A descriptive survey on knowledge gap related to retinopathy of prematurity and its prevention and management among nurses in a tertiary care hospital

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Purpose: Retinopathy of prematurity (ROP) is a leading cause of severe visual impairment of childhood affecting preterm babies. The disease is sensitive to the quality of neonatal nursing care provided to preterm neonates in any neonatal intensive care unit (NICU). The aim of this study was to assess the knowledge gap among nurses related to ROP and its prevention and management working in NICU in a tertiary care hospital. Methods: In a cross-sectional descriptive survey, 53 nurses working in a selected NICU of a tertiary care hospital were enrolled. A pretested and validated self-administered questionnaire was used to assess the knowledge of nurses related to ROP. The questionnaire consisted of two main parts namely the demographic information and the knowledge questionnaire related to ROP related to risk factors of ROP, screening procedure, and nursing care to babies with ROP before, during, and after the procedure. Results: The majority of nurses were female with a mean age of 33.48 ± 5.85 years, having a median of 5 years of experience in NICU. Most of the nurses (38, 68%) had overall poor knowledge, followed by fair knowledge (21%) with the mean knowledge scores of 14.07 ± 2.06. No significant association between the overall knowledge scores and age, total professional experience in NICU, designation, and educational qualification of the nurses could be observed (P ≥ 0.05). Conclusion: Most of the nurses working in the NICU had poor knowledge regarding ROP, necessitating the need for updating the knowledge of nurses related to ROP, its prevention, and management by disseminating information about the disease through seminars, and workshops and arranging in-house educational sessions on ROP.

Key words: Knowledge, neonatal intensive care unit, nurses, retinopathy of prematurity

Retinopathy of prematurity (ROP) is a vaso-proliferative disorder of the retina that occurs among premature babies. It is one of the most common causes of preventable blindness in children. Globally, ROP is estimated to affect 24% to 47% among high-risk neonates. The most risk factors for ROP include very low birth weight, prematurity, and unregulated administration of oxygen therapy. The additional factors that may influence the severity of ROP are acidosis, apnea, PDA, intra-vascular hemorrhage, and blood transfusion. The prevalence of ROP is sensitive to the quality of inpatient neonatal care provided to the hospitalized sick preterm and LBW babies. Neonatal nurses are the pillar of any neonatal intensive care unit. Their knowledge and clinical skills are essential in providing quality care to sick preterm and LBW babies in preventing ROP.

Nurses are the primary caregivers in neonatal units and have a crucial role as members of the multi-disciplinary neonatal team in preventing ROP-related blindness. Nurses play essentially a very important role in preventing late-onset sepsis, maintaining thermoregulation, and promoting optimal feeding in sick neonates. They also participate actively in educating parents and family members related to newborn care and emphasizing regular follow-up after the discharge from NICU. However, many nurses are not appropriately prepared especially in neonatal nursing in low and middle-income group countries (LMIC). They face significant challenges in providing high-quality neonatal care due to the lack of preparedness.

The role of nursing staff is critical in the successful management and prevention of ROP induced blindness. The neonatal nurses assist the ophthalmologists in the examination process and providing early treatment of ROP to preterm neonates. They also provide counseling on the importance of follow-up examination after discharge. Nurses’ knowledge in ROP prevention and management is not a much-explored area. Therefore, this study was planned to assess the knowledge of nurses regarding ROP and its prevention and management...
and to find the association of knowledge of nurses regarding ROP with selected demographic variables. The findings of this study would provide a strong foundation for developing an educational module on ROP to enhance their knowledge on prevention and management of ROP.

Methods

In a descriptive cross-sectional study, 53 staff nurses working in a neonatal intensive care unit (NICU) of a tertiary care hospital were enrolled using a total enumeration sampling technique. Ethical permission (IEC-820/08.11.2019/19.06.2020) was obtained from the institute of ethics committee. The study was conducted after obtaining informed consent from staff nurses and ensuring confidentiality and anonymity. The nursing staff willing to participate in the study and available during the study were enrolled. The tools used for data collection were the subject data sheet and a pretested and validated self-developed knowledge questionnaire from a standard Facility-Based Care of Preterm Infants on Eliminating Retinopathy of Prematurity by Improving Quality of Care.[9] The subject data sheet included the information related to age, gender, designation, qualification, total years of experience, experience in NICU, and attendance in any ROP workshop/seminar/conference, etc. The knowledge questionnaire had 22 multiple choice questions (MCQ) related to screening of preterm neonate for ROP, risk factors, ROP stages, recommended oxygen saturation (SPO2) for preterm, eye drop instillation, laser therapy, and the instruments used for ROP treatment. Each correct response to the items was given a score of ‘1’ and incorrect or not attempted item was scored as ‘0’ with the score ranging from 0 to 22. The obtained knowledge scores were categorized as excellent (>20), good (17–19), fair (14–16) and poor (<14).

The data was coded and entered in excel sheet and analyzed using SPSS 22.0. Descriptive and inferential statistics were used to analyze the data. As part of descriptive survey, the data were computed using frequency, percentage, and measure of central tendencies, while under inferential statistics Chi-square and one-way ANOVA tests were used to find the association between the knowledge and selected variables. The level of significance was set at 0.05.

Results

The majority of nursing staff were females (98%) with a mean age of 33.48 ± 5.85 years and were involved in the direct care of admitted neonates in NICU (85%). The majority of nurses working in NICU were either graduate or postgraduate and had not attended any workshop or seminar on ROP [Table 1]. Most of the nurses participated in the study had poor knowledge score (68%) and only 32% of nurses had fair to average knowledge about ROP with the mean score of 14.07 ± 2.06 [Table 2 and Fig. 1].

Most of the nurses could not answer correctly the recommended postmenstrual age for detection of ROP (50, 94.3%), age of neonate for first screening examination for ROP (44, 83%), postnatal age before which no ROP develops (38, 71.7%), risk factors for ROP and recommended dose of iron (36, 67.9%), each, and the level of hematocrit below which packed cell transfusion is given to a preterm baby (31, 58.5%).

Discussion

Findings of the study revealed that nurses had either poor or fair knowledge scores related to ROP, its prevention, and management. The majority of nurses had not attended any workshop or conference or seminar on ROP.

Neonatal nurses are the frontline workers in any NICU. Parents, due to the easy 24 × 7 availability of nurses and the busy schedule of the neonatologists, contact nurses for their concerns related to the sick newborn. Nurses with good knowledge and clinical skills can provide not only the best quality care to prevent ROP in preterm babies[10] but are also in a position to address the concerns of the parents in the absence of neonatologists and ophthalmologists. In this study majority of nurses had fair to poor knowledge. The findings of this study are in contrast to the findings reported by Bind Sankar and Pappal[11] in which a significant number of nurses had good knowledge regarding ROP. Poor knowledge scores of the nurses related to ROP, its prevention, and management
can be attributed to the lack of in-service education programs in ROP as the majority of nurses surveyed in this study had not attended any workshop or conference on ROP.

Item wise knowledge analysis of nurses revealed some significant findings. All the study participants were able to define ROP, identify listed risk factors associated with ROP, and could advise parents appropriately for keeping the neonate NPO for ROP examination. A significant number of the participants were not aware of the postmenstrual age of the preterm at which the screening for ROP is done. Also, nurses were found to be lacking in knowledge related to the postnatal age before which no ROP develops, an age considered for first screening examination for ROP, and risk factors for ROP. The findings suggest that the nurses had not gone through the screening protocol for ROP available in the unit. Nurses spend considerable time giving care to sick preterm babies with various neonatal conditions like sepsis, respiratory distress syndrome, birth asphyxia, and Rh iso-immunization. They should review the available ROP guidelines in the unit.

This study showed that most of the participants were able to give correct answers on the relationship between the incidence of ROP and gestational age and birth weight of newborn, indications of ROP screening in newborns, gestational age at which the first screening examination for ROP should be carried out, the concentration of eye drops used for dilating eye before eye examination and the time interval for dilating eyes of a neonate before examination, and for follow-up and laser therapy as the most preferred method for peripheral retinal ablation. The key factor in the outcome of ROP from a given list (stage of ROP, early diagnosis and treatment severity of ROP and early discharge from hospital) and the name of the instrument used during ROP treatment were correctly responded. Reasons for having high score in these items could be that the nurses were more practically oriented and were well versed with the tasks they were performing routinely. However in-depth knowledge about the topic is required to address the queries of the parents, which was substantially lacking in the nurses. There is no significant association between the knowledge score and age, total professional experience in NICU, designation, and educational qualification of the nurses (P ≥ 0.05) due to the small sample size.

Our study had some limitations. In a single-center study, the data were collected with the administration of knowledge questionnaire alone, practices of nurses could not be observed.
The study needs to be replicated in other settings, using a large sample size using an intervention. Because of the huge knowledge gap among nurses related to ROP, its prevention, and management, we recommend appropriate coordination among the neonatal team members including nurses, neonatologists, and ophthalmologists for efficient management of babies with ROP. There is a need for conducting regular updates through continuous nursing education, seminars, workshop, and preparing neonatal nurses for specialized roles in NICU.

Conclusion
The study findings suggest that the majority of the nurses working in NICU, had poor knowledge regarding ROP, its prevention, and management, necessitating the need for increasing the awareness of nurses about the clinical condition by disseminating information through seminars, and workshops and arranging in-house educational activities.

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Conflict of interest
No conflicting relationship exists for any author.

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