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Awareness and Practice Patterns Among Pediatricians Regarding Retinopathy of Prematurity at Bharatpur, Chitwan, Nepal

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ABSTRACT

Introduction

Retinopathy of prematurity (ROP) is a disorder of the developing retina of preterm infants due to defective vasculogenesis that can lead to incurable blindness. It can be prevented by timely detection and treatment. The study aimed to analyze the level of awareness, knowledge and practice of Pediatricians regarding ROP in Bharatpur.

Methods

This was a quantitative, cross-sectional study using self-administered questionnaires to assess the awareness level among pediatricians at the main hospitals of Bharatpur City. A scoring system was implemented in the data analysis, depending on the correct chosen answers on the questionnaire. The ethical approval was obtained from the Institutional Review Committee of NNJS (Reg. no. 15/2022).

Results

Forty-three pediatricians from 11 hospitals in Bharatpur Metropolitan City filled out the questionnaires. The mean age of the participants was 35.53 ± 9.09 years (25 to 68 years), majority being male (N=28; 65.12%). More than half of the participants, 23 (53.49%) had a knowledge score of 10-15. The knowledge score was 0-5 and >20 in 6 (13.95%) and 2(4.65%) participants respectively. Men were significantly more knowledgeable about ROP than women ($p = 0.02$).

Conclusions

This study has projected the level of understanding about ROP among pediatricians in Bharatpur. Workshops and courses on ROP screening criteria and referral are recommended specifically for pediatric residents and pediatricians in the early stages of their careers. There should be coordination and good referral network between Pediatricians and Ophthalmologists.

Keywords: Awareness; knowledge; Pediatricians; Preterm infant; Retinopathy of Prematurity.

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INTRODUCTION

Retinopathy of prematurity (ROP), previously called retrolental fibroplasias, is a vasoproliferative disorder of the retina which occurs principally in premature children due to defective vasculogenesis[1].In full-term infants, the retina and its vessels are fully developed; hence, ROP can only affect preterm infants.[2]The incidence of retinopathy of prematurity in Nepal was 22.6% [3] and 25.45% (n=14).[4] Pediatricians working in the NICU are the first physicians to examine preterm infants, thus assessing their knowledge regarding ROP is crucial.[5] A study done among Nigerian neonatologists in 2021, revealed that only one third had seen a case of ROP (n=15,29.41%), none were aware of local screening guidelines.[6] In a study measuring the level of awareness about ROP among NICU nurses, most of the nurses (38, 68%) had overall poor knowledge with the mean knowledge scores of 14.07 ± 2.06.[7] Some study showed that there was a very high level of awareness among pediatricians regarding ROP[8], whereas, other studies indicated that the awareness level among them was not adequate. [9-13]To the best of our knowledge, no studies were done in Nepal concerning ROP screening or awareness among pediatricians

The objectives of this study were to study the knowledge, attitudes, and practices about ROP among Pediatricians in Bharatpur, Nepal and to study the barriers faced for screening of ROP and referral of preterms.

METHODS

This was quantitative, non-experimental, cross-sectional, descriptive study using self-administered questionnaires to assess the knowledge level of Pediatricians among at the main hospitals of Bharatpur City.

A meeting was held to discuss Retinopathy of Prematurity and the role of Pediatricians in its prevention and management so as to prepare all stakeholders adequately for wholistic management of this highly preventable blinding condition. A self-administered semi-structured questionnaire was formed on the knowledge, attitude and practice (KAP) pattern. It was gathered and modified from other questionnaires of similar published researches to assess knowledge, screening, referral barriers and treatment of ROP.[5,11] A pretesting of the questionnaire was done among 3 Pediatricians at Bharatpur Hospital. This questionnaire was distributed to the pediatricians to be filled out by them. They were not informed previously about the objectives of the study or its title before being approached personally by the study investigators. A questionnaire was offered to attendees of the meeting that asked questions about attendees' perspective and experience with ROP including the causes of prematurity, its risk factors and other experiences that they may have observed in their practice over the years.

Consent for this study was given verbally after addressing respondents about the study. The understanding was anyone who accepted to fill the questionnaires had by that action given consent. Ethics committee approval was obtained before the commencement of the study, from the Institutional Review Committee (IRC) Nepal Netra Jyoti Sangh (NNJS) (Reg. no 15/2022).

All pediatrician attending the CME who agreed to fill out the questionnaire were included in this study and those who did not give consent to participate in this study were excluded. Convenience sampling was used.

The data obtained in the study questionnaire were entered into Microsoft Excel sheet. Collected data was presented in the form of frequency and percentage. Knowledge score was created by assigning a score of "1" for correct answers

and a score of "0" for wrong, missing, or "Don't know" responses. The total score was computed by summation of scores with a maximum score of 22, based on the number of correct answers in the KAP questions of the questionnaire.[5] The data generated was managed with Microsoft Excel 2016 (Microsoft Corporation, Redmond, Washington, United States) and Epi info version 7.02 (Centers for Disease Control, Atlanta, Georgia, United States). Chi square was used to determine associations and Students' t- test was used to compare two means. A p-value of <0.05 was taken as significant.

RESULTS

Out of 63 pediatricians and residents working at Bharatpur, 43 were present at the CME organized by Bharatpur Eye Hospital to raise the awareness among the pediatricians regarding the need of ROP screening. Thus the attendance percentage was 68.25%. The mean age of the participants was 35.53 ± 9.09 years, range 25 to 68 years, majority being male (28 (65.12%) . There were 27 (62.79%) qualified pediatricians, while residents in training were 16 (37.21%). 9 (20.93%) had been practicing for more than 10 years, 9 (20.93%) had about 6 to 10 years of practice experience and 25 (58.14%) had practice experience of 5 years or less. Among them, majority 14 (32.56%) examined 11-20 preterm children per month. 14 (32.46%) and 5 (11.63%) revealed that they examined ≤5 preterm infants and >30 preterm children respectively (Table 1).

NICU facility was available in 42(97.67%) participants. More than half of the participants, 23 (53.49%) had a knowledge score of 10-15. There were 6 (13.95%) participants with the knowledge score of 0-10 and 2(4.65%) had the knowledge score of >20. Mean knowledge score among the participants was 14.12 ± 4.14 out of the total score of 22 points.

Table 1. Demographic profile of the participants (n = 43).

S.N.	Variable	Category	Fequency (%)
1.	Gender	Male	28 (65.12%)
		Female	15 (34.88%)
2.	Age (in years)	20-30	18 (41.86%)
		31-40	16 (37.21%)
		41-50	7 (16.28%)
		51-60	1 (2.33%)
		>60	1 (2.33%)
3.	Educational qualification	Pediatrician	27 (62.79%)
		Pediatric resident 1st year	10 (23.26%)
		Pediatric resident 2nd year	4 (9.3%)
		Pediatric resident 3rd year	2 (4.65%)
4.	Preterm seen per month	0-5	14 (32.46%)
		6-10	8 (18.60%)
		11-20	14 (32.56%)
		21-30	2 (4.65%)
		>30	5 (11.63%)

Table 2. Comparing the educational qualification with the knowledge score.

Educational qualification	Knowledge score category				Total
	<10	10-15	16-20	>20	
Pediatrician	4 (14.81%)	15 (55.56%)	7 (25.93%)	1 (3.70%)	27 (100%)
Pediatric resident 1st year	2 (20%)	5 (50%)	2 (20%)	1 (10%)	10 (100%)
Pediatric resident 2nd year	0	3 (75%)	1 (25%)	0	4 (100%)
Pediatric resident 3rd year	0	0	2 (100%)	0	2 (100%)

Chi square test = 7.51 (p-value= 0.58)

Table 3. Comparing the experience in years with the knowledge score.

Experience in years	Knowledge category				Total
	<10	10-15	16-20	>20	
1-5	4 (16%)	13 (52%)	7 (28%)	1 (4%)	25 (100%)
6-10	1 (11.11%)	6 (66.67%)	2 (22.22%)	0	9 (100%)
>10	1 (11.11%)	4 (44.44%)	3 (33.33%)	1 (11.11%)	9 (100%)

Chi square test = 2.0676 (p-value= 0.9134)

Table 4. Comparing gender with the knowledge score.

Gender	Knowledge category				Total
	<10	10-15	16-20	>20	
Male	6 (21.43%)	16 (57.14%)	4(14.29%)	2(7.14%)	28(100%)
Female	0	7(46.67%)	8 (53.33%)	0	15 (100%)

Chi square value= 9.82 (p-value = 0.02)

Table 5. Comparing the frequency of preterm seen per month with the knowledge score.

Frequency of preterm seen per month	Knowledge score category				Total
	<10	10-15	16-20	>20	
0-5	1 (7.14%)	7 (50%)	5 (35.71%)	1 (7.14%)	14(100%)
6-10	0	7 (87.50%)	1 (12.50%)	0	8 (100%)
11-20	5 (35.71%)	4 (28.57%)	4 (28.57%)	1 (7.14%)	14 (100%)
21-30	0	0	2 (100%)	0	2 (100%)
>30	0	5 (100%)	0	0	5 (100%)

Chi square test = 20.97 (p-value= 0.05)

Majority of the participants, 38 (88.37%) revealed that they referred the pre-term babies for ROP screening. Only 5 participants (11.63%) did not send these babies for ROP screening. The reasons for non-referral among them was absent of indoor screening facilities due to lack of trained ophthalmologists attached to the hospital, poor financial status of the parents and no trained ophthalmologists in the nearby areas.

The comparison of the educational qualification with the knowledge score did not show statistical significance (Table 2).

Also comparing the experience in years with the knowledge score revealed that it was not of statistical significance (Table 3).

Comparing the gender with the knowledge score was statistically significant (Table 4).

In addition to it, comparing the frequency of preterm seen per month and the knowledge score was also not statistically significant (Table 5).

DISCUSSION

Our study was performed on 43 pediatricians who represent the majority of pediatricians covering NICUs in Bharatpur Metropolitan City. Pediatricians who are the primary caregivers of babies with prematurity ought to be aware of the screening protocol for ROP to improve the quality of care and lives of these babies following survival. Indeed, monitoring for risk factors and clinical features of ROP in babies are prognostic indicators in these babies .[10] Till date there is no study published on KAP for ROP among Pediatricians in Nepal. The first step in reducing blindness due to ROP is recognizing that the problem exists.

The American Academy of ophthalmology clarified that indications for screening are region dependent. Thus, it is advisable to develop more research about possible risk factors and screening criteria specific to the country, instead of relying merely on the criteria published by developed countries.[9] Apart from this, another unique problem that Nepal and other developing nations face is that severe ROP is also seen in bigger preterm babies. This is mainly because supplemental oxygen is often given unnecessarily to infants who are stable even when they would be adequately oxygenated without it. Thus it is advisable to have caution and use wider screening criteria and not to rely on the criteria published by developed countries.[11] In order to improve the awareness among pediatricians about ROP, we recommend publishing articles in medical magazines and medical journals, including ROP seminars in national pediatric conferences and having frequent continuous medical education programs in government and private hospitals.

On the lines of joint statements given by the American Academy of Pediatrics and the American Academy of Ophthalmology,[14] the Nepalese Association of Pediatrics along with the Nepalese Ophthalmology Society (NOS) should develop national guidelines for the control of ROP. This will not only help in increasing the awareness among pediatricians and ophthalmologists, but also give uniform guidelines on screening and treatment of ROP. Identifying barriers for referral is vital for formulating any successful model. In our study the major reason given for not screening the preterm babies for ROP were was absent of indoor screening facilities due to lack of trained ophthalmologists attached to the hospital, poor financial status of the parents and no trained ophthalmologists in the nearby areas. It is similar to other studies which highlighted the non-availability of experienced ophthalmologists as well as incompatible screening guidelines.[5-13]

Mean knowledge score among the participants was 14.12 ± 4.14 out of the total score of 22 points. Managing ROP is a collaborative work that requires a multidisciplinary team, where the pediatricians, who are the first-line physicians, detect ROP and refer preterm infants to the Ophthalmologists who confirm the diagnosis and initiate the treatment. Also, parents of ROP patients should be knowledgeable about the disease as their role is crucial in maintaining the treatment plan. Thus measuring the awareness level about ROP is essential for all stakeholders.[5] The results of our study highlight the need to

raise the awareness level and knowledge about ROP among the multidisciplinary team members who are collaborating in managing infants with ROP. This can be achieved by holding regular educational meetings involving ophthalmologists, pediatricians, neonatologists, obstetricians, nurses, and parents to disseminate the knowledge, share the updates on ROP screening guidelines, and discuss the obstacles that may prevent the success of the treatment plan.

Our study had some limitations, as with all self-reported questionnaires, the data could not be validated as their practices were not observed. It did not include other health care providers i.e. nurses in the NICU. Also, a question about the place where the babies are usually screened was not included in the questionnaire. In order to improve the awareness of ROP among pediatricians we recommend appropriate coordination between pediatricians and ophthalmologists, as well as dissemination of information through publishing articles and seminars in medical conferences, medical journals and health education materials for parents so local multidisciplinary workshops to highlight this issue is recommended. We recommend a nationwide survey to evaluate the causes of poor screening of high-risk premature babies, recruiting more trained ophthalmologists, especially in rural areas and the need to organize a network among fellow physicians, paramedical staff and parents, for early detection and effective treatment of ROP.

The main limitation of our study was that the information was gathered in the CPD with limited options put forward to all respondents which may not reflect factual data at times. This was done because the subjective response by every respondent would have been difficult to interpret; therefore, we included a few choices to simplify the questionnaire. Another limitation is that the sample size of our study was small. Additionally, the NICU contains a comprehensive team of different healthcare workers dealing directly with preterm infants; a potential limitation is that we only included pediatricians in our research.

Despite all the limitations of current study, this study has succeeded in providing the ophthalmologists a glimpse of existing knowledge and practice pattern of Nepalese pediatricians and conveyed the message that pediatricians could possibly be the missing link in the broken chain of ROP referral in a nation which produces children at a daunting rate, and hence we can design a better study to overcome the limitations.

CONCLUSIONS

The study suggests the need to create close coordination between pediatricians and ophthalmologists to address screening guidelines and barriers for service delivery in our country. The vital role of pediatricians in any screening program supports the need to enlighten them and increase their awareness by dissemination of information about ROP through seminars and literature, as well as spreading awareness among key members involved in preterm baby care. We recommend holding periodic educational sessions, seminars, and workshops to disseminate essential information with ROP stakeholders and NICU healthcare workers

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