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## Original Research Article

## A study to assess knowledge of retinopathy of prematurity amongst medical professionals in government medical college

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## ABSTRACT

**Introduction:** The study was conducted to assess the level of awareness and knowledge about retinopathy of prematurity (ROP) and its risk factors amongst medical professionals in Government Medical College.**Materials and Methods:** This study was conducted as a questionnaire based cross-sectional study amongst medical professionals working at tertiary care centreduring the study period of 1 year. The questionnaire administered and response sheets were collected prior to a talk on retinopathy of prematurity.**Statistical Analysis:** Data was compiled using MsExcel whereas analysis was done by using IBM SPSS software version 20. Cutoff percentage for level of knowledge was kept as 80-100% as good knowledge, 60 to 79% as medium and 40 to 59% as low knowledge. ANOVA and t test was used and p value less than 0.05 was considered statistically significant.**Result:** The study included a total of 500 medical professionals. Mean knowledge score was significantly higher among residents i.e.  $15.8 \pm 2.68$  as compared to consultants, demonstrators and medical officers. Also, mean score were significantly higher among non-practicing participants ( $15 \pm 3.34$ ) as compared to practicing participants ( $12.7 \pm 3.67$ ) ( $p < 0.01$ ).**Conclusion:** In general, participants had a medium level of knowledge regarding retinopathy of prematurity. Most of the participants had a good knowledge of the term Retinopathy of Prematurity, the organ affected and the age group in which it occurs. Knowledge regarding age and centre for screening of ROP is poor. Postgraduate students had the maximum knowledge and medical officers (MBBS) had optimum knowledge of retinopathy of prematurity.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Retinopathy of prematurity (ROP) is rising as a vital reason behind preventable blindness in each developed and developing countries. Advancement in neonatal care, in recent years, has diode to a rise within the survival rate of low birth infants. This, in turn, has diode to rising within the incidence of retinopathy of prematurity (ROP).<sup>1</sup>

The magnitude of the retinopathy of prematurity is incredibly high. Recent estimates counsel that globally over

50,000 youngsters' area unit affected with ROP. In the Asian countries alone five hundred youngsters area unit calculable to become blind due to ROP per annum. In the associate assessment of ROP prevalence, supported infant mortality rate per annum (9-60/1000 live births).<sup>2</sup> In these countries that retinopathy of prematurity is rising as a vital reason behind the visual defect. This has been stated because of the third epidemic of retinopathy of prematurity. To combat this third epidemic of ROP, comprehensive screening programs area unit the necessity for hour.<sup>3</sup>

In extremely developed, industrial countries (i.e. those hierarchical extremely by the United Nations Development

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Program [UNDP] on the premise of their Human Development Index [HDI]), the population of premature infants WHO area unit presently at risk for the advanced stages of ROP that needs treatment is extraordinarily premature with birth weights nearly always 1000gm.<sup>4,5</sup>

However, this has not continuously been the case: throughout the primary epidemic of ROP, within the Forties, and Fifties, larger, additional mature infants became blind from retrolental fibroplasia (the term used earlier to explain the condition). At that point, the mean birth weight of affected infants within the United Kingdom was 1370 g (range: 936–1843 g) and within the United States was 1354 g (range: 770–3421 g).<sup>6</sup>

With the above background, the present study was conducted with the broad objective to assess the level of awareness and knowledge about retinopathy of prematurity (ROP) and its risk factors amongst medical professionals in Government Medical College.

## 2. Materials and Methods

This study was conducted as a questionnaire based cross-sectional study amongst medical professionals working at Gandhi Medical College and associated Hamidia Hospital Bhopal during the study period of 1 year i.e. from 1<sup>st</sup> March 2020 to 28<sup>th</sup> February 2021. All post MBBS medical professionals working in Govt. medical college including (faculty, Residents & medical officers) were included in our study whereas MBBS Students, Paramedical staff, Non-medical personnel, Pediatricians & Ophthalmologist were excluded from the study.

The study was preapproved by Institute's ethical committee. Written consent was obtained from all the study participants after explaining them nature and purpose of study. The questionnaire administered and response sheets were collected prior to a talk on retinopathy of prematurity. The ROP related questionnaire contained questions for collecting information about their educational and practice profile, knowledge regarding screening guidelines, risk factors, treatment modalities and risks of both screening as well as treating preterm babies affected with ROP. Score of 1 was given for each correct answer and 0 was given for unanswered and incorrect question.

### 2.1. Statistical analysis

Data was compiled using MsExcel whereas analysis was done using IBM SPSS software version 20. The entire variable grouped as per mathematic transformation into nominal /ordinal /interval and ratio. Cutoff percentage for level of knowledge was kept as 80-100% as good knowledge, 60 to 79% as medium and 40 to 59% as low knowledge. Extent of type one error measured with parametric analysis. ANOVA and t test was used to find out any significance difference between mean. P value less than

0.05 was considered statistically significant.

## 3. Result

The study included a total of 500 medical professionals of Gandhi Medical College, Bhopal.

The mean age of the participants was 33.6 years, range 25 to 59 years. Majority of participants belonged to age range of 25 to 35 years (76.4%). About 102 (20.4%) participants were Specialist (MD/MS) medical professionals, while residents in training were maximum i.e. 368 (73.6%). Only 16 (3.2%) had been practicing as demonstrator, 14 (2.8 %) had been practicing as Medical officers.

In present study, majority i.e. 98.4% cases heard about ROP; 96.8% and 97.4% participants knew the correct age group and organ affected by ROP respectively. Overall, knowledge regarding ROP was >80% for most of the variables depicted. However, knowledge regarding center where ROP screening services are available (8.6%) as well as age at screening (36.6%) was poor.

Mean score was maximum among residents i.e. 15.8±2.68 whereas mean score among consultants, demonstrators and medical officers was 13.4±3.86, 12.1±4.55 and 11.2±7.20 respectively. Test of significance (ANOVA) showed statistically significant difference in mean score between consultants, residents, demonstrators and medical officers (p<0.01).

In present study, mean score were significantly higher among non-practicing participants (15±3.34) as compared to practicing participants (12.7±3.67) (p<0.01).

## 4. Discussion

Till date, there is no study published on KAP for ROP among medical professionals in India. Only few studies have been published on KAP for ROP, that too among pediatricians in India. Rani et al included 38 pediatricians attending a neonatology ventilation workshop in Hyderabad, and documented that 100% of pediatricians knew about risk factors of ROP, 68% knew about laser treatment.<sup>7</sup> In another study by Kulkarni et al<sup>8</sup> in Pune, risk factors of ROP were known by 80% and pediatrician and 93% of the pediatricians knew that timely treatment can prevent ROP related blindness. Both these above studies were done in tier one cities of India. Although the level of ROP awareness may be high among pediatricians of metro cities. Sathiamohanraj et al concluded that the awareness among pediatricians in Coimbatore about ROP is poor. Their study emphasizes the need to increase awareness of this avoidable cause of blindness.<sup>9</sup> Sekeroglu et al in their study on Turkish ophthalmologists who were primarily concerned in ROP, revealed considerable variation among Turkish ROP specialists regarding ROP care. The survey data are critical in order to develop quality improvement and help in planning more effective future programs for ROP

**Table 1:** Demographic details of the participants

Variable	Categories	Frequency (n=500)	Percentage
Age	25-35	382	76.4%
	36-45	69	13.8%
	46-55	36	7.2%
	55-65	13	2.6%
Education	Specialist(MD/MS)	102	20.4%
	Residents	366	73.2%
	MBBS(Demonstrator & Medical officer)	32	6.4%

**Table 2:** Distribution according to knowledge of ROP among study participants

S. No	Questions	Correct Answer	Wrong Answer	Not Attempted
1	Have you ever heard about ROP?	492 (98.4%)	8 (1.6%)	0 (0%)
2	The Abbreviation/Term ROP Stand for?	469 (93.8%)	10 (2%)	21 (4.2%)
3	Which age groups of patients are susceptible for ROP?	484 (96.8%)	10 (2%)	6 (1.2%)
4	Which part of the body is affected by ROP?	487 (97.4%)	5 (1%)	8 (1.6%)
5	What patients are more likely to develop ROP?	477 (95.4%)	10 (2%)	13 (2.6%)
6	What is the importance of diagnosing ROP?	459 (91.8%)	8 (1.6%)	33 (6.6%)
7	Who is responsible, to first suspect ROP?	307 (61.4%)	101 (20.2%)	92 (18.4%)
8	Where is a patients of ROP referred for diagnosis?	436 (87.2%)	27 (5.4%)	37 (7.4%)
9	Is it preventable?	471 (94.2%)	14 (2.8%)	15 (3%)
10	Is it treatable?	421 (84.2%)	21 (4.2%)	58 (11.6%)
11	At what age patients should be screened?	183 (36.6%)	281 (56.2%)	36 (7.2%)
12	If not diagnosed in time what is the likely complication of ROP?	422 (84.4%)	33 (6.6%)	45 (9%)
13	How ROP is preventable?	383 (76.6%)	38 (7.6%)	79 (15.8%)
14	What are the available treatment modalities for ROP?	318 (63.6%)	46 (9.2%)	135 (27%)
15	Is ROP screening services available in your institute?	434 (86.8%)	15 (3%)	51 (10.2%)
16	Where in your institute, ROP screening services are rendered?	399 (79.8%)	21(4.2%)	80 (16%)
17	Will you contribute towards awareness of ROP?	396 (79.2%)	35 (7%)	69 (13.8%)
18	How will you contribute towards awareness of ROP?	315 (63%)	0 (0%)	185 (37%)
19	Is there any national program for prevention of ROP?	127 (25.4%)	265 (20%)	108 (21.6%)
20	Do you know any other center where ROP screening services are available in your city?	43 (8.6%)	357 (71.4%)	100 (20%)

care in terms of training.<sup>10</sup>

In our study, we included medical professionals other than pediatrician and ophthalmologists with mean age of 33.7years, range 25 to 59 years. There were 102 (20.4%) Specialist (MD and MS), while resident participants in training were 366 (73.2%). About 14 (2.8%) participants had been practicing as demonstrator in various department (MBBS), 18 (3.6 %) participants had been practicing as Medical officers (MBBS). We asked a series of 20

questions pertaining to retinopathy and its risk factors. Overall, the knowledge was good for majority of questions, but knowledge regarding center where ROP screening services are available (8.6%) as well as age at screening (36.6%) was poor. In our study, 492 (98%) participants had answered the Question 1 (Have you ever heard about ROP) as the most correct answer. 357 (71.4%) participants had answered the Question 20 (Do you know any other center where ROP screening services are available in

**Table 3:** Comparison of knowledge score between various categories of study participants significance difference between the category frequency and average percentage score

Category	Average score	Standard deviation	Maximum score	Minimum score	Average % of score
Consultants	13.4	3.86	19	1	67%
Residents	15.8	2.68	19	0	79%
Demonstrators	12.1	4.55	17	0	60%
Medical officers	11.2	7.20	19	0	56%
Anova			889.029		
P value			0.001		

**Table 4:** Difference in knowledge score between practicing and non practicing category

Category	Frequency	Average score	Standard deviation	Average % of score
Practicing	66	12.7	3.67	64%
Non practicing	434	15	3.34	77%
T test			5.42	
P value			0.001	

your city?) as the most wrong answer. Most of the participants did not attempt question (Q.18 How will you contribute towards awareness of ROP?), which was attempted only by 37% of the participants. The above three response concluded that the main gap between awareness and practice was perceived as lack of trained ophthalmologist in the vicinity of pediatricians in both rural as well as in urban setup. Awareness program for ROP screening and knowledge of ROP must be run by the government. Residents performed well with the average percentage of 79%. 67% scored by the specialist (MD/MS), 60% scored by the demonstrator and 56% scored by medical officers. The level of knowledge of the residents among other three groups (consultants, demonstrator and medical officer) was high. Statistically significant difference was found in the responses of the groups. The study conclusion of the category wise performance was 64% scored by the Practicing participants and 77% scored by the non practicing participants. Non Practicing participants performed well with average percentage of 77%. The level of knowledge of the Non Practicing participants was high. The study suggests that the medium level of knowledge of ROP among consultants, residents and demonstrator. Medical officers had Low level of knowledge of retinopathy of prematurity as per the cutoff percentage.

Till date, none of the studies have been done on medical professional other than pediatricians or ophthalmologist. Thus, our study is unique to assess the awareness and knowledge on other medical professionals. Uhumwangho et al in their study among Nigerian pediatricians concluded that retinopathy of prematurity is an important and emerging disease in Nigeria. Pediatricians and other caregivers should be educated to improve their awareness of ROP.<sup>11</sup> Akkawi et al recommend that an oversized majority of pediatricians were conscious of ROP as a preventable disease, but

had less information regarding ROP screening guidelines and service delivery. The study suggests the need to increase awareness of pediatricians.<sup>12</sup> Raiturcar et al found a very high level of awareness among pediatricians in Goa regarding ROP, its risk factors, and screening of ROP. However, there is a need to increase the awareness about management and treatment of ROP, and there is a need to reduce the barriers for a referral to an ophthalmologist so that blindness due to ROP can be prevented.<sup>13</sup> Kulkarni et al found that the Indian guidelines for ROP screening are not universally known among health care personals i.e. pediatricians and ophthalmologists. Educating medical undergraduate, providing counseling training to professionals, and integration of rehabilitation into the health system will ensure continuity of care for children with vision loss and their families.<sup>14</sup>

In our study, 75.23% awareness and knowledge on ROP among medical professionals is the medium level of ROP awareness. In order to ameliorate the awareness among medical professionals about ROP, we recommend publishing articles in newspapers, medical journals, and medical magazines and medical seminars should include the ROP seminar. National pediatric conferences should initiate an awareness program of ROP and ensure national-level awareness should be spread uniformly among medical professionals in India. Joint statements were given by the American Academy of Pediatrics and American Academy of Ophthalmology,<sup>15</sup> the IAP along the All India Ophthalmological Society (AIOS) should develop national guidelines for the control of ROP. This should not be only for increasing awareness among pediatricians and ophthalmologists, but also for medical professionals in India.<sup>1</sup>

Our study had certain limitations. First, accessing all the intended participants was not easy because of their work

schedule and duties especially in COVID ICU. The non response rate was high which meant the minimum sample size. Many professionals not attempted questions, especially the open ended ones and hence some insight could not be captured. The questionnaire was self administered and hence responses could not be investigated further with follow-up questions as would be the case of interview. Sudden emergence of pandemic disease covid-19 affected the study duration badly. Lack of interest of the participants towards the study (questionnaire) was noticed.

## 5. Conclusion

In general, participants had a medium level of knowledge regarding retinopathy of prematurity. Most of the participants had a good knowledge of the term retinopathy of prematurity, the organ affected and the age group in which it occurs. Knowledge regarding age and centre for screening of ROP is poor. Postgraduate students had the maximum knowledge and medical officers (MBBS) had optimum knowledge of retinopathy of prematurity. In order to ameliorate the awareness among medical professionals about ROP, we recommend publishing articles in newspapers, medical journals and medical magazines. Unfortunately, no national program is being conducted so far in our country for prevention of retinopathy of prematurity and very few ophthalmologists are rendering the retinopathy of prematurity screening services. National pediatric conferences should initiate awareness program of ROP and ensure national level awareness should be spread uniformly among medical professionals in India. Followings are strength of this study.

1. This study was performed in Medical College situated in central India. The study covers the all the medical Professional except Pediatrician and Ophthalmologist which were excluded from the study, to know the knowledge, attitude and practice of Retinopathy of prematurity.
2. As a post graduate student this study allows me to evaluate the level of knowledge about retinopathy of prematurity among medical professionals and to interact with them.
3. As being a tertiary care institute, it provided me availability of infrastructure to help diagnose record and even to treat retinopathy of prematurity.

Followings are limitations of this study

1. As being Medical College it is situated at the capital of the state. The medical Professionals are still unaware of Retinopathy of prematurity screening guidelines, ROP screening centers and exact treatment modalities.
2. Unfortunately, no national program is being conducted so far in our country for prevention of Retinopathy of Prematurity and very few ophthalmologists are rendering the Retinopathy of Prematurity screening

services. So that the knowledge of ROP could have better among medical professionals.

3. As being a resident of a tertiary care centre situated in a country like India where there is usually a huge workload and numbers of patients are high, we usually are much more overworked, as we have to diagnose, treat as well as performing various research and academic work simultaneously. So it is not always possible for us to be engaged personally in carrying out screening and monitoring.

## 6. Source of Funding

None


## 7. Conflict of Interest

The authors declare that there is no conflict of interest.

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