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Knowledge, attitude and practice towards management of birth asphyxia among nurses and midwives working in labour ward and NICU in hospitals, at Sriganga Nagar (Rajasthan)

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Abstract

Introduction: The inability to start and maintain breathing right after birth is known as birth asphyxia. About 23% of the 4 million neonatal deaths that occur each year are caused by it, making it the third most common cause of neonatal mortality in developing nations, behind infections and preterm births, according to the World Health Organisation (WHO). Every year, an estimated 900,000 babies pass away from asphyxia at birth. The inability to start breathing at birth is known as perinatal asphyxia, and it continues to be one of the leading causes of neonatal death globally.

Methodology: The researcher employed a quantitative research approach. Data was gathered through a pretested, structured, self-administered questionnaire. A total of 163 nurses and midwives, meeting the inclusion criteria, were chosen through simple random sampling from the NICU and labour wards of selected hospitals in Sriganga Nagar (Rajasthan).

Results: The mean of concept of birth asphaxia is 5.25 with SD of 1.747; mean of causes of birth asphaxia is 5.42 with SD of 1.486 and the mean of management of birth asphaxia is 5.17 with SD of 1.404. Regarding to knowledge of midwives and nurses regarding birth asphaxia the mean is 15.83 and SD 2.665. The mean of practices was 12.08 and 2.297 standard deviation. The mean of attitude was 54.3 and 4.56 standard deviation. The study found a weak positive correlation (r=0.233) between knowledge and practice, while the correlation between knowledge and attitude was negative (r=-0.08).

Conclusion: The study showed that around 54% of nurses and midwives were knowledgeable about birth asphyxia management. Although over half demonstrated good practice, their attitude toward its management was negative. Proper management of birth asphyxia is crucial for reducing neonatal mortality. Among those who attempted to define birth asphyxia, 85% provided an accurate definition. Multiple pregnancies were commonly cited by nurses and midwives as a risk factor for birth asphyxia.

Keywords: NICU, knowledge, attitude, practice, birth asphyxia, labour ward

Introduction

Birth asphyxia continues to be a major concern, largely due to inadequate antenatal care and substandard perinatal services. According to the World Health Organization (WHO), it is the third most common cause of neonatal mortality in developing countries, following infections and preterm births, and is responsible for roughly 23% of the 4 million neonatal deaths annually. WHO estimates that annually, 120 million infants in developing countries experience birth asphyxia and require resuscitation, with roughly 900,000 deaths resulting. The risk of death from birth asphyxia varies globally, with high neonatal mortality regions having about eight times greater risk than low NMR regions. Studies indicate that 24%-61% of perinatal mortality is due to asphyxia, with mortality rates from asphyxia typically ranging between 10 and 20 per 1,000 births[1]. In a study of 66 NICU nurses from three neonatal intensive care units in the northeastern United States, researchers assessed knowledge, attitudes, and practices. The findings indicated that nurses with greater years of experience were less likely to initiate specific care measures for do-not-resuscitate patients, whereas educational background showed no significant influence. This highlights the need for further NICU nurse education on legal definitions [2]. DHS surveys provide data on neonatal mortality, enabling comparisons across countries and time periods. According to the NFHS-5 survey, India's neonatal mortality rate stands at 24.9 per 1,000 live births [3]. While detailed causes are not well documented, earlier studies have identified sepsis, asphyxia, birth injury, and tetanus as major contributors [4]. Although birth asphyxia can occasionally be anticipated in situations such as fetal distress or preterm birth, the majority of cases occur unexpectedly. Hence, all birth attendants should be proficient in newborn resuscitation and ensure that the necessary equipment is always readily available for immediate intervention [5].

Need of the study

Globally, birth asphyxia remains a significant clinical challenge, impacting about one million newborns annually. The neonatal mortality rate (NMR) is notably higher in developing countries compared to developed nations. The World Health Organization (WHO) reports that Sub-Saharan Africa records the highest neonatal mortality rate (NMR) at 27 deaths per 1,000 live births, followed by Central and Southern Asia at 21 deaths per 1,000 live births, while developed countries have a much lower NMR, ranging between 3 and 5 deaths per 1,000 live births. The first month after birth is the most critical for child survival, with 2.3 million newborn deaths reported in 2022. Birth asphyxia is a critical condition that, if not treated promptly and effectively, can lead to brain death, as well as failure of the heart, lungs, and kidneys, and may ultimately result in death [7]. A neonatal intensive care unit (NICU) is a specialized hospital facility equipped to provide advanced medical and nursing care, as well as technological support, for critically ill, high-risk, and premature infants, especially during emergencies like birth asphyxia [8]. India has committed to achieving the Sustainable Development Goal (SDG) targets for child mortality by 2030, which aim to bring the under-five mortality rate down to 25 per 1,000 live births and reduce the neonatal mortality rate to $\leq$ 12 per 1,000 live births. While notable progress has been achieved, significant challenges remain, especially in reaching vulnerable groups and addressing inequalities between states [10].

Aim of the study

This study aimed to evaluate the knowledge, attitudes, and practices of nurses and midwives in managing birth asphyxia within the labour wards and NICUs of hospitals in Sriganga Nagar (Rajasthan).

Objectives of the study

- To assess the knowledge regarding management of birth asphaxia among the nurses and midwives working in labor ward and NICU.
- To assess the attitude regarding management of birth asphaxia among the nurses and midwives working in labor ward and NICU.
- To assess the practice regarding management of birth asphaxia among the nurses and midwives working in labor ward and NICU.
- To find out correlation between knowledge and practice regarding management of birth asphaxia.
- To find out correlation between knowledge and attitude regarding management of birth asphaxia.
- To identify the relationship between pre-test knowledge about management of birth asphaxia with their demographic variables.

Hypothesis

- **H_{01}:** There will be no significant cor-relationship between knowledge and practice regarding management of birth asphyxia of nurses and midwives.
- **H_1:** There will be a significant cor-relationship between knowledge and practice regarding management of birth asphyxia of nurses and midwives.
- **H_{02}:** There will be no significant cor-relationship between knowledge and attitude regarding management of birth asphyxia of nurses and midwives.
- **H_2:** There will be a significant cor-relationship between knowledge and attitude regarding management of birth asphyxia of nurses and midwives.

Methodology

The study was carried out in Sriganga Nagar (Rajasthan) within randomly selected private hospitals. Four hospitals were chosen through simple random sampling: Giri Hospital, Delhi Sishu Hospital, Bikaner Sishu Hospital, and Sriganga Nagar Sishu Hospital. In these hospitals, a total of 254 nurses were employed in NICUs and labour wards. Of these, 163 were from the selected hospitals 81 in NICUs and 82 in labour wards according to each facility's human resource records. The study was conducted in private hospitals in Sriganga Nagar (Rajasthan) from February 20 to March 20, 2025, the study was conducted using an institution-based cross-sectional quantitative design.

The target population for the study included all staff nurses and midwives working in the labour wards and NICUs of private hospitals in Sriganga Nagar who met the inclusion criteria. Data collection was carried out using a pretested, structured, self-administered questionnaire designed to capture socio-demographic details and evaluate knowledge, attitudes, and practices regarding the management of birth asphyxia. Adapted from various relevant studies, the questionnaire was available in both English and Hindi and was divided into four sections: Part I 13 questions on socio-demographic characteristics; Part II 30 questions evaluating knowledge of birth asphyxia management; Part III 8 questions on attitudes toward its management; and Part IV 8 questions on related practices.

Results

Section 1: Assess the knowledge levels of nurses and midwives regarding management of birth asphaxia

Table 1: Area wise mean, mean percentage and standard deviation of birth asphaxia

S. No.	Area	Knowledge score			
		Maximum Score	Mean	Mean percentage	SD
1.	Question related to concept of birth asphaxia	10	5.25	52.5%	1.747
2.	Question related to causes of birth asphaxia	10	5.42	54.2%	1.486
3.	Question related to management of birth asphaxia	10	5.17	51.7%	1.404
	Total	30	15.83	52.76%	2.665

Table 1 reveals that aspects of birth asphaxia categorized into 3 parts i.e. part I of related to concept of birth asphaxia which have maximum score is 10; Part II related to causes of birth asphaxia had 10 questions and the maximum marks is 10 and part III related to management of birth asphaxia had 10 questions.

- The mean of part I is 5.25 with SD of 1.747
- The mean of part II is 5.42 with SD of 1.486
- The mean of part III is 5.17 with SD of 1.404.
- The overall mean of the total score of the birth asphaxia is 15.83 and SD 2.665.

Section-2: Assess the practice levels of nurses and midwives regarding management of birth asphaxia

Table 2: Mean, mean percentage, median and standard deviation of the practice nurses and midwives regarding birth asphaxia

S. No.	Area	Practice Score			
		Mean	Mean percentage	Median	SD
1.	Practice regarding birth asphaxia	12.08	60.4%	12	2.297

Table 2 reveals that practices score regarding birth asphaxia. The mean of practices was 12.08 with 60.4% mean percentage and 2.297 standard deviation.

Section-3: Assess the attitude levels of nurses and midwives regarding management of birth asphaxia

Table 3: Mean, Median, SD, of the attitude of nurses and midwives regarding birth asphaxia

S. No.	Area	Attitude Score			
		Mean	Mean percentage	Median	SD
1.	Attitude regarding birth asphaxia	54.3	66.2%	53	± 4.56

Table 3 reveals that attitude score regarding birth asphaxia. The mean of attitude was 54.3 with 66.2% mean percentage and 4.56 standard deviation.

Section-4: Correlation between knowledge and practices level score of nurses and midwives towards birth asphyxia management

The mean, mean percentage, median, standard deviation, and the correlation between knowledge and practices regarding birth asphyxia are presented as follows.

Table 4: Mean, mean percentage, median, standard deviation and correlation of knowledge and practices

S. No.	Aspect	Mean	Mean Percentage	Median	SD	Correlation
1.	Knowledge	15.83	52.75%	16	2.665	0.233
2.	Self-care practices	12.08	60.4%	12	2.297	

Above Table 4 show the mean, mean percentage, median SD, and correlation between knowledge and practices

- The correlation is (0.233) it means that there is some positive relationship.
- Out of 163 nurses and midwives have good knowledge with positive practices regarding birth asphaxia.
- But if the knowledge is poor or good then it is not necessary that the practices of the nurses and midwives are also poor or good.
- The correlation value is greater than zero, indicating a positive relationship between the knowledge and practices of nurses and midwives.

Section-5: Correlation between knowledge and attitude score of nurses and midwives towards birth asphyxia management: The mean, mean percentage, median, standard deviation, and the correlation between knowledge and attitude regarding birth asphyxia are presented as follows.

Table 5: Mean, mean percentage, median, standard deviation and correlation of knowledge and attitude

S. No.	Aspect	Mean	Mean Percentage	Median	SD	Correlation
1.	Knowledge	15.83	52.75%	16	2.665	-0.08
2.	Attitude	54.3	66.2%	53	4.56	

Above Table 5 show the mean, mean percentage, median SD, and correlation between knowledge and attitude

- The correlation is (-0.08) it means that there is negative relationship.
- Out of 163 nurses and midwives have good knowledge with negative attitude regarding birth asphaxia.

Discussion

The study reported that 66.3% of nurses and midwives possessed good knowledge regarding the management of birth asphyxia. This finding aligns with existing data on neonatal birth asphyxia, which reported that out of 80 respondents, 79 (98.8%) were aware of the standard guidelines and protocols for its management. Among those trained, 60 out of 80 participants (75%) demonstrated higher knowledge compared to those without training. Concerning the definition of birth asphyxia, nearly two-thirds of participants provided an accurate definition, consistent with a study in Malawi where the majority could define it correctly.

Regarding attitude and practice, more than half of the respondents demonstrated a positive attitude and good practice in managing birth asphyxia. This is consistent with a study by Mr. Jagdieesh G Hubballi in Belgaum, where 60% of participants exhibited average practice. In terms of factors influencing birth asphyxia management, no significant association was observed between nurses' and midwives' knowledge and their age, marital status, neonatal resuscitation training, or years of experience. Training remains a key strategy for enhancing healthcare workers'

knowledge and skills, thereby improving the quality of care and management of birth asphyxia. In the present study, only 29.4% of nurses and midwives had received such training, a finding similar to that reported by Samaita Rout in Odisha, which showed a significant improvement in knowledge scores after training the mean post-test knowledge score percentage was 33.12%, compared to a pre-test mean of 15.246%.

Conversely, the result differs from the Malawi study, where 85.3% had undergone training. This difference may be attributed to the low prioritization of job-related training on birth asphyxia within the local context, as training opportunities often depend on the interests of funders rather than healthcare providers' needs, making it difficult to secure funding for targeted programs [14].

Conclusion

The study found that about 54% of nurses and midwives had knowledge of birth asphyxia management. While more than half demonstrated good practice, they held a negative attitude toward its management. Proper management of birth asphyxia is essential for reducing neonatal mortality[15]. Among those who attempted to define birth asphyxia, 85% provided a correct definition. Multiple pregnancies were frequently cited as a risk factor by respondents. Multivariate regression analysis showed that training was positively associated with knowledge, while profession was significantly linked to practice in managing birth asphyxia. These findings highlight the need to design and implement programs aimed at increasing knowledge on birth asphyxia management.

Conflict of Interest: The authors declare that they have no involvement with any organization or entity that has any financial or non-financial interest in the subject matter or materials discussed in this paper.

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