive touch, inflection postural positioning with members in the medial line, and using slow transitioning of movements and wrapping to maintain gentle flexion of the arms and legs while permitting small ranges of spontaneous motion.[9] One professional specifically emphasized the postural flexion position and medial line in the description of early mobilization (M), and three professionals mentioned interventions that are contingent on a specific requirement, such as "using four hands" (A1 and A5) and wrapping (D) (Table 5).

Another type of newborn handling in a NICU that should be prioritized is skin-to-skin contact with the infant's guardians with the objective of thermoregulation, improved oxygen saturation, decreased respiratory rate, decreased hospitalization time, improved weight gain, increased breastfeeding rates after discharge, as well as being related to improved long-term development and decreased depression rates in mothers.[9] Only one participant mentioned positioning in a mother's lap when defining early mobilization (S – Table 4), but no professional mentioned this as an act of early mobilization.

Benefits of utilizing early mobilization

Most of the participants in this study affirmed that early mobilization benefits the post-operative neonate, which agreed with the literature (J, L). Several authors point to benefits of early mobilization in pediatrics: increased activity of members, early ambulation, decreased time in an ICU, increased mobilization, decreased mechanical ventilation time, improved functional results; decreased venous thrombosis cases, increased cognitive and functional improvements; and for neonates: favors motor development through various movement and sensory-motor experiences, as well as prevention of musculoskeletal complications, such as dystonia.[12-14]

Many participants cited the benefits of preventing the consequences of immobilization, agreeing with the literature (K, O, W). Three studies[2,3,15] describe the consequences of immobilization: loss of muscle mass and strength and decreased muscle protein synthesis, which increases the muscular catabolism and reduces endurance, as well as bone density loss, demineralization, and increased bone resorption instead of formation.[2,3] Related to the cardiorespiratory system, consequences include decreased cardiovascular conditioning, reduced blood volume, reduced cardiac output by 30%, increased heart rate, and more serious complications such as the higher risk for pneumonia, atelectasis, atrophy, loss of diaphragm muscular strength.[2,3] In addition, there is a higher risk for pressure injury, delirium, insulin resistance, alterations to the sleep cycle, thrombotic events, and delayed motor development.[3,15]

Safety of implementing early mobilization

Many participants (77.4%) believe that implementing early mobilization in post-operative neonates is safe, but 90% believe that it is possible to have adverse events during early mobilization. These findings disagree with the findings in the literature, which associates the safety of early mobilization with the absence of adverse events. Several studies show that adverse events do not occur during early mobilization, and a systematic review relates that from the 11 studies included (n=1,178 children), only 1.1% of the participants had an adverse event associated with mobilization, which supports it as a very safe intervention, according to pediatric literature.[4,8,10]

In addition, Wieczorek et al.[8] affirm that no studies reported interrupting early mobilization due to hemodynamic, respiratory, pain, or behavioral criteria.

Zheng et al.[16], in their study about the impressions of the team and family about early mobilization, affirm that a professional mentioned that the variability in team members' knowledge and the level of comfort in performing early mobilization is a factor that challenges this practice. They also state that the professionals need more assurance in their implementation of early mobilization than the family.[16] This information validates our study in that the safety of early mobilization was mentioned in several answers in the questionnaire.

Cuello-Garcia et al.[4] described probable adverse events, including acute hypotension or hypertension, dysrhythmias, hypoxia, loss of equipment, patient intolerance, and falls. The participants also expressed these in this study.

Three individuals mentioned pulmonary embolism as a possible adverse event of early mobilization (I, F, K), but this information is not supported in the literature. Witmer and Takemoto[14] relate that the chance of venous thrombosis in hospitalized infants is secondary to using central venous catheters; immobility is a risk factor, especially for pediatric post-operative patients who have active inflammatory factors. These authors recommend early mobilization as important to prevent venous thrombosis, independent of risk factors due to the benefits caused by mobilization.[14]

Another data found regarding possible adverse events was what four professionals (A5, A1, W, L) attributed to an adverse event being related to "good performance" or training of the team as a controlling factor. Choong et al.[1] emphasize the importance of making a safety checklist before mobilizing patients with the following precautions: first, identify the lack of contraindications; revise possible precautions; physical therapist or occupational therapist evaluate and establish initial activity goals; activity and objectives are revised by the team; available personnel needed for mobilization; open and protected areas of access, intact wound dressings; patient with adequate analgesia and optimal comfort as determined by the medical team.[1]

Many professionals (Q, A5, K, G) believe that early mobilization must not be performed in cases of hemodynamic or clinical instability and after some types of surgeries that involve medical restrictions or serious clinical considerations. Therefore, the practice recommendations for pediatric early mobilization describe contraindications to mobilization in which only repositioning is recommended: hemodynamic instability, respiratory instability, neurological instability, or surgical considerations (active bleeding, unstable pelvis, spinal fracture, or acute surgical emergency).[1]

One professional (D) mentioned the use of mechanical ventilation as a contraindication to early mobilization, but the literature recommends this condition as a precaution for early mobilization.[1] Another professional (B) mentioned the level of sedation as a contraindication to early mobilization, but literature shows that excessive sedation is a barrier to early mobilization.[5] In the clinical recommendations for early mobilization entitled "ABCDEFGH," the first letter represents the adjustment of analgesics to avoid high levels of sedation.[1] This shows that sedating the patient is not considered a contraindication to mobilization but a barrier in clinical practice for necessary medical adjustments.

Two professionals (L, M) mentioned the very premature gestational age (less than 32 weeks) and low birth weight (less than 1100 g) as contraindications to early mobilization in post-operative patients. The Kangaroo Method Manual affirms that neonates under 32 weeks go through a period of physiological reorganization, which indicates that they do not support much stimulation since they are easily fatigued and can show signs of stress, such as apnea.[17] It is also understood that it is important for the neonate to maintain thermoregulation for their survival (as cited by Z) and that patients with extremely low birth weight are at greater risk for losing heat when born and while being cared for in neonatal units, making it important to pay attention to the quantity of manipulation in each day.[17]

Three professionals also emphasized the lack of knowledge of situations in which early mobilization should not be performed or answered "no" to an open-ended question (F, I, A3), which supports the need for training and understanding of the topic.

Limitations of the study

A major limitation of this study was the inability to access all the professionals of the NICU team in the hospital, which contained 45 professionals, probably due to the distribution of the professionals in the given shift and due to the limited time of data collection. This study cannot be generalized since it reflects the findings of a single unit in the NICU.

A lack of literature in neonatology was observed, specifically about early mobilization in post-surgical care. Future studies are needed in multiple health centers with greater methodology rigor to extract data to increase knowledge of early mobilization practice in surgical NICUs.

This study was important to evaluate the understanding of the multi-disciplinary team about early mobilization, which can generate greater engagement of the professionals in its application. Further publications about the subject are important to clarify the importance of the action of every member of the NICU team in early mobilization for neonates that have surgical procedures.

Conclusion

It can be concluded that the healthcare professionals have some knowledge about early mobilization, but there is a need for clarification, requiring training about the topic, such as the formation of a training improvement and establishment of institutional protocols. In addition, many professionals recognize early mobilization as being a safe intervention that benefits post-operative infants.

Authors' contribution

Deitos MV participated in the conception, design, data collection, data analysis, writing, and review. Andrade AN participated in the writing and review of the article. Andrade ALD participated in the translation, writing, and review of the scientific article.

Competing interests

No financial, legal, or political conflicts involving third parties (government, companies and private foundations, etc.) have been declared for any aspect of the submitted work (including, but not limited to grants and funding, participation in advisory council, study design, preparation manuscript, statistical analysis, etc.).

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