v. 4, n. 63, 2024

International Journal of Health Science

REPERCUSSIONS OF ENDOTRACHEAL ASPIRATION IN PREMATURE CHILDREN UNDERGOING PHYSIOTHERAPEUTIC ASSISTANCE: A SERIES OF CASES

Francisca Nayra de Sousa Vieira
``Centro Universitário Christus``
Fortaleza – Ceará
http://lattes.cnpq.br/2047572531842558

Mara Marusia Martins Sampaio Campos
Physiotherapist at: ``Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC); Professor at: ``Centro Universitário Christus``` (UNICHRISTUS)
Fortaleza – Ceará
http://lattes.cnpq.br/6515305320777878

Maria Valdeleda Uchoa Moraes Araújo
Physiotherapist at ``Hospital Geral Cesar Cals`` (HGCC); Professor at: ``Centro Universitário Christus`` (UNICHRISTUS).
Fortaleza – Ceará
http://lattes.cnpq.br/7314440835465770

Jamille Soares Moreira Alves
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH)/ Maternidade Escola Assis Chateaubriand (MEAC)
Fortaleza – Ceará
http://lattes.cnpq.br/8477958626474245

Lila Maria Mendonça Aguiar
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC).
Fortaleza – Ceará
http://lattes.cnpq.br/0550364998554069

Inês Cristina Pereira Potrichi
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC)
Fortaleza – Ceará
http://lattes.cnpq.br/2100600735795627

Luciana de Sena Melo Veras
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH)/ ``Maternidade Escola Assis Chateaubriand`` (MEAC)
Fortaleza – Ceará
http://lattes.cnpq.br/1418831561314792

Emilia de Alencar Andrade
Physiotherapist at ``Hospital geral de Fortaleza`` (HGF)
Fortaleza – Ceará
http://lattes.cnpq.br/8742653633

Luan Nascimento da Silva
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC) /``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC)
Fortaleza – Ceará
http://lattes.cnpq.br/2218632188500044

Daniela Uchoa Pires Lima
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC) /``Empresa Brasileira de Serviços Hospitalares``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC)
Fortaleza – Ceará
http://lattes.cnpq.br/0913372177824754

Carlos Vinícius Brito Taumaturgo
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC)/``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC) and at Instituto Dr. José Frota (IJF)
Fortaleza – Ceará
http://lattes.cnpq.br/9762838643307851

Adelina Braga Batista
Physiotherapist at Hospital Complex of ``Universidade Federal do Ceará`` (UFC) /``Empresa Brasileira de Serviços Hospitalares ``(EBSERH) / ``Maternidade Escola Assis Chateaubriand`` (MEAC) and at: ``Hospital de Messejana`` (HM)
Fortaleza – Ceará
http://lattes.cnpq.br/8128595143625452

Abstract: INTRODUCTION: Endotracheal Aspiration is a multidisciplinary procedure used to optimize the airway clearance process in patients using invasive mechanical ventilation admitted to the Neonatal Intensive Care Unit. OBJECTIVE: To analyze the repercussions caused by endotracheal aspiration undergoing physiotherapeutic assistance. METHODOLOGY: This is a series of cases carried out with 1 neonate (N) and 2 infants (L1 and L2) admitted to the Intensive Care Unit of Maternidade Escola Assis Chateaubriand, using invasive mechanical ventilation and physiotherapeutic intervention, during the period of March to May 2024. A pre-peri- and post-natal characterization form for the studied premature infants and an observation form for vital and neurobehavioral signs recorded before, during and immediately after Endotracheal Aspiration were used as collection instruments. RESULTS: The mothers of the newborns/infants studied were an average of 34.6 years old, were of mixed race, had incomplete secondary education, lived with their partner and did not carry out payed work. The 3 subjects evaluated were with chronological ages of 17,35 and 37 days of life, respectively, 2 were male, very premature, extremely low birth weights and suitable for gestational age. Regarding vital signs, it was observed that 2 had a drop in HR, an increase in respiratory drive (RR) and 3 had a drop in SatO2 during endotracheal aspiration. All those studied during this period showed changes in behavioral states, many signs of withdrawal and few signs of approximation, demonstrating that the use of comfort measures alone did not promote neurobehavioral regulation in this study. CONCLUSION: it is important to carry out more research that addresses ways to prevent toxic stress in premature newborns (PTNB), especially when carried out by health professionals in neonatal hospital units.

Keywords: Neonatal Intensive Care Units; Intratracheal Intubation; Respiratory Therapy.

INTRODUCTION

The cerebral system has its peak of development between the 24th and 40th weeks of gestational age (GA), so the occurrence of insults at this stage, especially before the 34th week of gestation, can result in significant damage to neurodevelopment, which may present itself as short and long term (Dias et al, 2022; Brazil, 2022; Machado et al, 2021).

Prematurity stands out as a biological insult and still affects around 15 million newborns every year around the world. Because they are born before completing the desired gestational cycle, premature babies experience difficulties in adapting after birth, causing them to require life support resources and pharmacological supplementation, available in Neonatal Intensive Care Units (NICU) (Lima et al, 2022; Machado et al, 2021;

The NICU is a highly complex hospital environment that promotes human and technological assistance to premature babies. Human support is provided by the multidisciplinary team and technological support is provided by resources and equipment, which, while ensuring the survival of the premature newborn, can also cause potential damage to their neurobehavioral development (Rocha et al, 2023).

Sousa et al (2023) highlight the importance of the physiotherapist remaining full-time as part of the multidisciplinary team in NICUs, working through specific preventive and curative behaviors. And in that study, the importance of respiratory assistance is highlighted, which is provided through conventional and current techniques, in addition to procedures such as Endotracheal Aspiration (ETA), the object of the study (Souza et al, 2023; Medeiros 2023; Abreu, 2021).

AET is a multidisciplinary invasive procedure in which a flexible sterile catheter is inserted through the endotracheal tube, with negative pressure also applied to remove pulmonary and tracheobronchial secretions. avoid complications. In the studied population, organic and systemic immaturity is added to other aggressions produced by the NICU environment., which can generate high levels of discomfort and stress (Kessler; Alcará; Barduzzi Netto, 2019, Silva et al, 2018).

Normally, premature babies, when exposed to stressful situations, have their self-regulation capacity activated, promoting a response to the functioning of their subsystems (autonomous, motor, attention and social interaction, regulatory system and behavioral states), explained in the Synchronous-active Theory of Development – (TSAD) (Otoni; Grave, 2022).

According to TSAD (Als et al, 2009), it is possible to observe the reactions of newborns to stimuli emitted by the environment and are called approach or withdrawal signals. Signs of approximation mean that the newborn (NB) is receiving intervention in quantity, in which he/she shows signs of approximation with the professional. On the other hand, "withdrawing" or moving away indicates that the professional needs to wait for a more suitable moment to carry out the intervention (Araújo et al, 2022; Riccioppo; Almohalha, 2018).

In many services of AET is still performed routinely without observing and respecting the responses of neonates/infants to this procedure, which gives relevance to the present series of cases, which had the general objective of analyzing the neurobehavioral responses caused by endotracheal aspiration during care physiotherapeutics.

According to Araújo et al (2022), it is important to carry out more research that addresses ways to prevent toxic stress in premature newborns (PTNB), especially when carried out by health professionals in neonatal hospital units. The research becomes relevant because it offers theoretical material for humanized action to professionals who serve this population, so that they can adapt their handling, as well as reevaluate conduct and/or procedures.

METHODOLOGY

The study is a series of cases, which according to Capp and Nienov (2021) comprises a study of three to ten or more clinical cases. According to Torres-duque; Patino and Ferreira (2020) is an observational research model that analyzes the research objectives and subsequently evaluates and stabilizes in order to obtain a similar outcome, or not, among the subjects studied.

In the present series of cases, the sample was non-random and carried out in the NICU 3A of the Hospital e Maternidade Escola Assis Chateaubriand – MEAC from March to May 2024. The MEAC is part of the hospital complex of ``*Universidade Federal do Ceará*`` (UFC) managed by the Brazilian Hospital Services Company (EBSERH), whose mission is to help, teaching and research for excellent care for the health of women and newborns (Brazil, 2020).

The research was approved by the Ethics and Research Committee (CEP) of the Unimed Hospital with Opinion: 6.632.701 and CAAE: 75813523.1.0000.0161 and was subsequently validated by the Ethics and Research Committee of the study site.

The study took place in 2 moments: initially, an active search was carried out in the medical records in order to identify premature babies who met the inclusion (indication) and exclusion (contraindication) criteria in accordance with the Standard Operating Procedure (SOP) for Respiratory Physiotherapy Neonatal from the study

International Journal of Health Science ISSN 2764-0159 DOI https://doi.org/10.22533/at.ed.1594632428063

hospital (Silva and Carvalho, 2021). Contact with those responsible (mothers) was made after this identification and informally, with authorization given through the Free and Informed Consent Form (TCLE).

Based on the information contained in the medical record, a form was filled out containing socioeconomic data (maternal age, ethnicity, education, marital status and profession); prenatal care (dependence on alcohol, cigarettes, drugs during pregnancy, number of prenatal and perinatal consultations (type of birth and gestational complications). Postnatal data consisted of the characteristics of GA, weight and GA/ Weight of those studied at birth.

In the second moment, after authorization from the physiotherapist on duty, the researchers followed the physiotherapeutic intervention, recording the following data in the second instrument: respiratory techniques used, the type of aspiration system, the performance of comfort measures and signs of withdrawal and approximation of the autonomous, motor and attention and interaction subsystems based on TSAD (Heidelise et al apud Otoni; Grave, 2022). Vital signs such as Heart Rate (HR), Respiratory Rate (RR), Oxygen Saturation (SatO2) and neurobehavioral responses were evaluated before, during and immediately after the AET procedure.

For the physiotherapeutic intervention, the babies remained in a heated incubator, following diet schedules, as well as protocols to combat hospital infections. The neonate/ infant was positioned in the supine position and the physiotherapist applied respiratory techniques, endotracheal aspiration and open oral cavity aspiration, respectively. To better visualize the cases, the neonate was identified by "N" and the infants by "L1 and L2".

The HR, SatO2 were recorded according to data shown on the multiparametric monitor, the RR was visualized on the mechanical ventilator (Vyaire iX5) and the supply and total were always recorded. Behavioral states were analyzed by the physiotherapist and researcher, according to the Sleep and Wakefulness States Assessment Scale adapted from Brazelton. In order to analyze the variables studied, HR of 85 to 205 beats per minute (bpm), SatO2 of 93 to 96%, RR of 30 to 50 beats per minute (irpm) were considered normal standards.

To analyze behavioral states, the scale was used adapted from Brazelton provides a score for each state of sleep or wakefulness of the child and presents 6 states, varying in: State 1 (deep sleep), no movements and regular breathing, State 2 (light sleep), eyes closed and some body movements, State 3 (drowsy), eyes opening and closing, State 4 (awake), eyes open, minimal body movements, State 5 (fully awake), vigorous body movements and State 6 (crying) (Brazelton apud Padilha; Bombarda, 2021).

After collection, the data was analyzed in a descriptive and inferential way, being presented in the form of tables in order to be analyzed using comparisons of the visualized scores.

The research complied with all the ethical precepts of research with human beings that govern confidentiality, secrecy, anonymity, autonomy, beneficence, non-maleficence, justice and equity, regulated by Resolution 466/12 of the National Health Council/ Ministry of Health/ MS (Brazil, 2013) and the Code of Ethics for Physiotherapists and Occupational Therapists - Resolution of the Federal Council of Physiotherapy and Occupational Therapy (COFFITO) 424 (Coffito, 1978).

RESULTS

The mothers of the newborns/infants studied were an average of 34.6 years old, were of mixed race, had incomplete secondary education, lived with their partner and did not carry out payed work. Among the prenatal variables, it was seen that none of the mothers had used teratogens such as alcohol and illicit drugs during pregnancy, however they had reactive immunoglobulin (IgG) for STORCH infections such as toxoplasmosis (L1 and L2), rubella (N and L1) and cytomegalovirus (N and L1).

In the variables related to prenatal and perinatal care, it was observed that the 3 mothers had less than 6 prenatal consultations, had an abdominal birth and were primiparous (N and L1). Among the indications for premature birth are HELLP Syndrome and pregnancy toxemia (pre-eclampsia/eclampsia). All mothers had previous hospitalization and used corticosteroids before birth.

Three subjects were evaluated, 1 neonate (N) with 17 days of life (dv) and 2 infants (L1 and L2) with 35 and 37 dv respectively. N and L1 were male and "L2" was female. The newborn (N) and infant 2 (L2) were classified as very premature and "L1" as extremely premature, "N" as very low birth weight (VLBW) and "L1 and L2" were extremely low birth weight (ELBW), however, in the correlation between GA and weight, all were presented as adequate for gestational age (AGA) (Brazil, 2001).

The second part of the collection consists of physiotherapeutic monitoring, which occurred in the following sequence: secretion removal, AET and oral cavity techniques and therapeutic positioning/adjustment. Among the physiotherapeutic techniques used by professionals, the following stand out: Thoracoabdominal Rebalancing (RTA), Increased slow expiratory flow (AFEl) and therapeutic positioning. AET was performed in a closed system in all consultations. The probe was subsequently opened and the vacuum tested inside the incubator in order to aspirate the oral cavity.

Vital signs and neurobehavioral responses recorded before, during and immediately after the AET procedure are highlighted in Table 2.

It can be seen in the table above that "N and L2" showed a drop in HR during AET, returning to higher standards after the procedure, while "L1" showed an increase during followed by a decrease immediately after the procedure. In relation to RR, "L1 and L2" showed an increase in respiratory drive during the procedure and "N" showed less participation in the respiratory cycle.

ALL THOSE EVALUATED HAD A DROP IN SATO2 DURING AET

In relation to the behavioral states, "N" who was in light sleep before AET, appeared drowsy during the procedure and in light sleep immediately after, "L1" who was awake transitioned to drowsy during the procedure and in light sleep afterwards and " L2" who were in light sleep before AET, became fully awake during the procedure and remained so immediately afterwards.

The comfort measures carried out by professionals are listed in Table 3. Table 4 shows the relationship between not carrying out comfort measures before AET, with many signs of withdrawal being observed, and carrying them out immediately after the procedure with few signs of approximation., that is, that the use of comfort measures alone did not promote neurobehavioral regulation in this population.

Many signs of withdrawal (15) were observed at the time of AET, which proves that the procedure causes discomfort in the babies studied and even though their self-regulation demonstrated through signs of approximation (6) were not of great importance if we compare with those of withdrawal.

CASES	N	L1	L2
			
CHRONOLOGICAL AGE	17dv	35dv	37dv
IG AT BIRTH	29s and 3d	24s and 6d	25s and 3d
BIRTH WEIGHT	1066 kg	740 kg	896 kg
WEIGHT/GA CORRELATION	AIG	AIG	AIG
CORRECTED IG	31s and 6d	32s and 4d	31s and 5d

TABLE 1: CLASSIFICATION OF CHILDREN STUDIED

Source: The own author, 2024.

Abbreviations: GA (gestational age), s (weeks), d (days), kg (kilograms).

DATA	AET		
FC	**BEFORE**	**DURING**	**AFTER**
N	174 bpm	158 bpm	166 bpm
L1	147 bpm	159 bpm	157 bpm
L2	114 bpm	88 bpm	149 bpm
FR	**BEFORE**	**DURING**	**AFTER**
N	18/51 (33) ipm	18/37 (19) ipm	18/39 (21) ipm
L1	30/36 (6) ipm	30/41 (11) ipm	30/32 (2) ipm
L2	20/46 (26) ipm	20/49 (29) ipm	20/54 (24) ipm
SATO2	**BEFORE**	**DURING**	**AFTER**
N	94%	86%	95%
L1	96%	83%	98%
L2	90%	88%	96%
EC	**BEFORE**	**DURING**	**AFTER**
N	2	3	2
L1	4	3	2
L2	2	5	5

TABLE 2: VITAL SIGNS AND NEUROBEHAVIORAL RESPONSES IN AET

Source: The own author, 2024.

Abbreviations: HR (Heart rate), RR (Respiratory rate), SatO2 (Oxygen saturation), EC (behavioral state); bpm (beats per minute); ipm (raid per min).

DATA	What comfort measures were taken afterwards?
N	Therapeutic Positioning
L1	Professional or Family Warmth
L2	Therapeutic Positioning, Professional or Family Comfort

TABLE 3: COMFORT MEASURES CARRIED OUT

Source: the own author, 2024.

SIGNS OF WITHDRAWAL OR STRESS BEFORE			
Have you carried out comfort measures before? NO			
	S. Autonomous	**S. Engine**	**Attention and Interaction**
N 	Sudden movements	Finger spacing	Restlessness and silent crying
L1 	Sudden movements and scares	Finger separation, Hyperextension of the legs and grimaces	Silent Cry
L2 	Sudden Movements and Irregular Breathing	Hyperextension of legs, Hyperextension of trunk, Spreading of fingers and Grimacing	Apathetic staring, Sudden facial movement, Irritability, Restlessness and Staring
SIGNS OF WITHDRAWAL OR STRESS AFTER			
Did you take comfort measures afterwards? YES			
	S. Autonomous	**S. Engine**	**Attention and Interaction**
N 		Hand on face	
L1 			
L2 		Semi-flexion or flexion of arms, legs and trunk, hand on face, look for a shield, hands together	Easily soothes and lifts the eyebrows

TABLE 4: SIGNS OF WITHDRAWAL/APPROXIMATION AND RELATIONSHIP WITH COMFORT MEASURES

Source: the own author, 2024.

DISCUSSION

According to Lima et al (2022), neonatology is still one of the most worrying scenarios in Brazil, as there is a significant increase in the number of premature newborns admitted to ICUs, with increasingly lower GA and birth weight.

Martins et al (2022), when studying the perceptions of nursing mothers when experiencing prematurity in the NICU, observed that they had an average of 28 years of age, had births between the 24th and 36th weeks of gestation, had completed high school, were married and they were unemployed. Defilipo et al (2022) and Schiavo et al (2020) relate prematurity to low age, primiparity, cesarean section and low education, respectively. All the studies mentioned above highlight a strong relationship between prematurity and low adherence to prenatal care, data also found in the present study.

In a study by Vannin et al (2020), the existence of STORCH-type infection (syphilis, toxoplasmosis, rubella, mumps, herpes, among others) was observed in 6.9% of pregnancies. Syphilis was the most common infection, responsible for 48.1% of STORCH infections and present in 3.1% of the total sample. It was observed that 14.2% of pregnant women used drugs (legal or illegal)

during pregnancy, the most common of which was cigarettes. Other drugs used were crack, marijuana and alcoholic beverages, data that partially corroborates the present research, as the women studied deny using alcohol and illicit drugs during pregnancy.

Lima et al (2022), when studying extrauterine growth retardation (EUGR), observed that it can occur in patients with lower birth weight, longer hospitalization and use of mechanical ventilation (MCV), variables found in this study.

The present study considered AET when performed by physiotherapists, who are part of the professionals who work in NICUs, who tend to carry out this intervention with the aim of stimulating respiratory and motor functions through specific techniques and procedures, as described in the intervention carried out in this study.

Amaral, Bernardi and Seus (2023), when analyzing physiotherapeutic performance in a NICU, observed that among the techniques highlighted by professionals were therapeutic positioning and aspiration, encouraging development with an emphasis on the midline, tactile stimulation and RTA. Dias et al (2022) highlight secretion removal techniques, which according to the literature are part of conventional respiratory physiotherapy and among which are (AFEl), manual vibrocompression, manual hyperinflation (HM) and AET.

The AET technique, the object of this study, is the responsibility of the multidisciplinary team, and is almost always necessary after secretion removal techniques, however it is worth highlighting that according to COFFITO Agreement 474 this procedure must only be performed at the time of physiotherapeutic intervention. and if the professional deems it necessary, it is not that professional's responsibility (Coffito, 2016), which justifies the analysis of this procedure being carried out only by physiotherapists and during the intervention.

As it is an invasive procedure and given the characteristics of premature babies, this research sought to evaluate the real vital and neurobehavioral responses that this may cause in the neonate and infant. Gonçalves, Tsuzuki and Carvalho (2015), when carrying out a systematic review on tracheal suctioning, highlight that according to the American Association of Respiratory Care (AARC) and the Evidence-based guideline for suctioning the intubated neonate and infant, this becomes safer when variables such as respiratory sounds, SpO2, skin color, respiratory rate, respiratory pattern, hemodynamic variables (HR, blood pressure (BP), heart rate and intracranial pressure (ICP), characteristics of the aspirated secretion, such as color, volume, consistency and odor, cough characteristics, ventilatory parameters such as peak inspiratory pressure and plateau pressure, TV, flow, exhaled volume and FiO2 are monitored before, during and after the procedure.

Menger et al (2021) studied the neurobehavioral and cardiorespiratory repercussions of hammock positioning in PTNBs in a NICU and observed that the variables evaluated (HR, RR and SatO2) remained within normal limits, showing no significant differences between moments evaluated, given that it differs from the present study.

Araújo et al (2022) evaluated signs of withdrawal in 30 preterm infants in the autonomic, motor, behavioral and attention and interaction subsystems after checking body weight, with 18 showing tremors, signs of withdrawal in the autonomic subsystem, sudden movements and hyperextension of the legs in the motor subsystem. In the subsystems of behavioral states and attention and interaction, 30 presented a dumbfounded, fixed and apathetic look, data also verified in the present research after AET.

Albuquerque and Albuquerque (2017) mention some positioning and containment strategies used in NICU services, such as the roll, swaddle and net, which according to the authors lead to gains not only in the field of development, but also simplify treatment and make it viable the recovery of the PTNB. Paiva (2022), when studying Therapeutic Positioning, concluded that it can contribute to minimizing the negative effects of prematurity, stimulating the physiological control of neuromuscular development (flexor pattern), self-regulation and promoting restraint limits. The theme of the present study proved to be quite relevant, however, the barriers encountered such as revalidation of the research hospital's zip code and the clinical profile of the newborns/infants presented during the study delayed collection and reduced the sample respectively.

CONCLUSION

In this study, it was seen that among the risk factors for prematurity in relation to the maternal profile, only low education was found, since the mothers were mostly primiparous and of advanced ages.

Endotracheal aspiration caused changes in the values and profile of HR, RR, SatO2 and behavioral states of the neonates/infants studied and despite carrying out comfort measures they still showed many signs of stress.

Finally, it is suggested that this topic be addressed in other research with a more robust sample and longer collection time in order to confirm the findings of this research and so that the evidence corroborates the implementation of measures that can reduce stress in the premature population, as humanized interventions have gained ground by showing that they can minimize, or eliminate, developmental changes resulting from early birth.

REFERENCES

ABREU, G.S.M. **Estratégias não-farmacológicas na gestão da dor associada a procedimentos dolorosos em recém-nascidos internados em neonatologia,** Porto; s.n; 20220223. il., tab.Tese em Português | BDENF - Enfermagem | ID: biblio-1373651. Disponível em: https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1373651. Acesso em:20/01/2024.

ALBUQUERQUE, T.M.; ALBUQUERQUE, R.C. Estratégias de posicionamento e contenção de recém-nascido pré-termo utilizadas em Unidades de Terapia Intensiva Neonatal. **Revisbrato**, v. 1, n. 1, p. 40–51, 2017. Disponível em: <http://dx.doi.org/10.47222/2526-3544.rbto4254>.Acesso em :12/04/2024.

AMARAL, J. Q. DO; BERNARDI, L. D. P. SEUS, T. L. C. **Atuação fisioterapêutica em unidades de terapia intensiva neonatal do Rio Grande do Sul.** Fisioterapia e Pesquisa, v. 29, n. 4, p. 350–356, out. 2022.

ARAÚJO, B. B. M. De *et al*. Neurobehavioral signals in preterm infants in body weight check: a quasi-experimental study. **Revista Brasileira de Enfermagem**, v. 75, p. e20210584, 2022.

ALS, H. A synactive model of neonatal behavioral organization: framework for the assessment of neurobehavioral development in the premature infant and for support of infants and parents in the neonatal intensive careenvironment. **Physical & Occupational Therapy in Pediatrics**, v. 6, p. 3–53, July 2009 DOI:10.1080/J006v06n03_02

BRASIL.Gov.br [homepage na Internet]. **Missão, Visão e Valores-Maternidade Escola Assis Chateaubriand-MEAC**, 23/11/2020. [acesso em 27 abr 2024]. Disponível em: https://www.gov.br/ebserh/pt-br/hospitais-universitarios/regiao-nordeste/ch-ufc/acesso-a-informacao/institucional/missao-visao-e-valores.

BRASIL.Gov.br [homepage na Internet]. **Campanha ressalta importância dos cuidados com bebês prematuros:Equipe Neonatal da MCO-UFBA/Ebserh realiza ação educativa sobre Prematuridade**. 21/06/2022.[acesso em 27 abr 2024]. Disponível em: https://www.gov.br/ebserh/pt-br/hospitais-universitarios/regiao-nordeste/mco-ufba/comunicacao/noticias/campanha-ressalta-importancia-dos-cuidados-com-bebes-prematuros

BRASIL. Ministério da Saúde. **Dia Mundial da Prematuridade: "Separação Zero: Aja agora! Mantenha pais e bebês prematuros juntos".** Brasília, 2021.

BRASIL. Resolução CNS n° 466, 12 de dezembro de 2012. Aprova diretrizes e normas de pesquisa envolvendo seres humanos. **Diário Oficial da União, Brasília**, DF, n° 12, seção 1, p. 59, 13 jun. 2013.

COFFITO, Conselho Federal de Fisioterapia e Terapia Ocupacional - **ACÓRDÃO Nº 474**, DE 20 DE MAIO DE 2016 – Dispõe sobre o papel Fisioterapeuta em relação ao procedimento de aspiração traqueal, 05/09/2016. Disponível em:https://www.coffito.gov.br/nsite/?p=5075. Acesso em:19/05/2024.

COFFITO, Conselho Federal de Fisioterapia e Terapia Ocupacional- Exame de Resolução COFFITO-10. **Diário Oficial da República Federativa do Brasil**, Brasília, p.5.265-8, 1978, Seção 1, parte 2.

CAPP, E; NIENOV, O.H. **Epidemiologia aplicada básica.** Porto Alegre, RS: Edison Capp e Otto Henrique Nienov, 2021.

DIAS, L.S. *et al*. Técnicas em fisioterapia respiratória para a remoção de secreção em recém-nascidos internados na UTI neonatal: uma revisão de literatura: Techniques in respiratory physiotherapy for the removal of secretion in newborns interned in the neonatal ICU: a literature revie. **Brazilian Journal of Development,** *[S. l.]*, v. 8, n. 11, p. 74336–74345, 2022.

DEFILIPO, É. C. *et al*. Factors associated with premature birth: a case-control study. **Revista Paulista de Pediatria**, v. 40, p. e2020486, 2022.

GONÇALVES,R.L.;TSUZUKI, L.M.; CARVALHO, M.G. S. Aspiração endotraqueal em recém-nascidos intubados: uma revisão integrativa da literatura. **Rev Bras Ter Intensiva**, v.27 n.3, p. 284-292, 2015.

KESSLER, R.M.G.; ALCARÁ, L.P; BARDUZZI NETTO, T.V.L. REVISÃO INTEGRATIVA: FISIOTERAPIA EM TERAPIA INTENSIVA NEONATAL. **Revista Interdisciplinar de Estudos em Saúde**, *[S. l.]*, v. 9, n. 2, p. 227-238, 2019.

LIMA, K. *et al*. Incidence of extrauterine growth restriction and risk and protective factors associated in very low birth weight infants. **Residência Pediátrica**, v. 12, n. 3, p. 1–7, 2022.

MACHADO, J.S. *et. al*. Premature birth: topics in physiology and pharmacological characteristics. **Revista da Associação Médica Brasileira**, *[S. l.]*, v. 67, n. 1, p. 150-155, 2021.

MARTINS, M.C. *et al*. Percepções de mães nutrizes ao vivenciarem a prematuridade na unidade de terapia intensiva neonatal. **Cogitare Enferm**. [Internet]. 2022 [acesso em 20/05/2024]; Disponível em: http://dx.doi. org/10.5380/ce.v27i0.80125.

MARTINELLI, K. G. *et. al*. Prematuridade no Brasil entre 2012 e 2019: dados do Sistema de Informações sobre Nascidos Vivos. **Revista Brasileira de Estudos de População,** *[S. l.]*, v. 38, p. 1-15, 2021.

MEDEIROS, R.L. de *et al.* Atuação da fisioterapia respiratória na Unidade de Terapia Intensiva Neonatal. **Research, Society and Development,** *[S. l.]*, v. 12, n. 3, 2023.

MENGER, J.de L.*et al.* EFEITOS DA REDE DE POSICIONAMENTO NOS PARÂMETROS CLÍNICOS DE PREMATUROS ADMITIDOS EM UNIDADE DE TERAPIA INTENSIVA NEONATAL: UMA REVISÃO SISTEMÁTICA. **Rev Paul Pediatr**.v.39, :e2019399.2021.

OTONI, A.C.S., GRAVE, M.T.Q. Avaliação dos sinais neurocomportamentais de bebês pré-termo internados em Unidade de Terapia Intensiva Neonatal. **Rev Ter Ocup Univ**, v.25, n.2, p.151-158, maio/ago, São Paulo, 2014.

PADILHA, K.B; BOMBARDA, A. Estimulação tátil-cinestésica em recém-nascido pré-termo. **Revista Ciência & Humanização do Hospital de Clínicas de Passo Fundo**, v. 1, n. 1, p. 22–37, 2021. Disponível em: <http://dx.doi.org/10.29327/2185320.1.1-2>. Acesso em 23/05/2024.

PAIVA, T. O Posicionamento Terapêutico Neonatal. In: Os desafios das políticas sociais, inclusão e o trabalho em rede na promoção da qualidade de vida. [s.l.]: **EPITAYA**, 2022, p. 221–233.

RICCIOPPO, M. R. P. L.; ALMOHALHA, L. A percepção materna sobre os sinais neurocomportamentais de bebês pré-termo internados na enfermaria pediátrica. **Revista Família Ciclos de Vida e Saúde no Contexto Social**, v. 6, n. 1, p. 35, 2018.

ROCHA,A. de S. *et al*.O papel da equipe multidisciplinar na UTI neonatal. **Brazilian Journal of Implantology and Health Sciences,** v. 5, . 5, 2023, P. 4915-4931.2023

SCHIAVO, R. A. *et al.* Fatores materno-infantis associados ao desenvolvimento de bebês prematuros e a termo. **Revista Psicologia e Saúde**, 2021. Disponível em: <http://dx.doi.org/10.20435/pssa.vi.1031>. Acesso em 01/06/2024.

SILVA, M. G de C. CARVALHO, E. M. [homepage na Internet]. **FISIOTERAPIA RESPIRATÓRIA NEONATAL - PRO. FIS.004.pdf**. 15/06/21.acesso em 27 abr 2024].Disponível em: https://www.gov.br/ebserh/pt-br/hospitais-universitarios/regiao-nordeste/ch-ufc/acesso-a-informacao/protocolos-e-pops/protocolos-meac/ Maternidade-escola-assis-chateaubriand/fisioterapia/pro-fis-004-fisioterapia-respiratoria-neonatal.pdf/view.

SILVA, M. F. da *et al.* Impacto da Prematuridade no Desenvolvimento Neuropsicomotor Infantil. **Brazilian Journal of Implantology and Health Sciences**, v. 6, n. 4, p. 401–431, 2024. Disponível em: <http://dx.doi.org/10.36557/2674-8169.2024v6n4p401-431>.Acesso:14/02/2024.

SOUZA, A. P.P. de *et al.* **PERFIL DO RECÉM NASCIDO INTERNADO EM UTI NEONATAL SUBMETIDOS A FISIOTERAPIA EM 2018.** Trabalho de Conclusão de Curso - Fisioterapia, 2019. Disponível em: <https://www.repositoriodigital.univag.com.br/index.php/tccfisio/article/view/1544>. Acesso em: 2 jun. 2024.

TORRES-DUQUE, C. A.; PATINO, C.M.; FERREIRA, J. C.arvalho. Série de casos: delineamento de estudo essencial para a construção de conhecimento e a proposição de hipóteses para doenças raras e novas. **J BrasPneumol**, v. 46, n. 4, 2020.

VANIN, L. K. *et al.* MATERNAL AND FETAL RISK FACTORS ASSOCIATED WITH LATE PRETERM INFANTS. **Revista Paulista de Pediatria**, v. 38, p. e2018136, 2020.