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RESEARCH ARTICLE (ORIGINAL)

Knowledge of the multidisciplinary team about neonatal post-resuscitation care

Conhecimento da equipa multidisciplinar acerca dos cuidados pós-reanimação neonatal

Conocimientos del equipo multidisciplinar sobre cuidados posreanimación neonatal

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Abstract
Background: The multidisciplinary team caring for at-risk newborns should identify the risk factors for asphyxia early on. The team should be prepared for cardiopulmonary resuscitation and post-resuscitation care and have theoretical knowledge, practical skills, and ethical behaviors to minimize adverse events and provide safe care.
Objective: To assess the knowledge of the multidisciplinary team about neonatal post-resuscitation care.
Methodology: Cross-sectional study in a neonatal unit in Fortaleza-CE-Brazil. A questionnaire was administered to the multidisciplinary team, selected by convenience, and analyzed using the positivity index.
Results: The team consisted mostly of women, aged 30 to 40 years, with a postgraduate degree, who had witnessed neonatal cardiorespiratory arrest and had attended a training course. They had an adequate knowledge positivity index (99.1%) regarding vital signs and oxygen saturation; borderline knowledge of blood gas dosage (71.8%), and poor knowledge (20.9% to 60.0%) about monitoring central venous pressure, urine output, blood glucose, and cardiac enzymes. Participants suggested using hard technologies, with only one professional recommending soft/relational technologies.
Conclusion: There is a need for effective professional training, continuing education, and awareness-raising interventions to promote a holistic approach to newborn care.

Keywords: patient care team; asphyxia neonatorum; cardiopulmonary resuscitation

Resumo
Enquadramento: Torna-se imperativo que a equipa multidisciplinar de assistência ao recém-nascido de risco, identifique precocemente riscos para asfixia. Esta deve estar preparada para reanimação cardiopulmonar e cuidados pós-reanimação; com conhecimento teórico, habilidades práticas e ações éticas para minimizar eventos adversos, proporcionando uma assistência segura.
Objetivo: Avaliar o conhecimento da equipa multidisciplinar acerca dos cuidados ao recém-nascido pós-reanimação.
Metodologia: Pesquisa transversal, numa unidade neonatal de Fortaleza-CE-Brasil. Aplicou-se um questionário à equipa multiprofissional, selecionada por conveniência, com análise pelo índice de positividade.
Resultados: Evidenciou-se uma equipa feminina, 30 a 40 anos, com pós-graduação, que presenciou paragem cardiorrespiratória neonatal e fez curso de aperfeiçoamento. Apresentou adequado índice de positividade do conhecimento (99,1%) quanto aos sinais vitais e saturação de oxigénio; conhecimento limítrofe para dosagem de gasometria (71,8%) e sofrível (20,9% a 60,0%) na verificação da pressão venosa central, débito urinário, glicemia e enzimas cardíacas. Sugerem uso de tecnologias duras, apenas um profissional recomenda tecnologias leves/relacionais.
Conclusão: Necessidade de ações efetivas de qualificação profissional, educação contínua e sensibilização para um olhar holístico ao recém-nascido.

Palavras-chave: equipe de assistência ao paciente; asfixia neonatal; reanimação cardiopulmonar

Resumen
Marco contextual: Es imprescindible que el equipo multidisciplinar que atiende a los recién nacidos de riesgo identifique los riesgos de asfixia de forma precoz. Deben estar preparados para la reanimación cardiopulmonar y los cuidados posteriores a la reanimación; con conocimientos teóricos, habilidades prácticas y acciones éticas para minimizar los eventos adversos y proporcionar cuidados seguros.
Objetivo: Evaluar los conocimientos del equipo multidisciplinar sobre los cuidados del recién nacido tras la reanimación.
Metodología: Estudio transversal realizado en una unidad neonatal de Fortaleza-CE-Brasil. Se administró un cuestionario al equipo multiprofesional, seleccionado por conveniencia, y se analizó mediante el índice de positividad.
Resultados: Se observó un equipo formado por mujeres de entre 30 y 40 años, con titulación de posgrado, que habían presenciado paradas cardiorespiratorias neonatales y habían realizado un curso de formación. Presentaban un índice de positividad de conocimiento adecuado (99,1%) sobre las constantes vitales y la saturación de oxígeno; conocimiento limitado sobre la medición de la gasometría (71,8%) y conocimiento escaso (del 20,9% al 60,0%) sobre la comprobación de la presión venosa central, la diuresis, la glucemia y las enzimas cardiacas. Se sugiere utilizar tecnologías duras, solo un profesional recomienda tecnologías blandas/relacionales.
Conclusión: Se necesita una formación profesional eficaz, educación continua y sensibilización sobre un enfoque holístico de los recién nacidos.

Palabras clave: equipo de atención al paciente; asfixia neonatal; reanimación cardiopulmonar

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Introduction

Neonatal survival is at the heart of the global health agenda and the Sustainable Development Goals. In Brazil, perinatal asphyxia is a major public health issue (Almeida et al., 2017).

Of the three million births in Brazil, there are 12 asphyxia-specific early neonatal deaths every day, without congenital anomalies, five of them in full-term newborns (NBs). Respiratory failure and shock are examples of hemodynamic alterations that lead to inadequate oxygen delivery to meet the metabolic needs of the cell (asphyxia), which can lead to cardiopulmonary arrest (CPR) or even death (National Association of Emergency Medical Technicians [NAEMT], 2017).

Therefore, determining the level of knowledge of the multidisciplinary team caring for at-risk NBs about CPR and post-resuscitation care is essential to use technical-scientific knowledge, practical skills, and ethical and respectful behavior.

This research is justified and relevant because of the need to identify the challenges, knowledge limitations, and training possibilities of multidisciplinary teams working in neonatal units. In addition, it is important to systematize post-resuscitation care with an impact on the prognosis, using safe technologies and humanized care for a comprehensive approach to NBs and their families.

This study aimed to assess the knowledge of the multidisciplinary team about neonatal post-resuscitation care.

Background

According to the International Liaison Committee on Resuscitation (ILCOR) International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations (CoSTR) guidelines, resuscitation is a set of procedures to maintain the hemodynamic stability and life support of NBs by maintaining normal temperature; monitoring heart and respiratory rates at levels compatible with life; monitoring isolated exhaled carbon dioxide during non-invasive mechanical ventilation; the need for supplemental oxygen; and chest compression techniques, among others (Berg et al., 2023).

In the northern region of Brazil, Neto et al. (2022) found that prematurity, very low or extremely low birth weight, 5-minute Apgar score of less than 7, small for gestational age, the presence of meconium, tobacco use, absence of a partner, spontaneous abortions, number of prenatal consultations, and male gender were risk factors for advanced maneuvers in neonatal resuscitation (Migoto et al., 2018).

The delivery room and the professionals responsible for NB care should be prepared for any intercurrence and critical condition at birth. This multidisciplinary team should be able to get the anamnesis from the mother to identify fetal risk conditions, prepare the material for immediate use, and have agility, efficiency, scientific knowledge, and technical skills. They should also be trained to quickly diagnose changes in vital signs and dysfunction of oxygen supply to tissues, thus reducing the possibility of CPR, maximizing survival and neurological recovery (Melo et al., 2021), and avoiding the causes of morbidity and mortality, both early and late, that can lead to multiple organ failure, brain damage, or both (Fundação Oswaldo Cruz, 2019; NAEMT, 2017).

The success of resuscitation increases with post-resuscitation care, which require a well-trained team equipped with technologies and systematic strategies that promote effective and timely interventions to provide cardiorespiratory and neurological support, thus improving prognosis and reducing morbidity and mortality rates (Wyckoff et al., 2020).

Research question

What is the level of knowledge of the multidisciplinary team about neonatal post-resuscitation care?

Methodology

This cross-sectional descriptive study, with a predominantly quantitative approach, was carried out in a maternity school in the city of Fortaleza, Ceará-Brazil, from June to July 2021.

The population consisted of all professionals in the multidisciplinary team (nurses, nursing technicians, physicians, physiotherapists) of the neonatal unit, selected by convenience. These professionals were invited by printed letter attached to a flannel board and sent by message, after authorization from the coordinators. The final sample consisted of 110 professionals from the following sectors: Obstetric Center, Conventional Neonatal Intermediate Care Unit (CNICU), and Neonatal Intensive Care Units (NICUs). The inclusion criteria included having worked in the neonatal unit for at least 6 months. Professionals who were not present during the data collection period due to illness or personal reasons were excluded.

Data collection only took place after approval by the Research Ethics Committee (Opinion No. 4.741.197), in compliance with Resolution No. 466/2012, of December 12, and Circular Letter No. 2/2021/CONEP/SECNS/MS, of February 24 (Ministério da Saúde & Conselho Nacional de Saúde, 2012; Ministério da Saúde, 2021).

After accepting the invitation, the participant received the link to the Informed Consent Form and an online questionnaire on Google Forms® with a Likert-type scale (1 corresponded to *disagree*, 2 to *neither agree nor disagree* and 3 to *agree*).

The instrument had sociodemographic and occupational questions (gender, age, profession, education level, duration of training, length of professional experience, capacity building) and questions to assess their level of knowledge about neonatal post-resuscitation care (monitoring of temperature, heart rate, respiratory rate, oxygen saturation, transport) and the use of health technologies to support clinical practice. For this second part, the Guidelines for CPR were used as a validated reference to

assess professionals' level of knowledge (American Heart Association [AHA], 2020).

Data were analyzed using descriptive statistics (absolute and relative frequencies), organized in Excel spreadsheets, presented in tables, and discussed in the light of the relevant literature. The research followed the guidelines of the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) statement of the EQUATOR network (Elm et al., 2007).

In order to better determine the level of knowledge, *positive* and *negative* concepts were established to assess professionals' answers. To this end, 110 answers represent 100% of this confirmation. The criteria adopted for analysis were the classification indices suggested by Saupe and Horr (1982), whereby the higher the positivity index, the better the quality of care, indicating a higher level of knowledge of the professional. This index is interpreted as follows: desirable care (100% positivity); adequate care (90 to 99% positivity); safe care (80 to 89% positivity); borderline care (71 to 79% positivity); and poor care (70% positivity or less).

Results

This sample consisted mostly of women (84.5%) aged 30 to 40 (50.9%). Concerning their professional classes, 28 (25.5%) were physicians, 23 (20.8%) physiotherapists, 31 (28.2%) nurses, and 28 (25.5%) nursing technicians. With regard to their education level, 56 (50.9%) had a lato sensu postgraduate degree, 11 (10%) had a stricto sensu master's degree, and only two (1.8%) had a doctoral degree. The longest periods of training and professional experiences corresponded to more than 10 years (45.9% and 49.1%, respectively).

Table 1 shows that most professionals (*n* = 91; 82.7%) had already witnessed at least one episode of neonatal resuscitation and post-resuscitation care, with a prevalence of physiotherapists (*n* = 22; 95.7%) and physicians (*n* = 26; 92.8%). A similar percentage of professionals had attended neonatal resuscitation training courses, namely physiotherapists (*n* = 22; 95.7%) and physicians (*n* = 24; 85.7%), followed by nurses (*n* = 19; 61.3%) and nursing technicians (*n* = 20; 71.4%).

Table 1

Multidisciplinary team members who had witnessed episodes of neonatal resuscitation and attended neonatal resuscitation training courses (n = 110)

Professional category	Witnessed neonatal resuscitation				Attended neonatal resuscitation training courses			
	YES		NO		YES		NO	
	n	%	*n*	%	*n*	%	*n*	%
Physician	26	23.6	2	1.8	24	21.8	4	3.6
Physiotherapist	22	20.0	1	0.9	22	20.0	1	0.9
Nursing technician	22	20.0	6	5.5	20	18.2	8	7.3
Nurse	21	19.1	10	9.1	19	17.3	12	10.9
Total	**91**	**82.7%**	**19**	**17.3%**	**85**	**77.3%**	**25**	**22.7%**

Table 3 shows the professionals' knowledge of monitoring vital parameters after a resuscitation episode and the impact of post-resuscitation care on the child's prognosis. Based on the criteria for the classification of care suggested by Saupe and Horr (1982), the monitoring of temperature, heart rate, respiratory rate, and oxygen saturation was considered adequate (85.7% to 100% of professionals). In other words, 99.1% of adequacy of the level of knowledge and positivity index regarding knowledge about and quality of neonatal post-resuscitation care. The need to take blood gases was borderline, with a 71.8% positivity index. With regard to checking central venous pressure, urine output, blood glucose, and cardiac enzymes, the level of knowledge was poor, ranging from 20.9% to 60.0% (Table 2).

Table 2

Classification of the quality of care and knowledge about the parameters for assessing neonatal post-resuscitation care (n = 110)

Assessment parameter and care	Physician (*n* = 28)		Physiotherapist (*n* = 23)		Nurse (*n* = 31)		Nursing technician (*n* = 28)		Positivity index (*n* = 110)	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Axillary temperature	28	100	22	95.6	29	93.5	26	92.8	105	95.5
Heart rate	28	100	22	95.6	31	100	28	100	109	99.1
Respiratory rate	24	85.7	23	100	31	100	26	92.8	104	94.5
O_2 saturation	28	100	23	100	31	100	27	96.4	109	99.1
Arterial blood gas	18	64.3	19	82.6	21	67.7	21	75.0	79	71.8
Central venous pressure	12	42.8	2	8.7	5	16.1	4	14.3	23	20.9
Urine output	19	67.8	19	82.6	8	25.8	6	21.4	52	47.3
Capillary blood glucose	19	67.8	18	78.3	15	48.4	14	50.0	66	60.0
Cardiac enzymes	15	53.6	7	30.4	6	19.3	6	21.4	34	30.9

Concerning the use of technologies to support safe and quality care, only 57.2% (*n* = 63) of the professionals reported using some technologies, with the prevalence of hard technologies (88.9%; *n* = 56). This pattern was reinforced when they were asked about suggestions for technologies to improve care, with the predominance of hard technologies (51.6%; *n* = 31), as shown in Table 3.

Table 3

Classification of the quality of care and knowledge about the parameters for assessing and caring for newborns after neonatal resuscitation (n = 110)

Technologies used	***n* (63)**	**%**
Soft (Information, reduction of environmental stimuli)	3	4.8
Soft – hard (Courses, applications, protocols)	4	6.3
Hard[1]	56	88.9
Technologies suggested	***n* (60)**	**%**
Leves (Information, reduction of environmental stimuli, music therapy)	1	1.7
Soft – hard (Courses, applications, protocols, bundle)	28	46.7
Hard[2]	31	51.6

Note. [1] = Mechanical ventilator, manual T-piece resuscitator, pulse oximeter, heart monitor, transport incubator, heated crib, continuous infusion pump, CPAP, umbilical catheter, baby puff, portable respirator, thermometer, venous hydration, drugs, laboratory tests, oxygen hood, functional echocardiography; [2] = Brain monitoring, heart monitor, baby puff, functional echocardiography, hemodynamic control, capnograph, manual T-piece resuscitator, pulse oximeter, transport incubator, CPAP.

Discussion

It is possible to reduce neonatal morbidity and mortality rates through assertive interventions, such as women's access to health services early in pregnancy, recognition of risk situations during the prenatal period, individualized care, active listening, and therapeutic communication. Childbirth and postpartum care should also be provided by well-trained professionals with up-to-date knowledge, capable of diagnosing complications and performing immediate resuscitation maneuvers to reduce maternal and neonatal deaths (Pedroso et al., 2021).

The multiprofessional team should attend training courses to be prepared to care for resuscitated NBs. In this study, around 77% (n = 85) of the professionals had attended neonatal resuscitation training courses.

Moreover, the nursing process is an important systematized method that is often perceived in the daily life of the NICU with little criticality and devoid of political, social, cultural, and economic perspectives for the visibility of the profession. For this reason, all members of the nursing team should reflect upon and incorporate the nursing process (Servo et al., 2021).

This allows for an expanded and systematized clinic of good practices, giving nurses greater autonomy and support, since it allows clinical judgment for the implementation of efficient and effective interventions for decision-making on care. In addition, it promotes the bond between the patient/family and the multidisciplinary team, minimizes errors, and improves interdisciplinary communication (Carvalho et al., 2017).

With regard to the appropriate use of material resources, priority should be given to equipment for temperature maintenance, airway patency, ventilation, circulation, and medication administration, all of which should be prepared, tested, and easily accessible even before birth (Melo et al., 2021).

The analysis of the quality of care revealed that temperature monitoring is an adequate intervention and a predictor of quality of care (NAEMT, 2017). The AHA (2020) and Maurício et al. (2018) highlight the importance of continuous temperature monitoring to prevent and treat fever immediately after CPR, directing the temperature to 32.0ºC-34.0ºC or only targeted temperature management, keeping it between 36.0ºC and 37.5ºC to minimize neurological damage (SBC, 2019).

Adequate pulmonary ventilation is the critical point through which it is possible to inflate the lungs and promote vascular dilation, leading to hemostasis (AHA, 2020).

As for oxygenation and ventilation support, evidence shows that oxygen saturation should be between 94%-99%. The observation of respiratory rate and oxygen saturation was considered adequate by the multidisciplinary team in this study (AHA, 2020; NAEMT, 2017; SBC, 2019).

In terms of hemodynamic monitoring, it is essential to maintain perfusion of vital organs by controlling heart rate, blood pressure, and urine output, among other parameters (AHA, 2020; SBC, 2019). Urine output monitoring was a vulnerable aspect of care, being classified as poor.

The AHA (2020) argues that monitoring blood glucose levels is crucial for identifying risk factors. The data collected in this study revealed that glycemic control is among the interventions most neglected by professionals. This control aims to provide the first warning signs of unforeseen variations that require real-time interventions (Haddad & Évora, 2008). Thus, analyzing care processes is an important management tool towards safe, effective, and evidence-based care.

A limitation of this study was the fact that it was conducted during a pandemic, making it difficult to analyze the results, especially because sampling by convenience prevents a broad understanding of the level of knowledge. One of the contributions of this study is that the assessment of professionals' level of knowledge revealed gaps in the impact of professional performance on patient recovery, influencing the quality of patient care. Therefore, professionals should receive training to use technologies in the care systematization process.

Continuing education interventions should be promoted and implemented to reduce the risk of death and injuries due to neonatal asphyxia (Pescador Chamorro et al., 2022).

To this end, techniques such as active methodologies and simulation-based learning, as well as immediate debriefing are suggested to improve behaviors and increase the level of knowledge about neonatal CPR. This aspect was highlighted in a study that used clinical simulation and immediate debriefing, assisted by a facilitator, to develop skills in neonatal resuscitation, including technical/cognitive and behavioral skills (Gamboa et al., 2018).

Conclusion

This study concluded that the multidisciplinary team had an adequate level of knowledge (99.1%) of vital signs and oxygen saturation; borderline knowledge of gasometry (71.8%), and poor knowledge (20.9% to 60.0%) of checking central venous pressure, urine output, blood glucose, and cardiac enzymes related to neonatal post-resuscitation care.

There is a need for professional training, continuous education, and awareness-raising interventions to promote a holistic approach to NB care. Assessing the level of knowledge of the professionals involved in neonatal post-resuscitation care is crucial because an adequate, safe, and effective resuscitation impacts the patient's prognosis and future consequences. Therefore, the hypothesis about the team's borderline and poor level of knowledge in certain aspects is confirmed, highlighting the need for continuous training. Further studies on the subject are also needed to improve the neonatal resuscitation process and post-resuscitation care.

Author contributions

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References

Almeida, M. F., Kawakami, M. D., Moreira, L. M., Santos, R. M., Anchieta, L. M., & Guinsburg, R. (2017). Early neonatal deaths associated with perinatal asphyxia in infants ≥2500 g in Brazil. *Jornal de Pediatria, 93*(6), 576-584. https://doi.org/10.1016/j.jped.2016.11.008

American Heart Association. (2020). *Highlights of the 2020 American Heart Association guidelines for CPR and ECC*. https://cpr.heart.org/-/media/cpr-files/cpr-guidelines-files/highlights/hghlghts_2020_ecc_guidelines_english.pdf

Berg, K. M., Bray, J. E., Ng, K.-C., Liley, H. G., Greif, R., Carlson, J. N., Morley, P. T., Drennan, I. R., Smyth, M., Scholefield, B. R., Weiner, G. M., Cheng, A., Djärv, T., Abelairas-Gómez, C., Acworth, J., Andersen, L. W., Atkins, D. L., Berry, D. C. Bhanji, F., … Hansen, C. M. (2023). International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations: Summary from the basic life support; advanced life support; pediatric life support; neonatal life support; education, implementation, and teams; and First Aid Task Forces. *Resuscitation.* https://doi.org/10.1016/j.resuscitation.2023.109992

Carvalho, E. C., Oliveira-Kumakura, A. R., & Morais, S. C. (2017). Clinical reasoning in nursing: Teaching strategies and assessment tools. *Revista Brasileira de Enfermagem, 70*(3), 662-668. https://doi.org/10.1590/0034-7167-2016-0509

Elm, E., Altman, D. G., Egger, M., Pocock. S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2007). Strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *British Medical Journal, 335*(7624), 806-808. https://doi.org/10.1136/bmj.39335.541782.AD

Fundação Oswaldo Cruz. (2019). *Principais questões sobre cuidados pós-reanimação neonatal*. https://portaldeboaspraticas.iff.fiocruz.br/atencao-recem-nascido/principais-questoes-cuidados-pos-reanimacao-neonatal/

Gamboa, O. A., Agudelo, S. I., Maldonado, M. J., Leguizamón, D. C., & Cala, S. M. (2018). Evaluation of two strategies for debriefing simulation in the development of skills for neonatal resuscitation: A randomized clinical trial. *BMC Research Notes, 11*(1), 739. https://doi.org/10.1186/s13104-018-3831-6

Haddad, M. C., & Évora, Y. D. (2008). Nursing care quality: The view from a patient hospitalized in a public university hospital. *Ciência, Cuidado e Saúde, 7*(1), 45-52. https://doi.org/10.4025/ciencuidsaude.v7i0.6559

Mauricio, E. C., Lopes, M. C., Batista, R. A., Okuno, M. F., & Campanharo, C. R. (2018). Results of the implementation of integrated care after cardiorespiratory arrest in a university hospital. *Revista Latino-Americana de Enfermagem, 26*, e2993. https://doi.org/10.1590/1518-8345.2308.2993

Melo, K. A., Silva, T. C., Bandeira, F. L., Andrade, J. M., Ribeiro, J. F., Bandeira, L. F., & Hirata, J. P. (2021). Reanimação neonatal: Atuação da equipa de enfermagem na unidade de terapia intensiva. *Revista de Enfermagem Atual In Derme, 95*(34), e-021066. https://revistaenfermagematual.com/index.php/revista/article/view/974/897

Migoto, M. T., Oliveira, R. P., Silva, A. M., & Freire, M. H. (2018). Early neonatal mortality and risk factors: A case-control study in Paraná State. *Revista Brasileira de Enfermagem, 71*(5), 2527-2534. https://doi.org/10.1590/0034-7167-2016-0586

Ministério da Saúde & Conselho Nacional de Saúde. (2012). *Resolução n.º 466, de 12 de dezembro de 2012*. https://bvsms.saude.gov.br/bvs/saudelegis/cns/2013/res0466_12_12_2012.html

Ministério da Saúde. (2021). *Ofício circular n.º 2/2021/CONEP/SECNS/MS, de 24 de fevereiro de 2021*. Secretaria Executiva do Conselho Nacional de Saúde; Comissão Nacional de Ética em Pesquisa. http://conselho.saude.gov.br/images/Oficio_Circular_2_24fev2021.pdf

National Association of Emergency Medical Technicians. (2017). *PHTLS-Prehospital Trauma Life Support* (8th ed.). Jones & Bartlett Learning.

Neto, G. F., Ferraz, R. A., Santo, A. C., Abraão, L. S., Pedroso, M. G., & Ferreira, N. B. (2022). Advanced maneuvers in neonatal resuscitation at a hospital in the amazon region: Associated factors. *Brazilian Journal of Health Review, 5*(5),
18020-18032. https://doi.org.10.34119/bjhrv5n5-017

Pedroso, K. Z., Ribeiro, D. P., Silva, E. G., Borges, M., & Silva, N. T. (2021). Morte materna e neonatal: Um desafio para sua redução. *Revista Multidisciplinar em Saúde, 2*(4), 13. https://doi.org/10.51161/rems/2438

Pescador Chamorro, M. I., Zeballos Sarrato, S. E., Marsinyach Ros, M. I., Zeballos Sarrato, G., Márquez Isidro, E. M., & Sánchez Luna, M. (2022). Training, experience and need of booster courses in neonatal cardiopulmonary resuscitation: Survey to pediatricians. *Anales de Pediatria, 96*(2),122-129. https://doi.org/10.1016/j.anpede.2020.11.014

Saupe, R., & Horr, L. (1982). Auditoria em enfermagem. *Revista de Ciências da Saúde, 1*(1), 23. https://revista.ccs.ufsc.br/index.php/REVCCS/issue/current

Servo, M. L., Alves, L. M., & Almeida, D. B. (2021). From subjacency to the lack of involvement of the nursing process in the construction of nurses' professional identity. *Revista de Enfermagem Referência, 5*(8), e20180. https://doi.org/10.12707/RV20180

Sociedade Brasileira de Cardiologia. (2019). Atualização da diretriz de ressuscitação cardiopulmonar e cuidados cardiovasculares de emergência da Sociedade Brasileira de Cardiologia: 2019. *Arquivos Brasileiros de Cardiologia 113*(3), 449-663. https://doi.org.10.5935/abc.20190203

Wyckoff, M. H., Wyllie, J., Aziz, K., Almeida, M. F., Fabres, J., Fawke, J., Guinsburg, R., Hosono, S., Isayama, T., Kapadia, V. S, Kim, H. S., Liley, H. G., McKinlay, C. J., Mildenhall, L., Perlman, J. M., Rabi, Y., Roehr, C. C., Schmölzer, G. M., Szyld, E., … Neonatal Life Support Collaborators. (2020). Neonatal life support 2020 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Circulation, 156*, A156-A187. https://doi.org/10.1016/j.resuscitation.2020.09.015