

Awareness of retinopathy of prematurity screening among healthcare professionals in Palakkad district of Kerala

ABSTRACT

Purpose: To understand the level of knowledge and create awareness about retinopathy of prematurity (ROP) among Pediatricians, General Practitioners, and Paramedical staff in the Palakkad district. **Materials and Methods:** A Questionnaire with multiple choice answers, created to determine the knowledge and current practices of ROP screening, was administered to 216 participants including 97 Pediatricians, 61 General Practitioners, and 58 Paramedical staff (staff nurses and optometrists) in a period of 1 year. The responses were collected and analyzed. **Results:** Most respondents (70.7%) were from the public sector. More than 90% of respondents in the three groups reported awareness of ROP as a preventable disease in premature babies. However, the knowledge of screening criteria and timing of screening was poor among all participants including Pediatricians. The awareness and knowledge did not differ significantly by respondents in the public and private sector (all $P > 0.05$). **Conclusion:** There is an urgent need to focus on strategies to increase awareness of the timing and criteria for the screening are suboptimal even among Pediatricians.

Keywords: Awareness, retinopathy of prematurity, screening criteria

INTRODUCTION

Retinopathy of prematurity (ROP) is an important cause of preventable blindness in children. An estimated 14.9 million children are born preterm (earlier than 37 weeks of gestation) worldwide^[1] and nearly 1,84,700 these preterm children develop any stage ROP.^[2] Approximately 32,000 children worldwide were reported to have severe visual impairment attributed to ROP in 2010.^[2] India has a high incidence of preterm births with an estimated 3.7 million preterm births in 2010.^[2] India contributes an estimated 10% of the global prevalence of blindness and visual impairment due to ROP with at least 5,000 developing severe disease and 2,900 children surviving with visual impairment related to ROP in 2010.^[3,4]

Middle-income countries, like India, are experiencing the “third global epidemic” of ROP due to factors that include better survival of preterm babies and inadequate access to quality neonatal care.^[4] Estimates of ROP in India were previously limited to urban neonatal units with the reported


incidence varying from 37% to 54% in neonatal units.^[5,6] However, improving survival rates of preterm children has led to the identification and reporting of ROP from semi-urban and rural units of Southern India with estimates of ROP that vary from 22.4% to 41.5% in neonatal units.^[7-9] ROP, if left untreated, causes bilateral retinal detachment and permanent and total blindness. Blindness in a child can lead to economic, social, psychological, educational, and employment potential losses and can affect the individual child and their family. A previous study from India reported that the fiscal quantum of blind person-years saved is approximately 108.4 million

V. K. P. GEETHA, JAYARAMAN THRIKKOVIL PISHARAM¹, PARAG K. SHAH²

District Hospital, Kerala Health Service, ¹District Early Intervention Centre, Government Women and Children Hospital Palakkad, Kerala, ²Department of Pediatric Retina and Ocular Oncology, Aravind Eye Hospital and Post Graduate Institute of ophthalmology, Coimbatore, Tamil Nadu, India

Address for correspondence: Dr. V. K. P. Geetha, District Hospital, Palakkad - 678 001, Kerala, India. E-mail: vkpgeetha@gmail.com

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USD annually if ROP screening is standardized and expanded across India.^[10]

Babies with ROP are not born blind and there is a time interval between the occurrence of stage 1 ROP and threshold ROP that needs treatment. However, ROP can be treated successfully, only if detected at the right time. Timely screening and detection of ROP at the correct time can save the vision and change the life of the child. Childbirth in Kerala is primarily institutional and hence the possibility of early screening and intervention for ROP is high. We designed a cross-sectional study to explore prevailing knowledge, attitudes, and practice related to ROP among Pediatricians, General Practitioners, and Paramedical Staff involved in Neonatal care at Palakkad District in Central Kerala.

MATERIALS AND METHODS

A seven-item closed-ended questionnaire in the English language was developed to collect information including the setting of practice (private or public sector) and specialization of respondents, and awareness of ROP, if blindness in ROP is preventable, the timing of screening for ROP, which babies must be screened, the modality of screening, if ROP is treatable and modalities of treatment for ROP. Individual demographic details including age and gender or name were not collected from respondents. The questionnaire was distributed to the pediatricians as part of a conference on pediatrics held at the Study District in 2018 and to the general practitioners in the public sector as part of a health services conference held in the study district in 2018. The questionnaire was given in person to the paramedical staff (Staff nurses and optometrists in the Government hospitals of the study district) in 2018 and responses were collected in person. Data from the study forms were entered in an MS Excel spreadsheet. The distribution of responses is presented as a proportion by groups.

RESULTS

The study included 216 participants including 97 (44.91%) pediatricians, 61 (28.24%) general practitioners and 58 (26.85%) paramedical staff. Most respondents ($n = 152$, 70.7%) were from the public sector and 64 (29.63%) were from the private sector.

The awareness of ROP, that blindness from ROP is preventable and screening processes were high among the study respondents [Table 1]. However, knowledge of screening criteria, the timing for screening and treatment modalities of ROP was suboptimal in the study respondents [Table 1]. The awareness of the screening criteria for ROP was 70%

among general practitioners and 80% in pediatricians. Nearly three-fourth of the general practitioners and paramedical staff were not aware of the appropriate time for ROP screening. The awareness of treatment modalities was nearly similar for pediatricians and general practitioners [Table 1]. Lasers were considered the only available treatment option for ROP by 19.64% of general practitioners and 26.04% of pediatricians. The distribution of responses did not differ significantly by respondents in the public or private sector (all $P > 0.05$).

DISCUSSION

The district of Palakkad in central Kerala is a predominantly rural district with a high literacy rate. Most childbirths are institutional in the district like other parts of Kerala. However, the district has only a few specialty hospitals that offer state-of-the-art neonatal care. Preterm babies are always under the care of a pediatrician or neonatologist in the study district and the knowledge, awareness, and involvement of pediatricians and neonatologists in the screening of ROP is important. The suboptimal levels of awareness on screening criteria, the timing of screening, and possible modalities of treatment among respondents indicate the need for more sustained educational programs on ROP in the study district.

Previous studies have reported poor awareness of ROP among pediatricians in several countries of Asia, Africa, and the Middle East.^[11-15] Previous studies have reported on awareness of ROP among pediatricians from different parts of India with higher awareness reported from metropolitan cities. High awareness of the risk factors for ROP was reported from Hyderabad (100%) and Pune (80%) but was much lower (57.8%) among pediatricians at a tier two city in south India.^[16,17] The awareness of ROP (98%) in our study is consistent with reports from Hyderabad and Pune. The awareness of ROP was similar among pediatricians, general practitioners, and paramedical staff in the study and indicates widespread awareness of ROP in the healthcare practitioners of the district.

However, we found that awareness of screening guidelines, the timing of screening, and modalities of treatment were suboptimal in our study. These results are consistent with previous studies from India and other parts of the world.^[11-17] Awareness of the screening criteria ranged from 70% among general practitioners to 80% among pediatricians in our study. Awareness of the modalities of treatment was 69.64% among general practitioners and 70.73% among pediatricians. Awareness of the timing of screening was only 23.33% among general practitioners and 60.82% among pediatricians. The high awareness of ROP but suboptimal awareness of the management modalities indicates the possible presence of

Table 1: Outcome of analysis

	Pediatricians (%)	General practitioners (%)	Paramedical staff (%)
Total participated	97	61	58
Awareness of ROP	96 (98.97)	60 (98.36)	57 (98.28)
Understanding ROP is preventable	93 (95.88)	58 (95.08)	53 (92.98)
Knowledge of screening criteria	78 (80.41)	42 (70)	41 (74.55)
Knowledge of time of screening	60 (61.85)	14 (23.33)	15 (26.79)
Knowledge of screening procedure	88 (93.62)	59 (98.33)	50 (89.29)
Knowledge of treatment	68 (70.83)	39 (69.64)	45 (83.33)

ROP Retinopathy of prematurity

a gap between awareness and its translation to practice. These results have implications for the success of the ROP program in the district as screening and management at the appropriate time intervals is necessary to prevent blindness from ROP.

Screening guidelines, criteria, and management modalities in developed countries recommend screening babies $\leq 30/32$ weeks or ≤ 1500 g.^[18-20] However, ROP is not restricted to smaller preterm babies in India and these guidelines must be adapted for use in India. Pediatricians and general practitioners must be made aware that larger and more mature babies are at risk of developing vision-threatening ROP in India due to the wide variation in the standard of neonatal care.^[21-23] The revised guidelines for ROP in India recommend screening all babies with birth weight < 2000 g or gestational age < 34 weeks or infants with unstable clinical course who are determined by the neonatologist or pediatrician to be at high risk for ROP.^[24] It is recommended to undertake the first ROP screening session before “day 30” of life and by “day 20” of life in smaller babies (possibly < 30 weeks and/or birth weight < 1200 g).^[25] A previous study has reported that lower target oxygen saturations are protective and monitoring should aim to keep oxygen levels between 83% and 93% and not higher.^[26,27] Improved awareness of screening criteria and guidelines is important as a previous study reported that only 14.5% of pediatricians followed standard guidelines.^[28]

Appropriate screening and care for ROP is a legally mandated requirement in India.^[10] The neonatologist or pediatrician at the neonatal care units is important to ensure appropriate screening for ROP in babies. It is also important that general practitioners and family physicians are aware of the screening guidelines and timing, especially in areas where there are fewer neonatal support services. It is also important to train more ophthalmologists to manage ROP in India. There are < 200 ophthalmologists trained to manage ROP in India at present^[4] and more training programs are essential to cover many babies at risk for ROP in India.

Our study has several limitations. The self-selection of participants attending conferences is a limitation that can lead to a selection bias as those who were aware of ROP and its importance may have chosen to reply to the questionnaire. We cannot say the population of respondents is a representation of these two groups in general and hence the results may not be generalizable to a larger population even though the results are consistent with other studies. The high awareness rates among paramedical staff may be explained by their involvement with the care of preterm babies and ROP and can also be explained by the ROP-specific awareness classes they receive before they are posted for the care of preterm babies. We did not explore each response in detail as part of this questionnaire and hence were unable to explore the possible reasons for the gap in awareness and practice, especially the criteria and timing of screening and modalities of treatment.

CONCLUSION

Our study suggests a high awareness of ROP among the appropriate healthcare practitioners in the study district. However, the suboptimal awareness of management modalities and timing of screening can impact the success of the program and must be addressed urgently.

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Conflicts of interest

There are no conflicts of interest.

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