



DETERMINE THE NEWBORN MORBIDITIES THAT ARE RELATED TO BEING BORN TOO SOON GIVEN THE CURRENT CIRCUMSTANCES

¹Syeda Fakhira Gillani, ²Maleeha Jawed, ³Dr Syed. Muhammad Hussain shah, ⁴Dr Sidra Hayat, ⁵Muhammad Sarim Bin Farooq Awan, ⁶Dr. Shaista Qazi

¹Syed Mukhtar Hussain Gillani, Fakhiragillani86@gmail.com

²Dow Medical Hospital, Karachi, maleehak14@gmail.com

³Assistant Professor, Paediatrics AKUH, mhussain.shah@aku.edu

⁴Medical Officer at Begum Jan Hospital Lehrtar road Islamabad, sidrahayat19@gmail.com

⁵Advanced International Hospital, Islamabad, Medical Officer, Accident and Emergency, sarimfarooqawan094@gmail.com

⁶Senior Registrar Paediatrics Akber Niazi Teaching Hospital Bharakhua Islamabad, shstqazi@gmail.com

ABSTRACT:

Aim: The purpose of this research is to determine the newborn morbidity that is linked with someone being born prematurely in our environment.

Methods: In the neonatal intensive care unit of Services Hospital in Lahore, Pakistan, cross-sectional research remained carried out over the course of a two-year period beginning in May 2019 and ending in April 2020. The research examined all of premature infants that were hospitalized in NICU, regardless of gender. Their prognosis was observed, both in regard to mortality and any issues that arose during their time spent in the hospital.

Results: The research can include a total of 205 infants that were born prematurely. There had been 46.3% males and 56.7% females among those who participated. The average gestational age, including standard deviation, was 35.49 weeks. The mean birth weight, including the standard deviation, was 1796 grams. In all, 18% of newborns did not make it. There were significantly more deaths in patients whose gestational age was fewer than 28 weeks (p -value = 0.034) in addition whose birth weight was less than 2.6 kg (p -value 0.003). Hyaline membrane illness was the leading cause of death, accounting for 41.7% of all deaths, surrounded by sepsis, which caused 32.4% of deaths, and necrotizing enterocolitis, which caused 13.6% of deaths. The most prevalent problem that was seen was sepsis, which was seen in 29.7% of newborns. This has been accompanied by neonatal jaundice, that was observed in 11.7% of newborn infants, necrotizing enterocolitis, which was seen in 16.7% of newborn babies, and hyaline membrane disease, that occurred in 18.6% of newborn babies. There was a significant correlation between necrotizing enterocolitis and hyaline membrane illness, as well as a low gestational age and a low birth weight.

Conclusion: In our investigation, we found that there was a substantial amount of newborn morbidity. Finding out the characteristics of death and morbidity associated with preterm births can assist us in



making early diagnoses and initiating prompt interventions, both of which are necessary for their survival.

Keywords: Newborn Morbidity, Born Prematurely.

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INTRODUCTION:

A baby is considered premature if it is born at fewer than 39 consecutive weeks of gestation, which is equivalent to 257 days [1]. This is a crucial factor in determining both the morbidity and death of newborns, as well as, in certain situations, the disabilities of children [2]. The issue of premature birth is a worldwide concern. South Asia and Africa are responsible for more than 63% of all premature births [3]. In the top ten list of nations with the highest incidence of premature babies, Pakistan comes in at number four. The infant mortality rate in Pakistan is one of the highest in the world, coming in at 46 for every 1 000 live births [4-7]. Every year, Pakistan has the third greatest number of fatalities that occur in neonates, accounting for 8% of the total number of neonatal deaths worldwide [8]. The fact that there was just a 0.8% decrease in newborn death from 2019 to 2020 is evidence that there has not been any momentous development in the newborn death risk throughout that time period [9]. The mortality rate for children under the age of six is one of the targets set for the Millennium Development Goals. In light of the fact that newborn death is accountable for 58% of mortality among children under the age of six, it is imperative that every endeavor be made to lower maternal deaths in order to accomplish this objective. There are 29 percent of all newborn fatalities that may be attributed to premature birth [10]. In order for this vulnerable group to be rescued, the patterns of premature mortality that are related with premature birth need to be treated [11-15].

The severity of problems associated with premature birth might differ from one location to the next, and successful management of these issues requires prompt diagnosis and intervention. The purpose of this research was

to uncover trends of illness and death in preterm in our setting so that we might take steps to lower the risk of dying of newborns [16]. Poor maternal nutrition, parental illnesses, initial rupture of membranes, uterine anomalies, congenital deformities, multiple fetus gestation, fetal growth restriction, also infections are all predisposing factors for preterm birth [17]. Symptoms like as hypoxia, hyaline membrane sickness, hypothermia, hypoglycemia, necrotizing enterocolitis, anemias, jaundice, apnea, convulsions, difficulty feeding, electrolyte imbalance, etc. are observed often [18].

It is estimated that 27% of preterm infants born with very little birth weight also 68% of very little birth weight newborns suffer from breathing difficulties [19-23]. There is a 5% incidence rate of intraventricular hemorrhage in premature newborns born VLBW. In preterm infants, the overall incidence of sepsis is 38%, the danger of necrotizing gastroenteritis is 7%, the danger of chronic ductus arteriosus is 6%, the hazard of hypothermia is 12.7%, and the danger of hypoglycemia is 6% [24]. In Pakistan, there is only a restricted amount of evidence available indicating the relation of a specific issue to higher death and morbidity in preterm newborns. The purpose of this research was to investigate the relationship between the numerous issues that contribute to mortality and morbidity in preterm neonates, with the end goal of improving their survival chances by the use of appropriate and prompt intervention [25].

METHODOLOGY:

This research was carried out at the neonatal intensive care unit and Pediatrics department of the Services Hospital in Lahore throughout the period beginning on May 1, 2019, and ending in April 2020, respectively. The research

comprised all of the premature infants (both male and female) transferred to the NICU who had a gestational age of fewer than 38 consecutive weeks. These infants might have been born in or outside of the body. Any infant that presented with dysmorphic facies was disqualified from participation in the research. The first date of their most recent monthly period was used in conjunction with a prenatal ultrasound to determine their gestational age. Because when woman was unable to provide accurate dates and a scan was not performed, the gestation was evaluated using a modified version of the Ballard rating system. The first documented weight after delivery or during the first twenty-four hours of life generally considered to remain the individual's birth weight. The gestational age of the individual at the time of delivery was used to categories individuals into one of three groups: those born at less than 31 weeks, those born between 34 and 36 weeks, as well as those born at more than 36 weeks. In a manner similar, they were categorized based on the amount of weight they weighed at birth. ELBW refers to very low birth weight, VLBW refers to very a low birth weight, low birth weight refers to birth weight between 2.7 and 3.6 kg, and natural birth weight refers to birth weight beyond 2.6 kg. Each of the patient populations were closely monitored for prematurity-related health problems such as septic shock, acute respiratory distress syndrome hyperbilirubinemia, necrotizing enterocolitis, intraventricular hemorrhage, meconium aspiration disease, congenital pneumonia, hypoxic ischemic encephalopathy, and congenital heart defects. The information that was recorded included gestational age, gender, birth weight, method of delivery, length of stay, any difficulties that arose during labor and delivery, and the result of those difficulties in terms of discharge or death. SPSS version 25 was used for data entry and analysis throughout the whole process. The average as well as the standard deviation were used in order to arrive at a conclusion about the definition of a

grouping of variables. Both categorical and continuous variables were defined via the use of figures and percentages. The prognostic value of the links between the various variables had been determined using the Chi square test. A significance level of less than 0.06 for the P value was required.

RESULTS:

In the investigative process, a total of 983 people were sent to the neonatal intensive care unit. Among them, there were 198 infants born prematurely who were hospitalized, making up 21.4% of the total number of patients. 89 (45.3%) of the premature newborns were female, while 114 (57%) were man. There was a total of 197 premature infants. In all, 66 infants were born through caesarean section (35.4%), while 136 babies have been produced via spontaneous vertex delivery (67.9%). Average gestational age \pm SD has been 35.49 \pm 4.3 weeks. The standard deviation added to the mean to get a total of 567 grammes. The least amount of weight that was ever reported was 520 grammes. A maximum weight of 1200 grammes was required to survive.

The average length of stay was 11,3 days, plus 3. There were 6.6% of infants diagnosed with ELBW, 34.8% overall VLBW, 47.8% with LBW, and 16.3% to NBW (Table 1). These babies who were born at less than or equivalent to 36 full weeks of gestation made up 46.3% of the total, while those born between 32 and 38 finished weeks of gestation made up 53.9% of the total (Table 2).

There were a number of 197 newborns; 33 (17%) of them did not make it, while 168 (85%) did. There was a significant difference in the number of pregnancies that did not make it to term between those whose gestational age was more than 28 weeks and those whose gestational age was fewer than 35 full weeks ($p = 0.034$). (Table 1). Patients who had lower birth weights, namely these whose birth weight was fewer than 2.6 kilograms, had themeaningly higher death rate, as shown through a p value of 0.003. Our research revealed a variety of problems associated with preterm birth. The

most prevalent condition was sepsis, which was found in 58 newborns (29.5%), accompanied by hyaline membrane illness in 37 babies (18.6%), necrotizing enterocolitis in 32 babies (14.6%), and neonatal jaundice in 23 babies (11.7%). Table 2 provides information on a number of other problems that occur less often.

A birth weight of less than 2.6 kilograms remained shown to have a significant correlation with both hyaline membrane illness also necrotizing enterocolitis, having p values of 0.002 and 0.039, correspondingly. In contrast, our research found that the risk of sepsis was about the same for infants born weighing less than 2.6 kilograms and those born weighing more than 2.6 kilograms, with a p value of 0.68. It demonstrates that there is not a major

occurrence of sepsis in newborns that are VLBW (Table 2). In a related manner, infants born at a gestational age of fewer than 34 full weeks exhibited a significant connection between hyaline membrane illness in addition necrotizing enterocolitis, having p values of 0.021 also 0.002, respectively. There remained no significant statistical relationship between low gestational ages and sepsis. A p-value of 0.47 indicates that it was not significantly different between the two sets. Hyaline membrane sickness was the leading cause of death with 14 cases (41.7%), following by sepsis with 8 cases (22.9%), and necrotizing enterocolitis with 7 cases (16.7%). Statistics are listed in table 2.

Table 1:

Problems	Number	Percentage
Sepsis	11	23.5
Hyaline membrane disease	15	41.7
Intra-ventricular hemorrhage	3	7.4
Necrotizing enterocolitis	5	16.3
HIE	3	7.6
Congenital heart disease	2	4.2

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Table 2:

Problems	Number	Percentage
Hyaline membrane disease	36	18.6
Septicemia	58	29.5
Neonatal jaundice	22	11.7
Necrotizing enterocolitis	32	16.8
Anemia	10	5.6
Feeding problems	13	7.1
Hypocalcemia	9	5.1
Congenital pneumonia	9	5.1
Apnea of prematurity	8	4.6
Hypoglycemia	9	5.1

DISCUSSION:

Numerous studies, carried out on both a national and worldwide scale, have conclusively shown that premature birth is one of the

leading causes of mortality among neonates [26]. Once we have a greater comprehension of the morbidities caused by premature birth, we will be able to increase their chances of survival



and bring the death rate of newborns down [27]. In line with the findings of previous research, our research included a much higher percentage of male participants (56.7%) [28-31]. Research that was carried out by Anya indicated that the male-to-female ratio remained 1.3:2.13 and that lower-segment surgical treatment was the method of birth for 32.5% of newborns [32]. The high proportion may be understood by the fact that the majority of the pregnancies were a large probability and required an early cesarean section due to complications with the mother's health [33-37]. The results presented by Chowder et al. are congruent with both the conclusions of this study, which found that 53.9% of infants were born after 31 weeks of gestation. There were 35.8% babies born with VLBW and 45.8% were born with LBW [38]. Other research found a comparable proportion of birth weight, including 27.5% of extremely low birth weight and 52.9% of low-birth-weight premature newborns. Our investigation found that the death rate was 17%, which is close to the study carried out by Khan MR, which found that the risk of dying was 15% [39]. Nevertheless, this death rate is much greater than the one found in the research carried out by Chowder et al., which was 9.64%.

When contrasted to babies delivered immediate term and weighing more than 1600 grammes, infants whose gestational ages were fewer than 34 weeks and whose weights were less than 1600 grammes had a rate of death that was considerably greater. This was shown by a p value that was less than 0.05 [40]. This class was also shown to be at a significant risk for morbidity and death in research that was carried out by Baku and colleagues. In Pakistan, there was yet another research conducted that came to the same conclusion [41-43].

Though sepsis was the condition that occurred most often in our research (29.7%), hyaline membrane illness was the major cause of death (41.7%), following by sepsis (32.3%), and then necrotizing enterocolitis (14.6%). The average length of stay remained 11,3 days, plus three. In

an investigation that was carried out by Shrestha et al., the researchers found that the mean length was 11.3, plus 9.9 days [44]. On the other hand, the primary reasons for mortality remained the same as before, namely sepsis and hyaline membrane illness. According to the findings of our research, lesser gestational age and lesser birth weight remained both related through an enlarged danger of developing hyaline membrane disease and necrotizing enterocolitis. Khan and colleagues, in their investigation, obtained results that were comparable to these [45].

In a different piece of research, the researchers claimed to have found a prevalence of necrotizing enterocolitis in their research of 15.29%, which is close to the incidence of 14.6% that we found in our research. Sepsis (26.7%), hyaline membrane illness (18.6%), and jaundice (11.7%) were the most prevalent co-morbidities seen in premature infants [46]. In contrast to those same research results, this other research that was carried out in a tertiary health center in Malaysia found that the most common medical conditions in premature infants were respiratory difficulties (67.9%), accompanied by jaundice (69.2%), but also sepsis (38.3%). In this research, the most common health issues in premature infants were: Additional problems that were detected in our research included hypoxic-ischemic encephalopathy (4.6% of patients), congenital heart diseases (4%), hypocalcemia (6%), anemias (5.7%), hypothermia (5.6%), and intraventricular hemorrhage (3.6%). The results of many research have been found to be consistent with one another [47].

CONCLUSION:

Those who are born prematurely have a greater chance of illness, which may have catastrophic effects. Even though the incidence and distribution of problems might be somewhat different, the major causes of death in this susceptible group remain identical in most settings. These include hyaline membrane illness, sepsis, also necrotizing enterocolitis.

Finding out trends of illness also death experienced by preterm infants will assist us in making early diagnoses and initiating prompt interventions, both of which are necessary for their survival.

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