

# A Study to Assess the Knowledge Regarding Essential Newborn Care Among Nursing Students of SGT University, Gurugram, Haryana

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## ABSTRACT

**Background:** Globally, neonatal deaths remain a major contributor to under-five mortality, despite advances in maternal and child health. Essential Newborn Care (ENC), a package of evidence-based interventions recommended by the World Health Organization—including immediate care at birth, thermal protection, breastfeeding support, infection prevention, and recognition of danger signs—has proven effective in reducing neonatal morbidity and mortality. India has made notable progress, with neonatal mortality declining to 19 per 1000 live births in 2021, yet disparities persist across states. Haryana continues to report rates slightly above the national average, with rural areas facing challenges in breastfeeding counselling, infection prevention, and timely referral. Nursing students, as future frontline caregivers, are critical to bridging these gaps.

**Aim:** The study aims to assess the knowledge of ENC among B.Sc. Nursing 6th semester students at SGT University, Gurugram, Haryana, and to explore associations with selected demographic variables.

**Methods:** A descriptive cross-sectional design was employed. The study population comprised 120 students selected through convenient sampling. Data were collected using a structured, validated questionnaire covering domains such as immediate care at birth, thermal protection, breastfeeding, infection prevention, immunization, and recognition of danger signs. Descriptive statistics summarized knowledge levels, while chi-square tests examined associations with demographic factors.

**Conclusion:** Assessing the knowledge of nursing students regarding ENC will strengthen nursing education, improve clinical practice, and contribute to reducing neonatal mortality. The outcomes align with national priorities such as the India Newborn Action Plan and Sustainable Development Goal 3.2, supporting India's commitment to reducing neonatal mortality to 12 per 1000 live births by 2030.

**Keywords:** knowledge, essential newborn care, nursing students

## INTRODUCTION

The neonatal period, defined as the first 28 days of life, is universally recognized as the most vulnerable stage in human development<sup>1</sup>. During this time, newborns face the highest risk of morbidity and mortality, with conditions such as prematurity, birth asphyxia, infections, and congenital anomalies contributing significantly to global child deaths<sup>2,3</sup>. According to the World Health Organization (WHO), nearly half of all under-five deaths occur in the neonatal period, amounting to approximately 2.4 million newborn deaths annually<sup>4</sup>. Alarming, one-third of these deaths occur on the very day of birth, and nearly three-quarters within the first week of life<sup>5,7</sup>. These figures underscore the urgent need for evidence-based interventions collectively termed “Essential Newborn Care (ENC)”<sup>12</sup>.

Essential newborn care is a set of simple, cost-effective, and universally applicable practices designed to ensure survival and healthy growth during the neonatal period<sup>5</sup>. The WHO framework for ENC includes immediate care at birth (such as delayed cord clamping, thorough drying, skin-to-skin contact, and early initiation of breastfeeding), thermal protection, resuscitation when needed, support for breast milk feeding, nurturing care, infection prevention, assessment of health problems, recognition of danger signs, and timely referral<sup>12</sup>. These interventions are critical not only in health facilities but also in community and home

settings, where a large proportion of births still occur in low- and middle-income countries<sup>6</sup>. Despite their proven effectiveness, coverage of ENC practices remains uneven worldwide, contributing to preventable neonatal deaths<sup>9</sup>.

Globally, disparities in neonatal outcomes reflect broader inequities in health systems and socioeconomic development. The World Bank reported that the global neonatal mortality rate (NMR) in 2023 was 16 per 1000 live births, but this average conceals stark contrasts: countries such as Afghanistan report NMRs as high as 34, while developed nations like Austria and Australia report rates as low as 2. The Healthy Newborn Network emphasizes that achieving Sustainable Development Goal (SDG) 3.2—reducing neonatal mortality to at least 12 per 1000 live births by 2030—requires not only expanded access to care but also improvements in the quality of care delivered<sup>14</sup>. This global context highlights the importance of strengthening ENC knowledge and practices among healthcare providers, including nursing students who represent the future workforce<sup>13, 15</sup>.

India has made remarkable progress in maternal and child health indicators over the past decade. The Sample Registration System (SRS) 2021 reported a decline in the Neonatal Mortality Rate from 26 per 1000 live births in 2014 to 19 in 2021. Similarly, the Infant Mortality Rate fell from 39 to 27 per 1000 live births, and the Under-Five Mortality Rate dropped from 45 to 31 per 1000 live births during the same period. The Maternal Mortality Ratio also showed significant improvement, declining from 130 per lakh live births in 2014–16 to 93 in 2019–21. These achievements reflect the impact of national programs such as the India Newborn Action Plan (INAP), Janani Suraksha Yojana (JSY), and the Lakshya initiative, which have promoted institutional deliveries, skilled birth attendance, and quality intrapartum and newborn care<sup>4</sup>.

Despite these gains, neonatal mortality continues to account for a substantial proportion of under-five deaths in India. Many of these deaths are linked to inadequate knowledge and practices surrounding ENC, particularly in resource-constrained settings. Disparities across states further complicate the picture: while Kerala, Tamil Nadu, Maharashtra, and Telangana have already achieved SDG targets for neonatal and child mortality, other states continue to report higher rates. This uneven progress underscores the need for localized strategies that strengthen ENC practices at the state and institutional levels<sup>11</sup>.

Haryana has witnessed steady improvements in maternal and child health indicators, supported by initiatives such as JSY and the Janani Shishu Suraksha Karyakram (JSSK), which provide free maternal and newborn care services. The state's neonatal mortality rate has declined but remains slightly above the national average, reflecting gaps in coverage and quality of ENC practices. Rural districts, in particular, face challenges related to breastfeeding counselling, infection prevention, and timely referral of high-risk newborns. While institutional delivery rates have improved, deficiencies in ENC knowledge among frontline workers and students persist, affecting neonatal outcomes<sup>12</sup>.

In this context, assessing the knowledge of nursing students in Haryana, particularly at institutions such as SGT University, Gurugram, becomes crucial. Nursing students represent the future healthcare workforce and are expected to translate theoretical knowledge into clinical practice. Their competence in ENC is vital for ensuring safe deliveries, effective newborn care, and timely identification of complications<sup>10</sup>. Evaluating their knowledge provides valuable insights into the effectiveness of nursing curricula and clinical training, while also highlighting areas requiring reinforcement, such as breastfeeding counselling, infection prevention, and recognition of danger signs.

This study, therefore, aims to assess the knowledge of essential newborn care among B.Sc. Nursing 6th semester students of SGT University, Gurugram, Haryana, and to explore associations with selected demographic variables. The findings will contribute to strengthening nursing education, bridging gaps between policy and practice, and ultimately improving neonatal health outcomes. By situating the study within the global, national, and state contexts, the research underscores the critical role of nursing students in advancing newborn survival and achieving sustainable development goals.

#### **NEED FOR THE STUDY**

Newborn care is a cornerstone of child survival strategies and a critical determinant of long-term health outcomes<sup>5</sup>. Despite global progress in reducing child mortality, neonatal deaths remain disproportionately high, accounting for nearly half of all under-five deaths worldwide<sup>16</sup>. The majority of these deaths occur within the first week of life and are largely preventable through simple, evidence-based interventions such as early initiation of breastfeeding, thermal protection, infection prevention, and timely referral. The persistence of neonatal mortality highlights the urgent need to strengthen essential newborn care (ENC) practices at every level of healthcare delivery<sup>1</sup>.

In India, significant improvements have been achieved in maternal and child health indicators over the past decade. The decline in neonatal mortality from 26 per 1000 live births in 2014 to 19 in 2021 reflects the impact of national programs such as the India Newborn Action Plan, Janani Suraksha Yojana, and Lakshya. However, neonatal deaths continue to account for a substantial proportion of under-five mortality, and disparities remain across states. Haryana, while showing progress, still reports neonatal mortality rates slightly above the national average. Rural and underserved areas face persistent challenges in breastfeeding

counselling, infection prevention, and recognition of danger signs. These gaps underscore the importance of ensuring that future healthcare providers are adequately trained in ENC<sup>6</sup>.

Nursing students, as future frontline caregivers, play a pivotal role in bridging the gap between policy and practice. Their knowledge and skills in ENC are essential for reducing neonatal morbidity and mortality<sup>15</sup>. However, studies conducted in India and globally reveal that while nursing students often possess moderate theoretical knowledge, deficiencies exist in practical application, particularly in neonatal resuscitation, infection prevention, and recognition of danger signs. Assessing their knowledge is therefore critical to identifying strengths and gaps, guiding curriculum development, and enhancing clinical training<sup>10</sup>.

At SGT University, Gurugram, nursing education emphasizes both theoretical and practical components. Yet, without systematic evaluation, it is difficult to determine whether students are adequately prepared to deliver quality newborn care. This study will provide valuable insights into the current level of knowledge among B.Sc. Nursing 6th semester students, highlight areas requiring reinforcement, and inform targeted interventions such as workshops, simulation-based training, and mentorship. By aligning with national and global priorities, the study contributes to the broader goal of reducing neonatal mortality and achieving Sustainable Development Goal 3: *Ensure healthy lives and promote well-being for all at all ages*<sup>8</sup>.

Thus, the need for this study arises from the dual imperative of improving neonatal survival rates and strengthening nursing education. By assessing the knowledge of nursing students regarding essential newborn care, the study will not only enhance academic outcomes but also contribute to improved public health indicators in Haryana and beyond.

**Ethiopia (2019):** A cross-sectional study among nursing and midwifery students revealed that only 56% had adequate knowledge of ENC, with major deficiencies in breastfeeding initiation and infection prevention<sup>9</sup>.

**Karnataka (2021):** A study among nursing interns revealed that only 40% could correctly identify all danger signs in newborns, highlighting the need for simulation-based teaching<sup>11</sup>.

**NFHS-5 (2019–21):** National survey data indicated improvements in institutional deliveries and breastfeeding initiation, but persistent gaps in cord care and thermal protection, reflecting the importance of strengthening ENC education<sup>8</sup>.

## STATEMENT OF THE PROBLEM

A Study to Assess the Knowledge Regarding Essential Newborn Care among Nursing Students of SGT University, Gurugram, Haryana

### OBJECTIVES:

1. To assess the knowledge of essential new born care among nursing students of Nursing SGT University, Gurugram, Haryana
2. To find out association between knowledge of essential newborn care with selected demographic variables.

### Hypothesis

1. H<sub>0</sub>: There is no significant association between the Knowledge of Nursing Students regarding Essential New Born Care and their sociodemographic variables.
2. H<sub>1</sub>: There is significant association between the Knowledge of Nursing Students regarding Essential New Born Care and their sociodemographic variables.

## METHODOLOGY OF THE RESEARCH

### Research Design:

A cross-sectional descriptive survey was conducted among B.Sc. Nursing students at SGT University, Gurugram.

### Setting of the Study:

The study was conducted at SGT University, Gurugram, Haryana, specifically among B.Sc. Nursing 6th semester students enrolled in the Faculty of Nursing.

### Population:

The target population consists of B.Sc. Nursing 6th semester students of SGT University, Gurugram, Haryana.

### Sample and Sampling Technique

- **Sample size:** The sample size was 120 students of 6th semester.
- **Sampling technique:** Convenient sampling was used.

### Criteria for Sample Selection

- **Inclusion criteria:**
  - ✓ Students enrolled in the B.Sc. Nursing program who consented to participate.
  - ✓ Students present during the period of data collection.
  - ✓ Students willing to participate and provide informed consent.
- **Exclusion criteria:**
  - ✓ Students absent during data collection or unwilling to participate.

### Tool for Data Collection

A structured questionnaire developed to assess knowledge regarding essential newborn care.

- **Section A:** Demographic variables (age, gender, residence, source of knowledge, clinical exposure etc).
- **Section B:** Knowledge questions covering domains such as immediate care at birth, thermal protection, breastfeeding, infection prevention, immunization, and recognition of danger signs.
- **Scoring:** Each correct answer will be awarded one mark.
- ✓ Good knowledge:  $\geq 75\%$
- ✓ Moderate knowledge: 50–74%
- ✓ Poor knowledge:  $< 50\%$

#### Validity and Reliability of the Tool

- **Content validity:** The questionnaire was validated by 7 experts from the Department of Child Health Nursing and Obstetrics and Gynaecological Nursing.
- **Reliability:** A pilot study was conducted among a small group of students to test reliability using Cronbach's alpha (Cronbach's alpha = 0.82, indicating good reliability).

#### Data Collection Procedure

- Permission was obtained from the concerned authorities of SGT University.
- Informed consent was taken from participants.
- The questionnaire was administered in classroom settings under supervision.
- Students were given adequate time to complete the questionnaire.

#### Plan for Data Analysis

- **Descriptive statistics:** Frequency, percentage, mean, and standard deviation were used to describe demographic variables and knowledge scores.
- **Inferential statistics:** Chi-square test was used to find the association between knowledge scores and selected demographic variables (e.g., age, gender, residence, clinical exposure).
- Data will be presented in the form of tables, graphs, and charts for clarity.

#### Statistical Analysis

- Data were coded and analysed using **SPSS version XX / Excel**.
- **Descriptive statistics** (frequency, percentage, mean, median, mode, range, standard deviation) were used to summarize demographic variables and knowledge scores.
- Knowledge was categorized as: Good ( $\geq 75\%$ ), Moderate (50–74%), Poor ( $< 50\%$ ).
- **Chi-square test ( $\chi^2$ )** was applied to examine associations between knowledge levels and sociodemographic variables.
- A **p-value  $< 0.05$**  was considered statistically significant.

#### Ethical Considerations

- Approval for the study was obtained from the Institutional Ethics Committee of SGT University, Gurugram.
- Written informed consent was obtained from all participants after explaining the purpose and procedures of the study.
- Confidentiality and anonymity of participants were strictly maintained.
- Participation was voluntary, and students had the right to withdraw at any stage without penalty.

## RESULTS

**Objective 1: To assess the knowledge of essential newborn care among nursing students of Nursing SGT University, Gurugram, Haryana**

Table 1: Descriptive Statistics of Knowledge Scores Regarding Essential Newborn Care Among Nursing Students (N=120)

| Variable        | N   | Minimum | Maximum | Mean  | Standard Deviation |
|-----------------|-----|---------|---------|-------|--------------------|
| Knowledge Score | 120 | 3.00    | 13.00   | 10.83 | 1.96               |

**Interpretation:** The data presented in Table 1 revealed that the Knowledge scores ranged from 3 to 13, with a mean of 10.83 (SD = 1.96). This indicates that most students demonstrated satisfactory knowledge of essential newborn care.

Table 2: Frequency and Percentage Distribution of Nursing Students According to Level of Knowledge Regarding Essential Newborn Care (N=120)

| Knowledge Level             | Frequency (f) | Percentage (%) |
|-----------------------------|---------------|----------------|
| Poor Knowledge ( $\leq 6$ ) | 5             | 4.2            |
| Moderate Knowledge (7–10)   | 30            | 25.2           |

|                                              |     |      |
|----------------------------------------------|-----|------|
| <b>Good Knowledge (<math>\geq 11</math>)</b> | 85  | 70.6 |
| <b>Total</b>                                 | 120 | 100  |

**Interpretation:** The data presented in Table 2 showed that the majority of students (70.6%) had good knowledge, 25.2% had moderate knowledge, and only 4.2% had poor knowledge.

**Objective 2: To find the association between knowledge of essential newborn care and selected demographic variables**

Table 3: Association Between Knowledge Level and Selected Demographic Variables  
(N=120)

| Demographic Variable       | $\chi^2$ Value | df | p-value | Significance        |
|----------------------------|----------------|----|---------|---------------------|
| Age                        | 0.553          | 2  | 0.758   | Not Significant     |
| Gender                     | 7.284          | 2  | 0.026   | <b>Significant*</b> |
| Religion                   | 1.627          | 4  | 0.804   | Not Significant     |
| Residence                  | 1.565          | 2  | 0.457   | Not Significant     |
| Source of Knowledge        | 19.201         | 6  | 0.004   | <b>Significant*</b> |
| Previous Clinical Exposure | 2.675          | 2  | 0.263   | Not Significant     |
| Mother's Education         | 9.472          | 2  | 0.009   | <b>Significant*</b> |
| Mother's Occupation        | 5.555          | 6  | 0.475   | Not Significant     |
| Father's Education         | 1.956          | 2  | 0.376   | Not Significant     |
| Father's Occupation        | 4.582          | 6  | 0.598   | Not Significant     |

\*Level of significance = 0.05

**Interpretation:** The data presented in Table 3 revealed that significant associations were observed between knowledge level and **gender (p = 0.026)**, **source of knowledge (p = 0.004)**, and **mother's education (p = 0.009)**. No significant associations were found with age, religion, residence, clinical exposure, mother's occupation, father's education, or father's occupation.

Table 4: Association between Gender and Knowledge Level Regarding Essential Newborn Care  
(N=120)

| Gender | Poor | Moderate | Good | Total |
|--------|------|----------|------|-------|
| Female | 1    | 16       | 64   | 81    |
| Male   | 2    | 14       | 23   | 39    |
| Total  | 3    | 30       | 87   | 120   |

#### Chi-Square Test Result

| $\chi^2$ Value | Df | p-value |
|----------------|----|---------|
| 7.284          | 2  | 0.026*  |

**Interpretation:** The data presented in Table 4 showed that 79% of female students had good knowledge compared to 55.6% of male students. The difference was statistically significant.

Table 5: Association between Source of Knowledge and Knowledge Level Regarding Essential Newborn Care  
(N=120)

| Source of Knowledge | Poor | Moderate | Good | Total |
|---------------------|------|----------|------|-------|
| Classroom Teaching  | 2    | 26       | 63   | 91    |
| Clinical Posting    | 0    | 2        | 0    | 2     |
| Others              | 0    | 2        | 6    | 8     |
| Workshops           | 3    | 0        | 16   | 18    |
| Total               | 5    | 30       | 85   | 120   |

#### Chi-Square Test Result

| $\chi^2$ Value | Df | p-value |
|----------------|----|---------|
| 19.201         | 6  | 0.004*  |

**Interpretation:** The data presented in Table 5 revealed that students who gained knowledge through classroom teaching and workshops had significantly higher good knowledge scores.

Table 6: Association Between Mother's Education and Knowledge Level Regarding Essential Newborn Care

(N=120)

| Mother's Education | Poor | Moderate | Good | Total |
|--------------------|------|----------|------|-------|
| Illiterate         | 0    | 7        | 4    | 11    |
| Literate           | 5    | 23       | 81   | 109   |
| Total              | 5    | 30       | 85   | 120   |

#### Chi-Square Test Result

| $\chi^2$ Value | Df | p-value |
|----------------|----|---------|
| 9.472          | 2  | 0.009*  |

#### Interpretation:

The data presented in Table 6 showed that nursing students whose mothers were literate had significantly higher good knowledge compared to those whose mothers were illiterate.

#### Summary of Findings

The mean knowledge score of nursing students regarding essential newborn care was **M = 10.83, SD = 1.96**, with scores ranging from 3 to 13. The majority (70.6%) demonstrated **good knowledge**, 25.2% had **moderate knowledge**, and only 4.2% had **poor knowledge**. Knowledge level was significantly associated with **gender** ( $\chi^2 = 7.284$ ,  $p = 0.026$ ), **source of knowledge** ( $\chi^2 = 19.201$ ,  $p = 0.004$ ), and **mother's education** ( $\chi^2 = 9.472$ ,  $p = 0.009$ ). No significant associations were observed with age, religion, residence, previous clinical exposure, mother's occupation, father's education, or father's occupation.

#### DISCUSSION

The present study revealed that the majority of nursing students (70.6%) demonstrated good knowledge of essential newborn care, with a mean score of  $10.83 \pm 1.96$ . These findings highlight the effectiveness of current teaching strategies but also point to areas requiring reinforcement. Comparable results were reported in Karnataka (2021), where nursing interns showed satisfactory knowledge of cord care and infection prevention, though notable gaps persisted in breastfeeding initiation and neonatal resuscitation. Such similarities suggest that while theoretical knowledge is being imparted effectively, practical application remains inconsistent.

International evidence further supports these observations. A cross-sectional study in Ethiopia (2019) found that only 56% of nursing and midwifery students possessed adequate knowledge of essential newborn care, with deficiencies particularly evident in breastfeeding initiation and infection prevention. Likewise, research from Nepal (2020) documented moderate knowledge levels among students, especially in recognizing danger signs. These findings align with the present study, underscoring the global challenge of ensuring comprehensive competence in essential newborn care.

The significant proportion of students in this study who achieved good knowledge scores reflects positively on the nursing curriculum at SGT University. However, the persistence of moderate and poor knowledge levels among a subset of students indicates the need for targeted interventions. Simulation-based training, skill laboratories, and structured workshops could bridge the gap between theoretical understanding and clinical practice.

Strengthening essential newborn care knowledge among nursing students has direct implications for clinical outcomes. Adequately trained graduates are more likely to initiate breastfeeding early, provide effective thermal protection, and recognize danger signs requiring referral. This contributes to reducing neonatal morbidity and mortality, aligning with national priorities such as the India Newborn Action Plan and global targets under Sustainable Development Goal 3.2.

Thus, the findings emphasize the importance of reinforcing practical skills within nursing education to ensure that future healthcare providers are fully prepared to deliver quality newborn care.

#### Implications for Nursing Education

The significant associations observed between knowledge and gender, source of knowledge, and mother's education highlight the influence of both personal and institutional factors. Female students and those exposed to structured teaching and workshops demonstrated higher knowledge levels, suggesting that pedagogical approaches and experiential learning play a critical role in competency development. These findings support the integration of simulation-based training, skill labs, and case-based discussions into nursing curricula to reinforce theoretical knowledge with practical application.

#### Clinical and Public Health Relevance

Strengthening ENC knowledge among nursing students has direct implications for clinical practice and neonatal outcomes. Adequately trained students are more likely to provide effective care during deliveries, ensure early initiation of breastfeeding, and recognize danger signs requiring referral. This contributes to reducing neonatal morbidity and mortality, aligning with the India Newborn Action Plan (INAP) and Sustainable Development Goal 3.2, which aim to reduce neonatal mortality to fewer than 12 per 1,000 live births by 2030. Locally, the findings are particularly relevant to Haryana, where neonatal mortality remains

slightly above the national average, and highlight the need for institutional strategies to bridge knowledge gaps.

### Limitations

This study employed a convenient sampling technique and was limited to a single institution (SGT University, Gurugram). Therefore, findings may not be generalizable to all nursing students in Haryana or India. Additionally, the study assessed knowledge only, without evaluating practical skills or clinical performance, which may differ from theoretical understanding.

### Recommendations

Future research should incorporate multi-institutional samples and assess both knowledge and practice through objective structured clinical examinations (OSCEs) and simulation-based evaluations. Faculty development programs should emphasize active learning strategies to address gaps in breastfeeding initiation, neonatal resuscitation, and recognition of jaundice. At the policy level, integrating ENC modules into nursing curricula and continuous professional development programs will strengthen the future workforce and contribute to achieving national and global neonatal survival targets.

### CONCLUSION

The present study assessed the knowledge of essential newborn care among B.Sc. Nursing 6th semester students at SGT University, Gurugram. Findings revealed that the majority of students (70.6%) demonstrated good knowledge, with a mean score of  $10.83 \pm 1.96$ . This indicates that the nursing curriculum has been effective in imparting theoretical understanding of newborn care practices. However, the presence of moderate and poor knowledge levels among a subset of students highlights the need for strengthening practical training and reinforcing specific areas such as breastfeeding initiation, neonatal resuscitation, and recognition of danger signs.

The study also established significant associations between knowledge levels and demographic variables, including gender, source of knowledge, and mother's education. These results emphasize the influence of both personal background and institutional teaching methods on student competence.

Strengthening essential newborn care knowledge among nursing students is critical for improving neonatal outcomes. Well-trained graduates are more likely to provide effective care during deliveries, ensure early initiation of breastfeeding, and identify complications requiring referral. The findings align with national priorities such as the India Newborn Action Plan and global targets under Sustainable Development Goal 3.2, which aim to reduce neonatal mortality to fewer than 12 per 1,000 live births by 2030.

Thus, the study underscores the importance of integrating simulation-based training, workshops, and mentorship into nursing education to ensure that future healthcare providers are fully prepared to deliver quality newborn care.

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