Journal of Positive Psychology & Wellbeing
2022, Vol. 6, No. 3, 670-675

http://journalppw.com
ISSN 2587-0130

Healthcare Administration Facilitating Neonatal Resuscitation Program Role Of Nursing, Midwifery, Clinical Laboratory And Radiological Teams In NRP

Ali Hassan Alrahmani[1], Ayed Awdah S Almrzogi[2], Razaz Mohammed A Twaily[3], Husniyyah Othman Mohammed Sufyani[4], Basmah Ali Dodani[5], Refah Matar Alenezi[6], Turki Faraj Safar Alharbi[7], Lula Abda Abu Kere An[8], Wael Hmdan Alqbsani[9], Rania Mohammed Abed Twaily[10], Ahmed Saeed Alshamrani[11], Albaqer Mohammed A Albeed[12], Hussain Raqi Alamri[13], Majed Abdullah Albeladi[14], Fuad Abdulkhaliq Ahmed Huwaykim[15], Nada Ali Asiri[16]

[1]Alith General Hospital, Hospital Administration
[2]Health Administration Specialist, East Jeddah Hospital
[3]Assistant Specialist Health Administration, King Fahd Hospital-Jeddah
[4]Nursing And Midwifery, Alhombokah Primery Helth Center
[5]Al Sadd Health Center, Midwife
[6]Nursing Specialist, Nursing Executive Administration In Hail Health Cluster
[7]Nursing, Wadi Al Faraa Hospital
[8]Nursing Specialist, Al Sadd Health Center
[9]Laboratory Technician, Public Health
[10]Laboratory Specialist, King Abdullah Medical Complex - Jeddah
[11]Laboratory Technician, King Abdulaziz Hospital
[12]Specialist-Laboratory, East Jeddah Hospital
[13]Jeddah Regional Laboratory, Laboratory Specialist
[14]King Fahd Hospital Jeddah, Lab Technician
[15]Technician-Radiological Technology, East Jeddah Hospital
[16]Nursing Specialist, Mohayil Dental Center

Abstract

The purpose of this review was to investigate the level of knowledge that nurses and midwives, as well as the clinical laboratory and radiology team, have regarding neonatal resuscitation. Additionally, the review aimed to investigate the effect that education has on knowledge levels, as well as the role that healthcare administration plays in making the program accessible to healthcare providers. Based on the timing of events, data from real-life instances reveal that main resuscitation events, as recommended by the guidelines of the Neonatal Resuscitation Program, are frequently severely delayed. Taking into consideration the fact that the individuals who participated in the NRP practitioner-training course had completed the course within the past four to five years, it was seen that the knowledge points were pretty satisfactory.

Keywords: *neonatal resuscitation program, Healthcare.*

Introduction

The term "newborn infant" refers to a youngster who has not yet reached the age of 28 days. There is a significant increase in the likelihood of a newborn passing away during the first 28 days of their existence. In 2017, the newborn infants accounted for 47% of all deaths among children under the age of five, whereas in 1990, the incidence of newborn infant mortality was just 40%. The process of transitioning from the uterus to the extrauterine space must be effectively completed by every newborn infant in order for them to live and then continue to grow [1]. When comparing the health state and social well-being of different civilizations, one of the most important criteria to consider is infant mortality, which can be defined as the probability of passing away within the first year of its life.3) An estimated four million infants pass away every year during the first four weeks of their lives, which is referred to as the newborn period. Ninety-nine percent of these fatalities take place in countries with low and moderate degrees of income. Prematurity and low birth weight, infections, hypoxia, and birth trauma were the contributing factors that led to the majority of deaths among newborns in the year 2016 [2]. Seventy-five percent of all neonatal deaths take place during the first week of life, and approximately one million babies pass away within the first twenty-four hours of their lives. The majority of neonates do not receive resuscitation in a timely manner and in the correct manner. Through the broad implementation of proper animation techniques, it will be possible to avoid the death or paralysis of thousands of babies each year. Providing the health worker with the information and experience necessary to provide the greatest care to infants in the delivery room is the primary objective of the NRP program. Additionally, the training aims to guarantee that this experience is utilized appropriately in the postnatal delivery room in both rural and urban hospitals [3]. It is used in two areas, such as the need for urgent approaches when a newborn is in the hospital under follow-up and treatment, and when making resuscitation of a newborn with respiratory and cardiac arrest [4]. A resuscitate, which means revitalization in Latin, refers to the term neonatology, which is used in both of these applications.

The materials that are necessary for resuscitation should be made available in every center where deliveries are performed. Additionally, the entire team should adhere to a particular implementation plan and be familiar with the procedures for resuscitation. This is because approximately one tenth of the babies may require revitalization within the first few minutes after birth. Every birth should be attended by a person who is completely capable of performing neonatal resuscitation and possesses the knowledge and skills necessary to do so. In the event that a comprehensive revitalization is required, there will be a demand for additional health care staff who have received the appropriate training. It is imperative that those working in the delivery room, including nurses, midwives, clinical laboratory and radiology teams, acquire the comprehensive knowledge and practical experience required for newborn resuscitation [5,6].

In order to ensure that the brain, heart, and other essential organs receive the necessary quantity of oxygen, the primary objective of resuscitation in the delivery room is to ensure that appropriate ventilation, oxygenation, and cardiac output are provided. The outcomes of interventions that are carried out within the first few minutes of a person's life have a direct influence on the quality of life and have repercussions that extend throughout their whole life [6].

Staff training that is carried out through a training program in the United States is referred to as the Neonatal Resuscitation Program (NRP). This program contains teaching materials that have been approved by the American Heart Association (AHA) and the American Children's Academy (AAP). NRP courses have been offered on a consistent basis in Turkey since 1996, with the Ministry of Health and the Neonatology Association working together to make this opportunity available. Istanbul served as the location for the first Neonatal Intensive Care Unit (NICU) course in Turkey, which was attended by nurses from a variety of districts. The objective of this course is to enhance the quality of nursing care

in the context of newborn nursing, which is characterized by its complexity and sensitivity. This Neonatal Intensive Care Unit (NICU) course has been designed to identify the developments that may be engaged in the care of babies who are at risk, to investigate the issues and trends that are affecting newborn patients, and to give the essential skills and tools to improve the quality of care [7,8].

Review:

There are step-by-step instructions for infant resuscitation that are provided by the Neonatal Resuscitation Program (NRP). These guidelines include the optimal timing of the beginning of mechanical ventilation and the introduction of medicines. The National Resuscitation Program (NRP) recommendations, in contrast to the guidelines for resuscitation for adults and children, place an emphasis on the provision of good ventilation as the most essential and efficient step for resuscitation in the delivery room as it pertains to neonates [8]. To be more specific, the National Registry of Pediatrics (NRP) guidelines recommend that positive pressure ventilation (PPV) be started within one minute of the birth of the infant, that chest compressions be performed before beginning chest compressions, that chest compressions be administered for sixty seconds if there is no response to thirty seconds of effective PPV, and that epinephrine be administered after sixty seconds of coordinated chest compressions and ventilation [9].

The National Resuscitation Program (NRP) guidelines also urge that "if the administration of epinephrine can be anticipated because the infant is not responding to PPV, one member of the resuscitation team should prepare to put an Umbilical Venous Catheter (UVC) while others continue to deliver PPV and CC."5. A significant number of these occurrences are time-sensitive, and a lack of adherence may have an impact on the neonate's short-term and long-term outcomes. Last but not least, the National Registry of Pediatrics (NRP) suggests that every birth should have at least one qualified individual who is solely responsible for the care of the newborn, and that there should be at least two individuals for newborns who have risk factors. In order to adhere to the recommendations, it is helpful to anticipate and prepare for deliveries that are at risk, to have experienced workers there, to communicate in a closed-loop manner, and to coordinate efforts with other people [10].

There is a variable level of adherence to the algorithm across the studies that have been published. This adherence appears to be dependent on the clinical situation, the number of providers, as well as their abilities and knowledge. On the other hand, there are only a few studies that have been conducted to investigate the timing of the resuscitation in the real world, and to the best of our knowledge, there are either no or very few instances of anything like this occurring among neonates who were born in the United States of America [11].

Statistical analysis revealed that there was no significant difference between the amount of time spent attending the NRP practitioner training course and the average score on the knowledge test ($p > 0.05$). On the other hand, it has been seen that the participants' knowledge point averages are increasing gradually during the duration of the course. This is something that has been observed. It was discovered that the NRP knowledge points of nurse/midwives were of an intermediate level, with a mean of 23.06 ± 3.47 (with a minimum of 12 and a maximum of 30). Furthermore, among the participants, 37% had completed an NRP course during the past four to five years. A number of studies have demonstrated that basic knowledge and abilities decrease after one to six months of receiving training. Being able to pass with knowledge points at an intermediate level may be seen to be satisfactory, despite the fact that the average passing time is longer. In-service training programs on NRP will be an effective means of ensuring that the material is kept up to date. This will be accomplished via the methodical repetition of knowledge and skills. In light of this, it is strongly suggested that these trainings be scheduled at predetermined intervals. About one-third of nurses and midwives participated in this training four to five years ago. Nevertheless,

in order to keep their knowledge and abilities up to date, to be successful, and to preserve their status as practitioners in accordance with international standards, nurses and midwives are required to take part in refresher courses two years after their initial training. A total of roughly 19.2% of the midwives who participated in the research conducted by Ucan and Alparslan said that they had attended the NRP throughout their post-graduate years. The investigation came to the same conclusions as the previous one. Following the findings of the research conducted by Ucan and Alparslan, it was discovered that the majority of the midwives have insufficient expertise on newborn resuscitation. On the other hand, their research did not successfully involve midwives, particularly those who had undergone training in NRP. During the research conducted by Akıllı et al. with physicians, it was noted that despite the fact that they had received training within the last year, the utilization of that material is restricted in terms of practical application [13]. As a result, they placed an emphasis on the establishment of a training program that would include the Emergency Medicine System. This is in contrast to a training program, which is only available through courses. Both in day-to-day practice and in the CPR group that is dealing with cardiopulmonary resuscitation (CPR), the education of the group of physicians who are not frequent and should be more frequent and practical is something that should be done. In the research conducted by Trevisanuto and colleagues, it was underlined that by the end of the six-month period following the completion of the NRP course, the participants' knowledge level had drastically declined, and that the course ought to be renewed prior to the conclusion of the two-year term [14]. In the study, it was shown that the participants' level of knowledge fell in the six months following the completion of the course, and that only a portion of the information that was presented during the course was retained in their memories. However, the participants' level of knowledge dramatically increased after the completion of the NRP course. Based on the information that was gathered, it was determined that the NRP course ought to be repeated one year following the initial course, particularly before to the conclusion of the 2-year term.111 The results of the study showed that there was no significant variation in the knowledge score depending on the number of months, ages, educational status, clinics, or working years that had passed since the completion of the NRP course ($p > 0.05$). Similarly, in the study conducted by Çınar and Güney, it was shown that there were no statistically significant differences in the amount of education and working years of nurses and their knowledge of neonatal resuscitation [15].

Interprofessional cooperation can be defined as the collaboration between members of different healthcare disciplines in order to offer patients with care that is evidence-based, of high quality, delivered in a timely manner, and tailored from a therapeutic perspective. The term "interprofessional communication" refers to the expressing of views, opinions, or actions that have an impact on the dynamics, organization, and function of a team. In order to achieve competency and replicability in the real-life practice situation, it is necessary to develop and practice teamwork and communication skills. These skills are not innate; rather, they must be learned and practiced.

In the field of healthcare, collaboration and communication are of the utmost importance, and this is especially true in the event of life-threatening emergency. In the absence of a response from an interprofessional team, the ability to resuscitate a neonate who is critically sick is restricted to the capabilities, manpower, and knowledge base of those who are there. Ineffective or absent cooperation and communication during a life-threatening emergency may propagate uncertainty, ambiguity, and inefficiency, as well as raise the risk of error, death, and morbidity. This is true even when the resuscitation team is adequately staffed. There is a dearth of inter-professional teamwork and communication training programs that are developed by the healthcare system. As a result, programs have been borrowed from other industries and adapted to the healthcare business in order to enhance these two essential processes. Through the use of effective stress-reduction techniques and critical thinking tactics, the courses aim to improve the team process by providing learners with the

tools necessary to overcome stress. The National Response Plan places a high priority on a number of fundamental behavioral skills that should be observed through SBT and real-life practice. These skills necessitate the provision of effective teamwork and communication responsibilities [17].

When there are not enough students enrolled in an SBT class, it is impossible to develop safe practices, communication, or teamwork inside the classroom. The insufficient number of learners either forces those who are present to assume several roles that overlap with one another, which are risky and unrealistic, or greatly limits the ability to progress appropriately through the processes of neonatal resuscitation. This results in a decrease in efficiency, can cause a delay in treatment, makes it more difficult for a learner to achieve behavioral objectives with NRP SBT, and is responsible for the creation of a learning environment that is confused and overwhelming. It is important for participants to participate in SBT activities that are appropriately aligned with their scope of practice. For the purpose of enhancing the safety of patients, the principle of "do no harm" ought to be extended from the real-world setting into the setting of systemic behavioral therapy (SBT). In a similar vein, when there are an overwhelming number of learners participating in a simulation, the possibilities for learners to provide hands-on care may be reduced or eliminated entirely. Because of this, a "Goldilocks effect" may be imposed. There is either an excessive amount of or an insufficient amount of responsibility that is observed, and obligations are rarely distributed in a manner that is "just right." During SBT, it is a waste of time to navigate between having too many learners and not having enough learners. A considerable fragmentation of the learning experience, an increase in the danger of diminished self-efficacy among learners, and a reduction in the instructor's ability to evaluate information transfer, behavior, and technical proficiency can all result from a lack of an optimal number of learners [18].

Conclusion:

The quality of life is immediately impacted by the interventions that are carried out in the first few minutes of a person's life, and these impacts will continue to have an impact throughout their entire life. It is of the utmost importance to intervene in the newborn in the delivery room within the first few minutes in order to reduce the number of deaths that occur in newborns. The fact that nurses and midwives, as well as members of the clinical laboratory and radiology team, who work in neonatal intensive care units (NICU) and delivery rooms, participate in the neonatal resuscitation program and develop knowledge and experience in this sector, will be useful in reducing the number of deaths that occur among newborns. The sample selection process was not carried out for this study; rather, it was applied to all of the nurses-midwives who were working in the obstetrics and maternity clinics of public hospitals in Adana, Turkey, and who had received training from the Neonatal Resuscitation Program (NRP). When taking into consideration the fact that the majority of the participants in the NRP practitioner training course had taken this course within the past four to five years, the knowledge scores were judged to be pretty satisfactory. In order to acquire and put these skills and knowledge into practice, it is advised that in-service training sessions be repeated on a regular basis. In addition, the contribution that healthcare administrators make to the facilitation of programs for all of the participants who are able to be involved in the deleviry room is also important.

Reference

[1] Lawn JE, Blencowe H, Oza S, et al. Every Newborn: progress, priorities, and potential beyond survival [published correction appears in Lancet. 2014 Jul 12;384:132]. Lancet. 2014;384:189-205. doi:10.1016/S0140-6736(14)60496-7.

[2] Black R.E., Cousens S., Johnson H.L., et al. Global, regional, and national causes of child mortality in 2008: a systematic analysis. Lancet. 2010;375:1969–1987. doi: 10.1016/S0140-6736(10)60549-1.

[3] Wyllie J., Perlman J.M., Kattwinkel J., et al. Part 7: Neonatal resuscitation: 2015 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Resuscitation. 2015;95:e169–e201. doi: 10.1016/j.resuscitation.2015.07.045.

[4] Aziz K, Lee CHC, Escobedo MB, et al. Part 5: Neonatal resuscitation 2020 American heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Pediatrics. 2021 Jan; 147: e2020038505E. doi: 10.1542/peds.2020-038505E. Epub 2020 Oct 21. PMID: 33087555.

[5] Textbook of Neonatal Resuscitation 8th ed (2021) Weiner GM, and Zaichkin J (Eds). American Academy of Pediatrics, USA.

[6] Maya-Enero S, Botet-Mussons F, Figueras-Aloy J, Izquierdo-Renau M, Thió M, Iriondo-Sanz M. Adherence to the neonatal resuscitation algorithm for preterm infants in a tertiary hospital in Spain. BMC Pediatr. 2018; 18: 319. Published 2018 Oct 9. doi:10.1186/s12887-018-1288-3.

[7] Yamada N.K., Yaeger K.A., Halamek L.P. Analysis and classification of errors made by teams during neonatal resuscitation. Resuscitation. 2015;96:109–113. doi: 10.1016/j.resuscitation.2015.07.048.

[8] Binkhorst M., van de Wiel I., Draaisma J.M.T., van Heijst A.F.J., Antonius T., Hogeveen M. Neonatal resuscitation guideline adherence: simulation study and framework for improvement. Eur J Pediatr. 2020;179:1813–1822. doi: 10.1007/s00431-020-03693-6.

[9] Sloane AJ, Kenaley KM, Favara MT. Assessment of temporal variations in adherence to NRP using video recording in the delivery room. Resusc Plus. 2021; 8: 100162. Published 2021 Sep 6. doi:10.1016/j.resplu.2021.100162.

[10] Heathcote A.C., Jones J., Clarke P. Timing and documentation of key events in neonatal resuscitation. Eur J Pediatr. 2018;177:1053–1056. doi: 10.1007/s00431-018-3160-8.

[11] Foglia E., Patel J., Niles D., Aasland P.H., Nadkarni V., Ades A. Provider Adherence to Neonatal Resuscitation Program Recommendations for Coordinated Neonatal Chest Compressions and Ventilations. Analg Resusc. 2013;Suppl 1doi: 10.4172/2324-903X.S1-010.

[12] Wyllie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B. European Resuscitation Council guidelines for resuscitation 2015: section 7. Resuscitation and support of transition of babies at birth. Resuscitation. 2015;95:249–263.

[13] Dorfsman ML, Menegazzi JJ, Wadas RJ, et al. Two-thumb vs. two-finger chest compression in an infant model of prolonged cardiopulmonary resuscitation. Acad Emerg Med. 2000;7(10):1077–1082. doi: 10.1111/j.1553-2712.2000.tb01255.x

[14] Akıllı BN, Cander B, Köylü R, et al. Kardiyopulmoner Resüsitasyonu Ne Kadar Biliyoruz? [How much do we know about cardiopulmonary resuscitation?]. J Acad Emerg Med. 2012;11:102–105. doi: 10.5152/jaem.2012.007

[15] Jukkala MA, Henly JS. Readiness for neonatal resuscitation: measuring knowledge, experience, and comfort level. Appl Nurs Res. 2007;20(2):78–85. doi: 10.1016/j.apnr.2006.01.006

[16] Fuerch JH, Yamada NK, Coelho PR, Lee HC, Halamek LP. Impact of a novel decision support tool on adherence to Neonatal Resuscitation Program algorithm. Resuscitation. 2015;88:52-56. doi:10.1016/j. resuscitation.2014.12.016.

[17] Andreatta PB, Klotz JJ, Dooley-Hash SL, Hauptman JG, Biddinger B, House JB. Performance-based comparison of neonatal intubation training outcomes: simulator and live animal. Adv Neonatal Care. 2015;15(1):56-64. doi:10.1097/ANC.0000000000000130.