

# Improving Maternal Knowledge For Neonatal Infection Prevention Through Structured Teaching: Evidence From A Tertiary Care Hospital In India

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## Abstract

Neonatal infections continue to be a leading cause of morbidity and mortality, especially in developing countries. Postnatal mothers play a crucial role in preventing these infections through proper hygiene, cord care, breastfeeding, timely immunization, and early recognition of infection signs. Structured Teaching Programs (STP) are an effective educational strategy to enhance maternal knowledge, thereby promoting better neonatal health outcomes. A quantitative, one-group pre-test post-test quasi-experimental design was adopted to evaluate the effectiveness of an STP. The study included 120 postnatal mothers admitted to Parul Sevashram Hospital, Vadodara, selected through convenience sampling. Data were collected using a structured questionnaire, validated by five experts with a Cronbach's alpha of 0.87, comprising socio-demographic information and knowledge assessment regarding neonatal infection prevention. The STP was delivered via interactive lectures, practical demonstrations, and audiovisual aids. Knowledge levels were assessed before (pre-test) and seven days after (post-test) the intervention. Pre-test assessment showed that 37.5% of mothers had poor knowledge, 51.7% had average knowledge, and 10.8% had good knowledge. Post-intervention, no mother had poor knowledge, 32.5% achieved good knowledge, and 24.2% attained excellent knowledge, demonstrating significant improvement ( $p < 0.05$ ). Significant associations were found between pre-test knowledge and educational status ( $\chi^2 = 16.593$ ,  $p = 0.035$ ), occupation ( $\chi^2 = 12.917$ ,  $p = 0.044$ ), type of family ( $\chi^2 = 11.213$ ,  $p = 0.004$ ), and socioeconomic status ( $\chi^2 = 10.22$ ,  $p = 0.037$ ). Other variables, including age, parity, mode of delivery, antenatal visits, prior exposure to neonatal care, and source of health information, were not significantly associated.

**Keywords:** Neonatal infection, postnatal mothers, structured teaching program, maternal knowledge, neonatal care.

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## INTRODUCTION

Neonatal infections remain a leading cause of morbidity and mortality worldwide, particularly in low- and middle-income countries. According to the World Health Organization <sup>[1]</sup>, nearly one-third of neonatal deaths globally are attributable to infections such as sepsis, pneumonia, and meningitis. In India, neonatal infections contribute significantly to the neonatal mortality rate, with poor hygiene, lack of knowledge regarding cord care, suboptimal breastfeeding practices, and delayed health-seeking behavior being major risk factors <sup>[2]</sup>.

Postnatal mothers are central to preventing neonatal infections as they are the primary caregivers during the critical neonatal period. Appropriate knowledge regarding hand hygiene, exclusive breastfeeding, timely immunization, cord care, and early recognition of infection signs can reduce the incidence of neonatal complications. However, multiple studies have highlighted gaps in maternal awareness and practices, particularly among mothers from low socioeconomic and educational backgrounds <sup>[3]</sup>.

Structured teaching programs (STPs) have been recognized as effective educational interventions to improve maternal knowledge and health-related practices. By incorporating interactive lectures, demonstrations, and audiovisual aids, STPs enhance retention, understanding, and application of preventive strategies. Previous studies in India and other developing countries have demonstrated the positive impact of structured education on maternal knowledge and neonatal outcomes <sup>[4]</sup>.

Considering the high burden of neonatal infections and the potential of educational interventions, the present study was undertaken to evaluate the effectiveness of a structured teaching program on knowledge regarding the prevention of neonatal infections among postnatal mothers admitted to a tertiary care hospital in Vadodara, Gujarat<sup>[5]</sup>.

**METHODOLOGY:** A quantitative, one-group pre-test post-test quasi-experimental design was adopted to evaluate the effectiveness of a structured teaching program (STP) on knowledge regarding neonatal infection prevention among postnatal mothers admitted to Parul Sevashram Hospital, Vadodara. A total of 120 mothers were selected using convenience sampling based on inclusion criteria: admitted within 7 days postpartum, able to understand Hindi or Gujarati, and willing to participate. Data were collected using a validated structured knowledge questionnaire (Cronbach's  $\alpha = 0.87$ ) covering socio-demographic variables and domains such as hygiene, cord care, breastfeeding, immunization, and infection recognition. The STP, delivered through interactive lectures, demonstrations, and audiovisual aids, was administered immediately after the pre-test, and the post-test was conducted after seven days. Descriptive statistics were used to summarize demographic variables and knowledge levels, while paired *t*-tests assessed the effectiveness of the STP, and Chi-square tests examined associations between pre-test knowledge and selected socio-demographic variables. Ethical approval was obtained from the Institutional Ethics Committee of Parul University (Approval No.: PUIECHR/PIMSR/00/081734/8005), and informed consent was secured from all participants before data collection.

## RESULTS:

### Section 1: Findings Related to Frequency and Percentage Distribution of Socio-Demographic Variables of the Postnatal Mothers

**Table 1: Frequency and Percentage Distribution of Socio-Demographic Variables of the Postnatal Mothers**

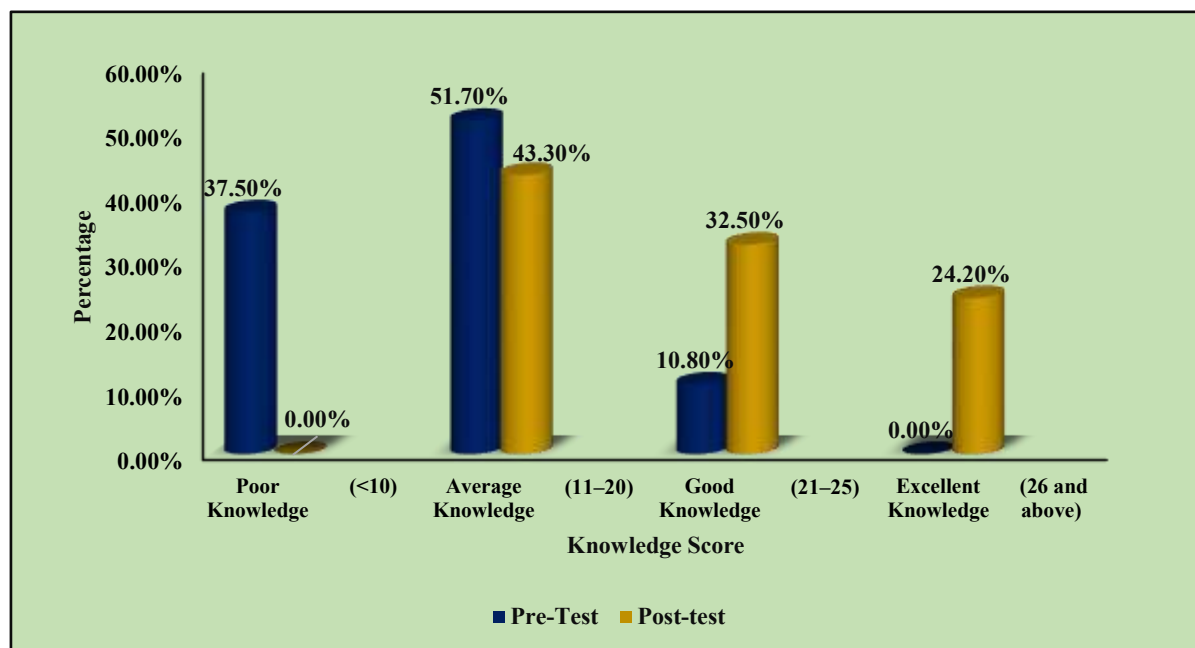
n=120

| Demographic Variable                        | Category                | Frequency (f) | Percentage (%) |
|---------------------------------------------|-------------------------|---------------|----------------|
| Age of the mother                           | < 20 years              | 26            | 21.7%          |
|                                             | 21–25 years             | 44            | 36.7%          |
|                                             | 26–30 years             | 26            | 21.7%          |
|                                             | > 30 years              | 24            | 20.0%          |
| Educational status                          | Illiterate              | 20            | 16.7%          |
|                                             | Primary school          | 32            | 26.7%          |
|                                             | Secondary school        | 22            | 18.3%          |
|                                             | Graduate                | 20            | 16.7%          |
|                                             | Postgraduate            | 26            | 21.7%          |
| Occupation                                  | Housewife               | 34            | 28.3%          |
|                                             | Government Employee     | 38            | 31.7%          |
|                                             | Private Employee        | 22            | 18.3%          |
|                                             | Student                 | 26            | 21.7%          |
| Type of family                              | Nuclear family          | 59            | 49.2%          |
|                                             | Joint family            | 61            | 50.8%          |
| Parity (number of deliveries)               | Primipara               | 57            | 47.5%          |
|                                             | Multipara               | 63            | 52.5%          |
| Mode of delivery for current baby           | Normal vaginal delivery | 55            | 46.7%          |
|                                             | Cesarean section        | 64            | 53.3%          |
| Number of antenatal visits during pregnancy | < 4 visits              | 33            | 27.5%          |
|                                             | 4–7 visits              | 42            | 35.0%          |
|                                             | > 7 visits              | 45            | 37.5%          |

|                                                      |                   |    |       |
|------------------------------------------------------|-------------------|----|-------|
| Previous exposure to neonatal care information       | Yes               | 52 | 43.3% |
|                                                      | No                | 68 | 56.7% |
| Socioeconomic status                                 | Upper class       | 39 | 32.5% |
|                                                      | Middle class      | 45 | 37.5% |
|                                                      | Lower class       | 36 | 30.0% |
| Source of health information regarding neonatal care | Health worker     | 5  | 4.2%  |
|                                                      | Doctor/Nurse      | 23 | 19.2% |
|                                                      | Media             | 21 | 17.5% |
|                                                      | Family or friends | 3  | 2.5%  |

The study included 120 postnatal mothers, most of whom (36.7%) were aged 21–25 years, followed by 26–30 years (21.7%), with 20% above 30 years. Educational levels varied, with 26.7% having primary education, 21.7% postgraduate, 18.3% secondary, 16.7% graduates, and 16.7% illiterate. Occupation-wise, 31.7% were government employees, 28.3% housewives, 21.7% students, and 18.3% private employees. Family type was almost equally distributed between nuclear (49.2%) and joint (50.8%) families. Nearly half were multipara (52.5%) and 47.5% primipara. Cesarean deliveries accounted for 53.3%, and 46.7% were normal vaginal births. Antenatal visits were adequate, with 37.5% attending >7 visits, 35.0% attending 4–7, and 27.5% less than 4. More than half (56.7%) had no prior exposure to neonatal care information. Socioeconomically, 37.5% belonged to the middle class, 32.5% upper, and 30.0% lower. The main sources of health information were doctors/nurses (19.2%) and media (17.5%), with minimal input from health workers (4.2%) and family/friends (2.5%).

## Section 2: Findings Related to Pre-Test Knowledge of Postnatal Mothers Regarding Reducing the Risk of Neonatal Infection



n=120

**Fig. 1: Pre-Test and Post-Test Knowledge Scores of Postnatal Mothers Regarding Reducing the Risk of Neonatal Infection.**

Section 2 shows the frequency and percentage distribution of pre-test and post-test knowledge scores of postnatal mothers. In the pre-test, the majority of mothers (51.7%) had average knowledge, 37.5% had poor knowledge, and only 10.8% demonstrated good knowledge, while none had excellent knowledge. After the structured teaching program, knowledge levels improved markedly, with 43.3% showing average

knowledge, 32.5% good knowledge, and 24.2% excellent knowledge, and no mother remained in the poor knowledge category.

### **Section 3: Findings Related to the Association between Pre-Test Knowledge Scores Regarding Reducing the Risk of Neonatal Infection Among Postnatal Mothers and Selected Socio-Demographic Variables.**

Association between pre-test knowledge scores of postnatal mothers and selected socio-demographic variables. A significant association was observed with educational status ( $\chi^2 = 16.593$ ,  $p = 0.035$ ), occupation ( $\chi^2 = 12.917$ ,  $p = 0.044$ ), type of family ( $\chi^2 = 11.213$ ,  $p = 0.004$ ), and socioeconomic status ( $\chi^2 = 10.22$ ,  $p = 0.037$ ), indicating that these factors influence mothers' baseline knowledge regarding neonatal infection prevention. Other variables such as age, parity, mode of delivery, antenatal visits, previous exposure to neonatal care information, and source of health information showed no statistically significant association ( $p > 0.05$ ).

## **DISCUSSION**

The present study revealed that the pre-test knowledge of postnatal mothers regarding the reduction of neonatal infection risk was significantly associated with certain socio-demographic variables such as educational status, occupation, type of family, and socioeconomic status. These findings highlight that maternal background characteristics play a crucial role in determining awareness and practices related to neonatal infection prevention.

The association between maternal education and knowledge was found to be significant in this study ( $\chi^2 = 16.593$ ,  $p = 0.035$ ). This is consistent with the findings of <sup>[6]</sup>, who reported that mothers with higher educational attainment had better awareness regarding newborn care and infection prevention. Education enables mothers to understand health messages more effectively and adopt preventive practices. Similarly, a study by Sharma, Goyal, and Dubey (2020) in rural Rajasthan also demonstrated a positive correlation between maternal education and newborn health outcomes <sup>[7]</sup>.

Occupation of mothers was another variable significantly associated with knowledge ( $\chi^2 = 12.917$ ,  $p = 0.044$ ). Employed mothers tend to have greater exposure to health information through social networks and media, enhancing their awareness. This aligns with the findings of Alam and Rahman (2018) <sup>[8]</sup>, who observed that working women displayed better maternal and child health practices compared to housewives due to increased exposure to health communication channels.

The type of family showed a statistically significant association ( $\chi^2 = 11.213$ ,  $p = 0.004$ ), suggesting that mothers from nuclear families had comparatively higher knowledge levels than those from joint families. This could be attributed to increased autonomy in decision-making and exposure to health services. These results are supported by the study of Yadav, Gupta, and Chauhan (2021) <sup>[9]</sup>, who highlighted that family structure influences maternal care practices, with nuclear families often practicing evidence-based newborn care more consistently.

Socioeconomic status also demonstrated a significant association with knowledge scores ( $\chi^2 = 10.22$ ,  $p = 0.037$ ). Mothers from higher socioeconomic backgrounds had better knowledge, possibly due to greater access to healthcare facilities, resources, and health education. These findings are in line with the results of Rani and Kumar (2017) <sup>[10]</sup>, who reported that socioeconomic disparities are a key determinant of maternal and child health outcomes, especially in infection prevention practices.

Conversely, variables such as age, parity, mode of delivery, antenatal visits, previous exposure to neonatal care information, and source of health information did not show a significant association with knowledge in this study. This contrasts with the findings of Das and Mishra (2020) <sup>[11]</sup>, who observed that parity and antenatal visits positively influenced maternal knowledge levels. The lack of significant association in the present study may be attributed to cultural differences and variations in health education programs across different regions.

Overall, the findings emphasize the importance of focusing health education programs on mothers with lower education levels, housewives, those from joint families, and lower socioeconomic backgrounds, as they are more vulnerable to knowledge deficits regarding neonatal infection prevention.

## CONCLUSION

The study concluded that the structured teaching program was effective in significantly improving the knowledge of postnatal mothers regarding reducing the risk of neonatal infection. Findings revealed that before the intervention, the majority of mothers had poor to average knowledge, while after the intervention, a considerable shift was observed toward good and excellent knowledge categories. This highlights the importance of health education as a powerful tool to empower mothers in adopting safe practices for neonatal care and infection prevention.

## Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of Parul University (Approval No.: PUIECHR/PIMSR/00/081734/8005). Informed consent was secured from all participants prior to data collection, ensuring confidentiality, anonymity, and the right to withdraw at any stage.

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**Conflict of Interest:** The author declares no conflict of interest.

## REFERENCES

1. World Health Organization. Newborns: improving survival and well-being. Geneva: WHO; 2020. Available from: <https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality>
2. Kumari R, Singh P. Knowledge and practices of postnatal mothers regarding prevention of neonatal infections in India: a cross-sectional study. *Int J Community Med Public Health*. 2022;9(4):1675-81.
3. Thomas J. Awareness and practices of postnatal mothers regarding neonatal care in rural communities: implications for nursing interventions. *Indian J Child Health*. 2021;8(2):45-50.
4. Patil S, Deshmukh A. Effectiveness of structured teaching program on knowledge of mothers regarding prevention of neonatal sepsis. *Int J Reprod Contracept Obstet Gynecol*. 2020;9(5):2050-6.
5. Sharma N. Impact of educational intervention on maternal knowledge and practices regarding neonatal care in a tertiary hospital of North India. *J Neonatal Nurs*. 2019;25(3):114-20.
6. Alam, M., & Rahman, M. (2018). Influence of maternal occupation on maternal and child health practices in South Asia. *International Journal of Community Medicine and Public Health*, 5(3), 1045–1051.
7. Das, S., & Mishra, P. (2020). Association of maternal socio-demographic factors with knowledge and practices of newborn care in Eastern India. *Journal of Maternal and Child Health*, 7(2), 112–118.
8. Rani, P., & Kumar, S. (2017). Socioeconomic determinants of maternal knowledge on newborn care practices: Evidence from North India. *Indian Journal of Public Health Research & Development*, 8(4), 234–239.
9. Sharma, R., Goyal, S., & Dubey, N. (2020). Effect of maternal education on neonatal health practices in rural Rajasthan. *Nursing and Midwifery Research Journal*, 16(1), 45–52.
10. Singh, A., & Verma, R. (2019). Impact of maternal education on neonatal care knowledge among postnatal mothers. *International Journal of Nursing Education*, 11(2), 93–97.
11. Yadav, P., Gupta, A., & Chauhan, S. (2021). Family structure and its impact on maternal newborn care practices in India: A cross-sectional study. *Asian Journal of Nursing Education and Research*, 11(2), 171–176.