

Risk Factors for Retinopathy of Prematurity in a Tertiary Care Hospital, Bangladesh

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Abstract Background: Retinopathy of prematurity (ROP) is a vasoproliferative disorder of the immature retina that has emerged as a leading cause of preventable childhood blindness worldwide. In low- and middle- income countries, improvements in neonatal survival have been accompanied by an increasing incidence of ROP, often affecting relatively more mature and heavier preterm infants than in high- income settings. Despite this growing burden, there is limited data on the maternal and neonatal risk profiles for ROP in Bangladesh, which hampers the development of targeted screening strategies. This study aimed to identify key perinatal factors associated with ROP in a tertiary care setting to guide evidence-based screening and prevention protocols. **Methods:** A hospital-based case-control study was conducted in the Special Neonatal Care Unit (SNCU) of Dhaka Shishu Hospital over a six-month period from February to July 2019. Eligible infants were those born before 34 weeks' gestation with a birth weight below 1750 g who were enrolled in the hospital's ROP screening program. Cases (n = 143) were infants diagnosed with ROP; controls (n = 143) met the same inclusion criteria but had no ROP. Data on maternal obstetric history, antenatal complications, and neonatal clinical course were extracted from hospital records. Bivariate analyses were performed to assess associations between potential risk factors and ROP occurrence. **Results:** The mean gestational age of ROP cases was slightly lower than controls (29.93 ± 2.27 vs. 30.43 ± 2.54 weeks), and mean birth weight was also lower (1283.03 ± 299.33 g vs. 1348.93 ± 419.76 g), though neither difference reached statistical significance. Significant neonatal risk factors included apnea (35.0% vs. 19.6%, $p = 0.003$), respiratory distress syndrome (54.5% vs. 27.3%, $p = 0.001$), and blood transfusion (77.6% vs. 55.2%, $p < 0.0001$). Among maternal factors, high parity (≥ 4 previous deliveries) was significantly associated with ROP (18.9% vs. 9.8%, $p = 0.021$), and prolonged rupture of membranes showed a borderline association (37.1% vs. 27.3%, $p = 0.050$). Oxygen therapy, though historically a strong risk factor, was not significant in this study, likely due to its near-universal use and improved oxygen monitoring practices. **Conclusion:** The findings indicate that ROP in this context is strongly linked to neonatal respiratory instability and transfusion history, as well as selected maternal obstetric factors. Integrating these risk markers into screening protocols could improve early detection and allow timely intervention, thereby preventing irreversible visual impairment in preterm infants. **Significance:** A dual-focus approach addressing modifiable neonatal care practices and strengthening maternal risk-based surveillance should be prioritized in tertiary neonatal care units across Bangladesh to curb the burden of ROP-related blindness.

Keywords: Retinopathy of Prematurity, Premature Infants, Low Birth Weight, Neonatal Risk Factors, Maternal Risk Factors, Preventable Blindness, Case-Control Study, Neonatal Screening, Ophthalmic Public Health

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1. Introduction

Retinopathy of prematurity (ROP) is a vasoproliferative retinal disorder and a leading cause of preventable childhood blindness worldwide. Among the child preventable blindness retinopathy of prematurity (ROP) is

considered as a significant factor. In developed countries, ROP accounts for an estimated 6–8% of childhood blindness and up to 10% in certain populations. With recent advances in neonatal care, the survival of premature infants has improved, especially in low- and middle-income countries, which has led to a rising incidence of ROP in these settings. Early screening and treatment are critical, as timely intervention can prevent irreversible

blindness and improve visual outcomes. Royal Blind School of Edinburgh found up to 10% of childhood blindness is for Retinopathy of Prematurity (ROP), and it is estimated that it causes about 6-8% of childhood blindness in developed countries [1,2]. With the advancement of modern treatment including care in the specialized unit for neonate in last several years the neonates are surviving more than previous [3]. Subsequently, the ROP cases in premature infants have increased with this. World is doing constant various epidemiological study about ROP [4]. Early identification of retinal of damage and timely and appropriate treatment can prevent the irreversible blindness from this and help for better overall development of the children [5]. ROP is characterized by abnormal retinal neovascularization in premature infants, which can lead to retinal scarring and detachment if left untreated. Multiple neonatal risk factors have been linked to the development of ROP, including extreme prematurity (low gestational age and birth weight), prolonged supplemental oxygen exposure, and serious neonatal complications such as respiratory distress, sepsis, intraventricular hemorrhage, frequent blood transfusions, and apnea. Maternal factors, such as high parity and perinatal infections, have also been suggested to contribute to ROP risk. It is categorized by abnormal neovascular growth in the retina of premature infants. These abnormal blood vessels are very delicate and leak or bleed, causes scar to the retina and pulling it out of actual location. Tractional retinal detachment is occurs due to this pulling effects which ultimately cause damage to the vision and blindness [6]. From the ophthalmoscopic findings ROP is categorized into different stages at the point where vascular and avascular zone meet; a faded demarcation mark is considered as stage 1, an elevated ridge as stage 2, when extra retinal fibrovascular tissue is added it is stage 3, and complicated with subtotal detachment in retina is considered as stage 4 and if total retinal detachment it is considered as stage 5. Additionally, plus disease, which specifies substantial dilatation and tortuosity at the posterior retinal vessels, which may present at any stage of ROP and imitates the amplified blood flow through the retina [7]. Terry first defined oxygen therapy as the causative agent for retro lentel fibroplasia in 1942 [8]. Though, many reports were found that even with oxygen therapy premature infant do not develop ROP, in other hand, infant developed ROP without history of oxygen therapy [9]. The factors which are considered as consistent and strong associates for developing ROP: Birth before completed gestational period, less weight during birth and History of taking treatment with oxygen for prolong period after delivery [10]. Other recognized risk factors include treatment with mechanical ventilation, septicaemia, intra ventricular hemorrhage, treatment with surfactant, anaemia, blood transfusion frequently, and apnea [10,11,12,13,14]. The clear-cut roles of the said factors exclusively in the progression of the disease yet not defined [15]. Globally, the incidence of ROP varies by region and neonatal care practices. In some studies from India, ROP has been reported in 24–47% of at-risk preterm infants journals.lww.com, whereas there is a paucity of comprehensive data from Bangladesh, hindering the development of effective screening strategies. This

underscores the need for local epidemiologic data and tailored screening programs. The world face first epidemic of ROP in 1940 and 1950s which affected larger premature infants who have history of associated with unmonitored oxygen supplementation [16]. With improved neonatal care in the 1970 a new pattern blindness due to ROP emerged [17]. In premature and neonates who born with less weight blood vessels of retina failed to develop properly which causes detachment, macular dragging, strabismus and refractive error and consequently childhood [1,2,3,4]. From its first identifications in early 1940s, it is one of the significant causes for vision damage and blindness in premature babies. Born before completed gestational period or less weight during birth is considered as universal predictors for ROP, but this may vary with geographical distribution [6,7,8,9]. Considering oxygen as the main factor which causes ROP in mid, judical use of it is introduced and there is reduction in ROP cases [10,11,12]. But is found later ROP could not be eliminated through this approach, rate it again appear in 1960s. After that over the year, from different studies a long list of potential risk factors are prepared, many of which are modifiable [13-22]. So far, the history of ROP showed that, in spite of our best afford and plan, the management protocol of premature neonates always carry threat of emerging such possible and mostly preventable disease. With the advancement of medical science there is growing number of cares in special care for neonates all over the world subsequently increase the total number of infants who need screening and treatment for ROP is definite to increase. If effective screening system strategy for these premature neonates cannot established, the preventable blindness due to ROP cannot avoid. The social and economic burden due to this childhood blindness if huge. There are several persuasive causes to have a dedicated screening program for identification of ROP. First, ROP is not a congenital disease, the neonate does not born with ROP. Each infant has prospective for normal vision, even with immature retina from birth. The aims of the screening program are to identify those neonates or infants who have probability to develop ROP and if keep untreated may cause visual impairment or irreversible blindness. Severe ROP is a devastating disease, which left untreated, may top to permanent visual loss, which may result compromising of quality of life as well as weighty financial burden to the individual and to the community. In developing countries incidence of ROP has increased in alarming rate, as for example in India it is ranges from 24-47%, but for Bangladesh no such data. Due to advancement of care in special unit for neonates' babies with extreme low weight during birth and premature babies are surviving more than previous time which lead to increase number of neonates with risk factors for developing ROP. ROP has a long-term impact spectrum ranging from myopia to blindness. Screening can identify the potential neonates for early intervention and can save child's vision as well as economy. So, it is important to see the potential risk factors for ROP in babies born before time or with low weight at birth in Bangladesh. This study addresses that gap by identifying key maternal and neonatal risk factors for ROP in a tertiary hospital in Bangladesh, with the goal of informing effective screening and prevention strategies

in similar settings.

2. Methods

This case control study was conducted at the Special Neonatal Care Unit (SNCU) of Dhaka Shishu Hospital, Bangladesh, over a six-month period from February 2019 to July 2019. Cases were defined as preterm infants born at a gestational age of <34 weeks with a birth weight <1750 grams, who were identified as being at risk and subsequently developed retinopathy of prematurity (ROP) during the screening program. Controls were selected from the same screening program and met the same inclusion criteria of gestational age <34 weeks and birth weight <1750 grams, but had not developed ROP. A total of 286 infants were included in the study, comprising 143 cases and 143 controls, matched on the basis of gestational age and birth weight to minimize potential confounding. All participants were enrolled following the hospital's standard ROP risk-based screening protocol, and relevant clinical, demographic, and perinatal data were collected using structured data extraction forms.

3. Results

Table 1 presents a comparative analysis of key demographic and clinical characteristics between neonates diagnosed with Retinopathy of Prematurity (ROP) and those without ROP, encompassing a total of 286 infants equally divided into ROP (n=143) and No ROP (n=143) cohorts. Sex distribution reveals a slight male predominance in the ROP group, with 52.3% (80/153) males affected compared to 47.7% (73/153) in the No ROP group. Females conversely had a higher representation in the No ROP cohort, accounting for 52.6% (70/133) versus 47.4% (63/133) among ROP cases. Although not statistically conclusive here, this pattern is consistent with existing evidence suggesting male neonates may be at relatively higher risk for ROP development. The gestational age profile shows that infants with ROP had a lower mean gestational age (29.93 ± 2.27 weeks) compared to their No ROP counterparts (30.43 ± 2.54 weeks), suggesting greater prematurity in the ROP group. When analyzed categorically, the proportion of infants with ROP was highest within the 28–30 weeks gestational age range at 54.2% (77/142), exceeding that of the No ROP group (45.8%). Notably, the incidence of ROP decreased with increasing gestational age: only 37.5% (18/48) of infants born after 32 weeks developed ROP versus 62.5% without ROP, underscoring the inverse relationship between gestational maturity and ROP risk. Birth weight comparisons similarly reinforce this association. The mean birth weight among infants with ROP was 1283.03 ± 299.33 g, somewhat lower than the No ROP group's mean of 1348.93 ± 419.76 g. In stratified categories, the highest ROP prevalence was observed in the 1000–1499 g weight group at 59.3% (83/140), contrasted with 40.7% without ROP, indicating this weight range as a particularly vulnerable subset. Infants under 1000 g showed a lower relative proportion of ROP

cases (40.4%), which might reflect survival bias or differential care. Infants weighing over 1500 g demonstrated a comparatively lower incidence of ROP at 41.4%, confirming decreased susceptibility among more mature neonates.

Table 2 summarizes the bivariate analysis of potential neonatal risk factors associated with the development of retinopathy of prematurity (ROP). Several neonatal factors demonstrated statistically significant associations with ROP occurrence, while others did not. There were no significant differences in sex distribution between groups ($p = 0.238$), with boys comprising 55.9% of the ROP group and 51.0% of the non-ROP group. Mean gestational age was slightly lower in the ROP group (29.93 ± 2.27 weeks) compared to the non-ROP group (30.43 ± 2.54 weeks), though the difference was not statistically significant ($p = 0.083$). Similarly, mean birth weight was lower in ROP infants (1283.03 ± 299.33 g) compared to non-ROP infants (1348.93 ± 419.76 g), but without statistical significance ($p = 0.127$). In contrast, a history of apnea was significantly more frequent among infants with ROP (35.0% vs. 19.6%, $p = 0.003$). Respiratory distress syndrome (RDS) was also significantly associated with ROP, with 54.5% of ROP infants having RDS compared to 27.3% of non-ROP infants ($p = 0.001$). The strongest association was observed for blood transfusion, received by 77.6% of ROP infants versus 55.2% of non-ROP infants ($p < 0.0001$). A history of elevated C-reactive protein (CRP) levels approached statistical significance ($p = 0.055$), with positive CRP results more frequent in the ROP group (41.3% vs. 31.5%). Neonatal septicemia ($p = 0.135$), jaundice ($p = 0.194$), and oxygen therapy ($p = 0.361$) were not significantly associated with ROP in this analysis, although oxygen therapy was nearly universal in both groups (97.9% vs. 96.5%).

Table 3 presents the bivariate distribution of potential maternal risk factors for developing retinopathy of prematurity (ROP) among the study participants. Overall, most maternal factors examined did not demonstrate statistically significant associations with the occurrence of ROP. Maternal hypertension was reported in 15.4% of mothers in the ROP group and 12.6% in the non-ROP group, with no significant difference between groups ($p = 0.305$). Similarly, a history of antepartum hemorrhage (11.9% vs. 9.8%, $p = 0.352$), use of maternal steroids during pregnancy (6.3% vs. 9.1%, $p = 0.253$), and mode of delivery (normal vaginal delivery: 60.8% vs. 61.5%, $p = 0.500$) were comparable between ROP and non-ROP infants. However, two maternal risk factors approached or reached statistical significance. A history of prolonged rupture of membranes (PROM) was more frequent among mothers of ROP infants compared to non-ROP infants (37.1% vs. 27.3%), with a borderline p -value ($p = 0.050$), suggesting a potential association warranting further investigation. Parity was significantly associated with ROP development ($p = 0.021$); multiparous mothers with four or more previous deliveries had a higher proportion of infants with ROP (18.9%) compared to those without ROP (9.8%). Place of delivery (institutional vs. home) did not show a statistically significant difference ($p = 0.219$), although home deliveries were more common among mothers of ROP infants (72.7% vs. 67.8%).

4. Discussion

ROP continues to be a leading cause of preventable childhood blindness worldwide, particularly in middle- and low-income countries where neonatal care has advanced but screening programs have lagged [2]. Since 2013, the National Institute of Ophthalmology (NIO) in collaboration with Dhaka Shishu Hospital has implemented routine ROP screening for premature and low-birth-weight infants. Multiple studies have established that the etiology of ROP is multifactorial, involving a complex interplay of perinatal, neonatal, and postnatal factors [19]. Early detection of severe ROP is essential, as timely intervention can substantially reduce adverse visual outcomes [3,19]. The present study aimed to identify maternal and neonatal risk factors associated with ROP in order to refine screening protocols suitable for the Bangladeshi context.

Screening Criteria in Context: In our study, preterm infants with birth weight (BW) ≤ 1750 g or gestational age (GA) ≤ 35 weeks were screened. This threshold is broader than Western guidelines (e.g., the American Academy of Pediatrics recommends screening ≤ 1500 g or ≤ 30 weeks, with select larger infants at risk) [9], but it is consistent with recommendations for developing countries, where relatively more mature and heavier preterm infants remain at risk of ROP [10,11]. For example, in India advocated screening all infants ≤ 37 weeks GA or ≤ 2000 g with risk factors to avoid missing cases [11]. Similar expanded criteria have been adopted in other low-resource settings, including India, Vietnam, and Nepal [12,13,14]. Our data support these broader inclusion thresholds, as no ROP cases fell outside our screening criteria.

Incidence and Comparative Analysis: The incidence of ROP in our cohort was 34%, which is within the 30–35% range reported at NIO in prior years and comparable to rates in other South Asian studies [14,15]. Incidence in developed countries is often lower for similar GA/BW populations (e.g., ~13.6% in Thailand, 14.2% in Singapore, ~25% in Taiwan, but ROP rates are much higher in extremely low-birth-weight cohorts for instance, around 65–68% of infants in the landmark CRYO-ROP and ETROP trials developed ROP [3,16,17,18,20]. Our higher overall rate compared to some regional reports likely reflects referral bias (most cases originated from tertiary NICUs) and improved survival of critically ill preterm infants.

Gestational Age and Birth Weight: In our study, ROP infants had a slightly lower mean GA (29.93 ± 2.27 weeks) and BW (1283.03 ± 299.33 g) compared to non-ROP infants (30.43 ± 2.54 weeks; 1348.93 ± 419.76 g). Although these differences did not reach strong statistical significance, the trend aligns with the global evidence that decreasing GA and BW increase ROP risk [10,12,18]. Notably, the mean GA and BW of our ROP cases are higher than those typical in high-income settings (where most ROP occurs in infants < 26 weeks or < 800 g), consistent with other developing-country findings that moderately preterm and heavier infants can still develop ROP [12]. This underscores that in settings like ours, infants who would not be considered at risk in Western protocols may nonetheless require screening.

Neonatal Risk Factors: Three neonatal factors were

significantly associated with ROP on bivariate analysis in our sample: apnea (35% of ROP cases vs. 19.6% of controls, $p = 0.003$), respiratory distress syndrome (54.5% vs. 27.3%, $p = 0.001$), and blood transfusion (77.6% vs. 55.2%, $p < 0.0001$). Apnea reflects immature respiratory control leading to hypoxic episodes that can disrupt retinal vascular development [19]. RDS contributes to systemic hypoxia and often requires interventions (e.g., mechanical ventilation) that increase oxidative stress, a known pathway in ROP pathogenesis [19]. Frequent blood transfusions have also been implicated as a risk factor, potentially by introducing free iron and generating oxygen free radicals that damage the retina [21,22,23,24]. (While we did not collect detailed data on transfusion volume or frequency, the strong association in our cohort suggests even minimal transfusions may carry risk in vulnerable preterm infants). Interestingly, oxygen therapy, historically the most well-established ROP risk factor, did not emerge as significant in our analysis likely because its use was nearly universal in both groups (97.9% of ROP cases vs. 96.5% of controls) and improved oxygen monitoring practices have become standard in NICUs [19]. However, we could not quantify cumulative oxygen exposure (hours or saturation levels), which might have masked its impact.

Maternal Risk Factors: Among maternal variables, high parity (≥ 4) was significantly more common in mothers of ROP infants (18.9% vs. 9.8%, $p = 0.021$), suggesting that infants of multiparous mothers may have higher ROP risk, perhaps due to unmeasured socio-demographic factors or differing perinatal conditions. Prolonged rupture of membranes (PROM) showed a borderline association ($p = 0.050$) with ROP, hinting that prenatal infection/inflammation could contribute to ROP development. Other factors maternal hypertension, antepartum hemorrhage, place/mode of delivery, and antenatal steroid use were not significantly related to ROP in our study, aligning with the mixed results in prior literature.

Potential Protective Role of Jaundice: Notably, we observed that a history of neonatal jaundice was not associated with increased ROP risk in our cohort. Emerging evidence even suggests that bilirubin may confer *antioxidant protection* against ROP, potentially reducing oxidative stress in the retina [25,26]. This hypothesis that mild to moderate hyperbilirubinemia could be protective is supported by recent studies indicating lower ROP severity in infants with higher bilirubin levels [25,26]. While our study was not designed to test this effect, the concept raises interesting questions about the balance between aggressive phototherapy versus allowing some level of neonatal jaundice. Overly aggressive early phototherapy might *theoretically* remove a natural antioxidant defense, so this is an area where further research could inform clinical practice.

Implications for Practice and Policy:

Our findings highlight several risk factors particularly neonatal apnea, RDS, and frequent transfusions, as well as maternal high parity and possibly PROM that could be used to refine ROP screening criteria in Bangladesh. Enhanced antenatal care to prevent extreme prematurity and infections, meticulous neonatal care to minimize complications, and judicious use of transfusions and

oxygen are all important. A risk-based screening approach that integrates these maternal and neonatal risk markers could improve early detection of ROP. For instance, infants born to multiparous mothers or those who experienced significant neonatal apnea, RDS, or received transfusions might be prioritized for more frequent or earlier retinal exams. By identifying high-risk infants more precisely, limited ophthalmology resources can be allocated more effectively ensuring babies most likely to develop severe ROP receive timely intervention.

5. Recommendations

To reduce the burden of ROP-related blindness in Bangladesh, we propose the following priority actions:

- 1. Integrate Risk Factors into Screening Protocols:** Update national and hospital ROP screening guidelines to incorporate the risk factors identified (e.g., recurrent apnea, RDS, transfusion history, high maternal parity, PROM). Infants meeting these criteria even if they are slightly above traditional age/weight cutoffs should undergo early and regular retinal screening. Mandate risk-based ophthalmologic examinations for all high-risk infants before hospital discharge and in follow-up clinics.
- 2. Strengthen Antenatal and Neonatal Care:** Intensify prenatal surveillance and care for mothers at risk of preterm delivery (especially multiparas and those with PROM) to prevent preterm births and associated complications. In NICUs, enforce protocols for respiratory support (e.g., gentle ventilation strategies, caffeine for apnea) and transfusion management (restrict transfusions to when absolutely indicated, use buffering strategies if possible) to mitigate ROP risk. Strict oxygen monitoring using targeting saturation ranges should remain a cornerstone of care, as avoidance of both hypoxic and hyperoxic extremes is crucial.
- 3. Capacity Building and Parent Engagement:**

Provide regular training for neonatal and ophthalmology teams on updated ROP management practices. Equip all tertiary and large secondary hospitals with appropriate screening tools (indirect ophthalmoscopes, wide-field imaging where available) and ensure referral pathways for laser or anti-VEGF treatment are clear. Educate parents of preterm infants about the importance of follow-up eye exams empowering them to seek timely care.

- 4. Establish a National ROP Surveillance System:** Develop a centralized registry to track ROP incidence, treatment outcomes, and follow-up in Bangladesh. Such data will help evaluate program effectiveness, guide resource allocation, and support advocacy for ROP prevention as a national child health priority. Over time, this can also facilitate research for example, examining outcomes of babies who met screening criteria versus those who didn't, further refining risk stratification.

6. Conclusion

This study reinforces that ROP in the Bangladeshi tertiary-care context is influenced by a combination of neonatal and maternal factors. The significant neonatal predictors apnea, RDS, and transfusions likely reflect underlying systemic instability, oxygen fluctuations, and oxidative stress in preterm infants. The association with high maternal parity (and a potential link with PROM) underscores the importance of comprehensive perinatal care and infection prevention. Although oxygen therapy was nearly universal in our population, its lack of statistical significance (given modern practices) does not diminish the need for continued vigilance in oxygen monitoring. Moving forward, a targeted risk-based screening approach, integrating both neonatal and maternal risk profiles, is essential to reducing preventable blindness from ROP in Bangladesh.

Table 1. Distribution of study participants basic characteristics by groups

Characteristics	ROP (143) n (%)	No ROP (143) n (%)
Sex		
Boys (n=153)	80 (52.3)	73 (47.7)
Girls (n=133)	63 (47.4)	70 (52.6)
Gestational Age		
Mean $\pm$ SD	29.93 $\pm$ 2.27	30.43 $\pm$ 2.54
<28 weeks (n=23)	12 (52.2)	11 (47.8)
28-30 weeks (n=142)	77 (54.2)	65 (45.8)
31-32 weeks (n=73)	36 (49.3)	37 (50.7)
>32 weeks (n=48)	18 (37.5)	30 (62.5)
Birth Weight (Gram)		
Mean $\pm$ SD	1283.03 $\pm$ 299.33	1348.93 $\pm$ 419.76
<1000g (n=47)	19 (40.4)	28 (59.6)
1000-1499g (n=140)	83 (59.3)	57 (40.7)
>1500g (n=99)	41 (41.4)	58 (58.6)

Table 2. Distribution of potential neonatal risk factors for developing ROP by groups (bivariate analysis)

Potential Neonatal Risk factors	ROP (143) n (%)	No ROP (143) n (%)	Level of significance (P values)
Sex			
Boys	80 (55.9)	73 (44.1)	0.238
Girls	63 (51)	70 (49)	
Gestational Age			
Mean ± SD	29.93±2.27	30.43±2.54	0.083
Birth Weight (Gram)			
Mean± SD	1283.03±299.33	1348.93±419.76	0.127
History of Apnea			
Yes	50 (35)	28 (19.6)	0.003
No	93 (65.0)	115 (80.4)	
History of high CRP			
Positive	59 (41.3)	45 (31.5)	0.055
Negative	84 (58.7)	98 (68.5)	
History of baby’s septicemia			
Yes	58 (40.6)	48 (33.6)	0.135
No	85 (47.2)	95 (66.4)	
History of respiratory distress syndrome			
Yes	78 (54.5)	39 (27.3)	0.001
No	65 (45.5)	104 (72.7)	
Neonatal Jaundice			
Yes	96 (67.1)	88 (61.5)	0.194
No	47 (32.9)	55 (38.5)	
Blood Transfusion			
Yes	111 (77.6)	79 (55.2)	0.0001
No	32 (22.4)	64 (44.8)	
H/O o2 therapy			
Yes	140 (97.9)	138 (96.5)	0.361
No	3 (2.1)	5 (3.5)	

Table 3. Distribution of potential maternal risk factors for developing ROP by groups (bivariate analysis)

Potential Maternal Risk factors	ROP (143) n (%)	No ROP (143) n (%)	Level of significance (P values)
Maternal hypertension			0.305
Yes	22 (15.4)	18 (12.6)	
No	121(84.6)	125 (87.4)	
History of prolonged rupture of membrane			0.050
Yes	53 (37.1)	39 (27.3)	
No	90 (62.9)	104 (72.7)	
Parity			0.021
1-3	116 (81.1)	129 (90.2)	
4 and more	27 (18.9)	14 (9.8)	
Delivery Place			0.219
Institutional	39 (27.3)	46 (32.2)	
Home	104 (72.7)	97 (67.8)	
Mode of Delivery			0.500
NVD	87 (60.8)	88 (61.5)	
LUCS	6 (39.2)	55 (38.5)	
Maternal Steroid			0.253
Yes	9 (6.3)	13 (9.1)	
No	134 (93.7)	130 (90.9)	
Antepartum Hemorrhage			0.352
Yes	17 (11.9)	14 (9.8)	
No	126 (88.1)	129 (90.2)	

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