

Impact and the Magnitude of Preterm Birth with ROP Babies on the Maternal Anxiety and Psychological Well-Being

Abdulaziz Alhadlaq*

Department of Industrial Engineering, King Saud University, Riyadh, Saudi Arabia

Abstract

Introduction: Postnatal maternal-infant interactions are crucially important in forming the basis of the subsequent relationship. This is hugely compromised in Premature babies, which will result in a significant variable of anxiety, depression, or both in the mother.

Aim: This study aimed to assess the degree of the mother's anxiety during clinical examinations for their baby during Retinopathy of Prematurity (ROP) examination.

Subject and methods: This cross-sectional study was carried out among mothers who visited the Maternity and Children Hospital, Al-Habib Hospital, Qassim university hospital in Buraidah City. A self-administered questionnaire was distributed among mothers using a web link. The questionnaire includes socio-demographic characteristics, attendance to the child's clinical examination, information about the child's condition from the treating consultant, and maternal anxiety using a Visual Analogue Scale (VAS).

Results: Of the 481 mothers, 33.7% were aged over 35 years, and 40.5% were bachelor's degree holders. Mothers who attended the first time for their child ROP clinical examination was 44.5%. 69.2% of the mothers had severe anxiety, 25.8% were moderate, and 3.1% were mild. Increasing age was more associated with increasing risk for severe anxiety, but mothers who received full information about their child's condition could likely decrease the risk for anxiety.

Conclusion: Mothers who attended ROP clinical examinations for their children demonstrated severe anxiety. Increasing age was the independent risk factor for severe anxiety while receiving full information about their child's conditions was identified as the protective factor. Psychological support is beneficial among mothers who are experiencing a high degree of anxiety during their child's ROP clinical examinations.

Keywords: Retinopathy of prematurity • Maternal anxiety • Mothers • Retinopathy of Prematurity (ROP)

Introduction

Retinopathy of Prematurity (ROP) is a developmental vasculature retinopathy that occurs exclusively in preterm. ROP was first described in 1942 [1]. It can be unilateral or bilateral and can result in deferent visual deficits or blindness [2]. The visual impairments other than blindness are including visual field defects, hyperopia, myopia and Astigmatism [3]. ROP causes blindness to more than 20,000 infants around the world per year and other visual impairments to additional 12,300 infants [4]. The incidence declined in countries with

advanced neonatal care [5]. It is the leading cause of a neonatal visual impairment and blindness. In Saudia Arabia, the population at risk are those born with a gestational age <34 weeks or with a birth weight of 2000 g or less [6]. Sometimes progresses very quickly, and delays in examinations, even for a few days, can lead to vision loss. For these reasons, timely diagnosis and treatment play a very important role in the rehabilitation of sight and vision of infants, and the emphasis on periodic examinations is especially necessary for parents. Visual impairment and blindness if it happens in infants

*Address for Correspondence: Abdulaziz Alhadlaq, Department of Industrial Engineering, King Saud University, Riyadh, Saudi Arabia, Tel: 966503178524; E-mail: 2913@qu.edu.sa

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impose a heavy psychological and physical burden on the child and it's a great tragedy for the family and society [7]. Control of visual loss requires high-quality neonatal care, timely screening, and urgent treatment, if required, which are very effective at preventing visual loss [8]. The active engagement of parents is critical. Parents of preterm infants can experience anxiety and depression especially in the mother side [9].

Background

Postnatal maternal-infant interactions are crucially important in forming the basis of the subsequent mother-infant relationship. This interaction begins in the prenatal period and continues in the natal and postnatal periods. A baby born prematurely can create a difficult situation for families, and previous studies have found that the experience of new born intensive care creates stress and anxiety to the parents [10].

Although blindness due to ROP is largely avoidable because of screening and treatment strategies, examinations can be stressful for both babies and their parents [11]. Screening for ROP involving the use of a speculum, globe manipulation, a bright light with a loudly crying baby that can be difficult for parents to witness.

For the parents who participated in the screenings, the feelings of an inability to protect their infant from the harmful effects of pain during the screening examination may explain the increase in anxiety in the first group. Studies have supported the positive relationship between the infants' pain and the parents' anxiety levels. Furthermore, the reason for the increase in anxiety in the mothers may be due to the emotional connections that they establish with the babies during pregnancy and having feelings instinctively to comfort their offspring [12]. It was also reported that the mothers are more concerned than the fathers during painful procedures applied to children [13].

Interestingly, contrary to expectations, ROP status showed no impact on the anxiety levels of parents in the study. Similarly, Özyurt et al. [14] found that having a baby with ROP does not appear to significantly affect the mothers' anxiety levels. However, Duman et al. [15] discovered that anxiety symptoms in mothers of infants diagnosed with ROP are higher.

Till this moment, there is no data showing the magnitude among mothers in premature babies who enrolled in ROP screening program in Saudi Arabia.

Materials and Methods

A descriptive cross-sectional study will be carried out at Buraidah hospital, Saudi Arabia. At Tertiary hospitals in Buraidah (Maternity and Children Hospital, Al-Habib Hospital, Qassim university hospital), AL-Qassim, kingdom of Saudi Arabia. mother with all babies that presented for ROP clinical examination from January 2022-august 2023 who attended the examination through a self-administered questionnaire will be enrolled in the study and contacted them and

sending the link to be filled by them. Who did not cooperate and did not want to share in our study will be excluded. The total number of ROP babies seen and examined in (Maternity and Children Hospital, Al-Habib Hospital) from January 2022-august 2023.

Assumed that the number will 400 babies. The data will be collected from parents from Maternity and Children Hospital, Al-Habib Hospital in Buraidah city by the researcher using valid pretested structured questionnaire. Participants will be informed about the purpose and extent of the research. Ethical considerations will be also taken to ensure the confidentiality and privacy of the collected data. all the mothers of all ROP babies from Maternity and Children Hospital, Al-Habib Hospital Buraidah, Qassim university hospital will be included in the study. However, any refused mother will be excluded from the study. A self-administered valid pretested questionnaire. The data will be analysed using SPSS 21.0 version statistical software. Descriptive statistics (mean, standard deviation, frequencies and percentages) will be used to describe the quantitative and categorical variables. Parents t-test for independent samples to compare the mean values. Pearson's *Chi-square* test will be used to assess the association between the categorical variables. Odds ratios will be calculated to measure the association between the categorical variables. Multivariate analysis will be carried out to identify the independent variables associated with outcome. A p-value of ≤ 0.05 and 95% confidence intervals will be used to report the statistical significance and precision of the results.

Objective

To assess the degree of the mother anxiety during clinical examinations for their baby during Retinopathy of Prematurity (ROP) examination.

Statistical analysis

Categorical variables were shown as numbers and percentages. The relationship between the level of maternal anxiety among the demographic and clinical characteristics of the patients has been conducted using the *Chi-square* test. Significant results based on its associations were then placed in a multivariate regression model to determine the significant independent risk factor for severe anxiety. Statistical significance was set to $p < 0.05$ level. All data analyses were carried out using the statistical package for social sciences, version 26 (SPSS, Armonk, NY: IBM Corp, USA).

Results

This study enrolled 481 mothers. As seen in Table 1, 33.7% were aged over 35 years. Mothers who were bachelor's degree holders constitute 40.5%. Approximately 44.5% indicated that their current maternity is their first baby. Nearly 60% of the respondents reported attending a clinical examination for their babies for the first time. Also, 44.5% said that they received full information about their child's condition from their attending physician. The prevalence of mothers with severe anxiety was 69.2% (Figure 1).

Study data	N (%)
Age group	
<25 years	147 (30.6%)
25-30 years	35 (07.3%)
31-35 years	137 (28.5%)
>35 years	162 (33.7%)
Educational level	
High school	178 (37.0%)
Bachelor	195 (40.5%)
Postgraduate	108 (22.5%)
First child for you?	
Yes	214 (44.5%)
No	267 (55.5%)
Is this the first time you have attended your child's clinical examination?	
Yes	286 (59.5%)
No	195 (40.5%)
Did you receive full information regarding your child's condition from the treating consultant?	
Yes	214 (44.5%)
No	267 (55.5%)
Level of maternal anxiety based on visual analogue scale	
None	09 (01.9%)
Mild	15 (03.1%)
Moderate	124 (25.8%)
Severe	333 (69.2%)

Table 1. Demographic and clinical characteristics of the patients (n=481).

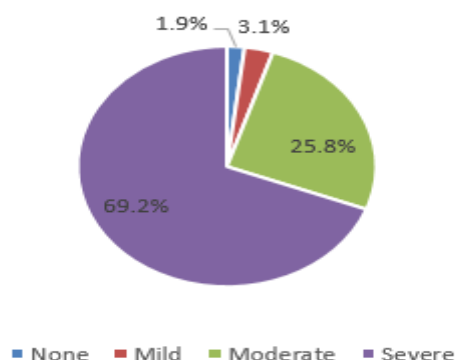


Figure 1. Level of maternal anxiety.

In Table 2, the prevalence of mothers with severe anxiety was significantly more common among the oldest age group ($p<0.001$) and those who were first-timer to attend child clinical examination ($p<0.001$), while it was significantly less among those who received full information about child's condition from the attending physician ($p<0.001$).

Factor	Level of maternal anxiety		P-value [§]
	Severe N (%) (n=333)	Mild to moderate N (%) (n=139)	
Age group			

≤ 30 years	122 (36.6%)	55 (39.6%)	<0.001**
31-35 years	80 (24.0%)	53 (38.1%)	
>35 years	131 (39.3%)	31 (22.3%)	
Educational level			
High school	121 (36.3%)	51 (36.7%)	0.509
Bachelor	132 (39.6%)	61 (43.9%)	
Postgraduate	80 (24.0%)	27 (19.4%)	
First child for you?			
Yes	157 (47.1%)	55 (39.6%)	0.131
No	176 (52.9%)	84 (60.4%)	
Is this the first time you have attended your child's clinical examination?			
Yes	218 (65.5%)	66 (47.5%)	<0.001**
No	115 (34.5%)	73 (52.5%)	
Did you receive full information regarding your child's condition from the treating consultant?			
Yes	128 (38.4%)	79 (56.8%)	<0.001**
No	205 (61.6%)	60 (43.2%)	

Note: *Nine mothers who do not have anxiety were excluded from the analysis.

§ P-value has been calculated using Chi-square test.

**Significant at p<0.05 level.

Table 2. Relationship between the level of maternal anxiety according to the demographic and clinical characteristics of the patients (n=472)*.

In a multivariate regression model (Table 3), it was observed that increasing age was more associated with increasing risk for severe anxiety, with the risk increased up to 1.9 times higher for the middle age group (AOR=1.979; 95% CI=1.102–3.553; p=0.022) and up to 6.7-fold higher for the oldest age group (AOR=6.694; 95% CI=2.590–15.191; p<0.001).

In contrast, mothers who received full information regarding their child's condition from the treating consultant were predicted to decrease the risk of severe anxiety by almost 55% compared to those who did not receive information (AOR=0.542; 95% CI=0.301-0.977; p=0.041).

Factor	AOR	95% CI	P-value
Age group			
≤ 30 years	Ref		
31-35 years	1.979	1.102-3.553	0.022**
>35 years	6.694	2.590-15.191	<0.001**
Is this the first time you have attended your child's clinical examination?			
Yes	1.398	0.761-2.571	0.281
No	Ref		
Did you receive full information regarding your child's condition from the treating consultant?			
Yes	0.542	0.301-0.977	0.041**
No	Ref		

Note: *Nine mothers who do not have anxiety were excluded from the analysis, AOR: Adjusted Odds Ratio; CI: Confidence Interval. **Significant at p<0.05 level.

Table 3. Multivariate regression analysis to determine the significant independent risk factor of severe anxiety (n=472)*.

Discussion

This study investigated the degree of the mother's anxiety during clinical examinations for their baby during ROP examination. To our knowledge, this is the first study in Saudi Arabia that discussed the influence of attending child ROP clinical examination on mother's mental conditions. The findings of this study will be an important addition to the literature, which could serve as a guide for future research. Our results revealed that based on the Visual Analogue Scale (VAS), nearly seventy percent of the attending mothers demonstrated severe anxiety. Only 3.1% had mild anxiety. This is comparable to the study of Duman et al. [10]. According to reports, the mothers of babies diagnosed with ROP were more associated with having higher scores in depression, anxiety, and global severity index. However, in a systematic review done by Satnarine et al. [13], after five years of discharge, mothers were found to have been suffering from long-term stress and anxiety due to having preterm babies. In contrast, Celen and Arslan reported that the overall level of parents' anxiety was deemed mild, although the mothers' of premature infants had higher mean anxiety scores than their fathers [14].

Data from our study suggest that increasing age was associated with increasing severity of anxiety. This is consistent with the study of Alexopoulou et al. [15]. The state anxiety score was statistically significantly higher among mothers aged ≥ 40 ($p=0.038$). Other contributing factors to anxiety and depression were living in rural areas, unemployment, and pregnancy complications. However, in a paper conducted by Baia et al. [16] stress was significantly less among fathers whose age was 30 years or higher, while in mothers, multiple pregnancies were associated with decreased stress levels.

In our univariate analysis, being a first-timer to attend ROP clinical examination for their babies seems to greatly affect mothers' anxiety. However, in our multivariate analysis, this did not reflect as a significant risk factor ($p=0.281$). In Chile [17], pregnancy complications, prenatal hospitalization, and prenatal diagnosis did not significantly affect parents' stress levels and the presence of ROP. In UK [18], an increased risk of psychological distress was more frequently seen among mothers with very preterm infants, while moderate or late preterm had no relevant increase in psychological distress, but mothers with early-term babies were shown to have a small excess risk of PD.

Moreover, our study noted that having been oriented by the attending consultant about the full information of their child's condition was seen to decrease the risk of anxiety, which was determined as the preventive factor for anxiety. In China [19], a study found that resilience was inversely associated with anxiety and depression and positively associated with social support and coping strategies. In Turkey [20], respondents who did not attend the ROP examination had decreased anxiety levels, but those who attended the ROP examination were on the opposite side, with increased state anxiety levels. However, in Iran [21], the mental health score of the counseling group was significantly lower than the control group, but no differences were observed in terms of weight, height, and head circumference between the two groups.

Conclusion

The prevalence of severe anxiety among mothers who attended ROP clinical examinations for their babies was higher. Older mothers and first-timer attendees of such ROP child clinical examinations were more likely to exhibit severe anxiety, but having comprehensive information regarding a child's condition could be a preventive factor for a higher degree of anxiety. These findings indicate the need for psychological support during clinical examination among mothers with ROP children. However, given the scarcity of literature discussing the impact of ROP infants on mothers' mental conditions, further prospective research is warranted to determine its cause and effects.

Ethical Consideration

This research will be conducted after approval of related research ethical committees, the privacy of the data that will be obtained will not be disclosed for ethical considerations.

References

1. Terry TL. "Retrolental fibroplasia in premature infants: V. further studies on fibroplastic overgrowth of persistent tunica vasculosa lentis." *AMA Arch Ophthalmol* 33 (1945): 203-208.
2. Crosse, V Mary, and Philip Jameson Evans. "Prevention of retrolental fibroplasia." *AMA Arch Ophthalmol* 48 (1952): 83-87.
3. Fielder, Alistair, Hannah Blencowe, Anna O'Connor, and Clare Gilbert. "Impact of retinopathy of prematurity on ocular structures and visual functions." *Arch Dis Child Fetal Neonatal Ed* 100 (2015): F179-F184.
4. Blencowe, Hannah, Joy E. Lawn, Thomas Vazquez, and Alistair Fielder, et al. "Preterm-associated visual impairment and estimates of retinopathy of prematurity at regional and global levels for 2010." *Pediatr Res* 74 (2013): 35-49.
5. Stoll, Barbara J, Nellie I Hansen, Edward F. Bell, and Michele C. Walsh, et al. "Trends in care practices, morbidity, and mortality of extremely preterm neonates, 1993-2012." *JAMA* 314 (2015): 1039-1051.
6. Al-Amro, Saleh A, Turki M. Al-Kharfi, Abdulla A. Thabit, and Saleh M. Al-Mofada. "Retinopathy of prematurity at a university hospital in Riyadh, Saudi Arabia." *Saudi Med J* 24 (2003): 720-724.
7. Roohipoor, Ramak, Reza Karkhaneh, Afsar Farahani, and Nazanin Ebrahimiadib, et al. "Retinopathy of prematurity screening criteria in Iran: new screening guidelines." *Arch Dis Child Fetal Neonatal Ed* 101 (2016): F288-F293.
8. Al Hadlaq, Abdulaziz Mohammad. "Incidence, clinical characteristics, and treatment outcomes of retinopathy of prematurity: a single-center retrospective study." *Inter J Med Dev Coun* 6 (2022): 922-922.
9. Ozyurt, Gonca, Ayhan Ozyurt, Taylan Ozturk, and Aylin Yaman, et al. "Evaluation of maternal attachment, self-efficacy, levels of depression, and anxiety in mothers who have babies diagnosed with retinopathy of prematurity." *Ophthalmic Epidemiol* 25 (2018): 140-146.

10. Duman, Nagihan Saday, Emel Sarı Gokten, Rahmi Duman, and Resat Duman, et al. "Evaluation of depression and anxiety levels in mothers of babies' following due to premature retinopathy." *Arch Psychiatr Nurs* 32 (2018): 439-443.
11. Johnston, C. Celeste, Marilyn Aita, Marsha Campbell-Yeo, and Lenora J. Duhn, et al. "The social and environmental context of pain in neonates." *Pain in Neonates and Infants*. Edinburgh, Scotland: Elsevier (2007): 177-189.
12. Doering, Lynn V, Kathleen Dracup, and Debra Moser. "Comparison of psychosocial adjustment of mothers and fathers of high-risk infants in the neonatal intensive care unit." *J Perinatol* 19 (1999): 132-137.
13. Satnarine, Travis, Pranuthi Ratna, Aditi Sarker, and Adarsh Srinivas Ramesh, et al. "The relationship between infant prematurity and parental anxiety: a systematic review." *J Med Health Stud* 3 (2022): 23-31.
14. Çelen, Raziye, and Fatma Taş Arslan. "The anxiety levels of the parents of premature infants and related factors." *J pediater Res* 4 (2017): 68-74.
15. Alexopoulou, Paraskevi, Eleni Evagelou, Chrysa Mpakoula-Tzoumaka, and Eleni Kyritsi-Koukoulari. "Assessing anxiety and depression in parents of preterm infants." *J Neonatal Nurs* 24 (2018): 273-276.
16. Baia, Ines, Mariana Amorim, Susana Silva, and Michelle Kelly-Irving, et al. "Parenting very preterm infants and stress in Neonatal Intensive Care Units." *Early Hum Dev* 101 (2016): 3-9.
17. Palma, Elisa, F. Von Wussow, Ignacia Morales, and Javier Cifuentes, et al. "Stress in parents of newborns hospitalized in a neonatal intensive care unit." *Rev Chil Pediatr* 88 (2017): 332-9.
18. Carson, Claire, Maggie Redshaw, Ron Gray, and Maria A. Quigley. "Risk of psychological distress in parents of preterm children in the first year: evidence from the UK Millennium Cohort Study." *BMJ open* 5 (2015): e007942.
19. Xie, Wanhua, Chunyan Liang, Daoman Xiang, and Feng Chen, et al. "Resilience, anxiety and depression, coping style, social support and their correlation in parents of premature infants undergoing outpatient fundus examination for retinopathy of prematurity." *Psychol Health Med* 26 (2021): 1091-1099.
20. Kara, Caner, Ozdemir Ozdemir, İkbāl S. Petricli, and Damla E. Acar, et al. "Should parents be present during screening examinations for retinopathy of prematurity?" *Indian J Ophthalmol* 69 (2021): 2134-2140.
21. Seiiedi-Biarag, Leila, Mojgan Mirghafourvand, Khalil Esmaeilpour, and Shirin Hasanpour. "A randomized controlled clinical trial of the effect of supportive counseling on mental health in Iranian mothers of premature infants." *BMC Pregnancy Childbirth* 21 (2021): 1-11.

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