



ANALYSIS OF MORBIDITY AND MORTALITY PATTERNS AMONG PRETERM BABIES: A PROSPECTIVE STUDY AT A TERTIARY CARE CENTRE IN AJMER, RAJASTHAN

Obstetrics & Gynaecology

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ABSTRACT

Birth prior to 37 completed weeks is considered as preterm birth and there is a direct correlation between gestational age at birth and neonatal outcome. It is highly important and it is necessary to get newer insights that lead to new discoveries, for the prevention and management of preterm births. In present study, the risk factors and burden of preterm births in a referral centre in Ajmer, Rajasthan were investigated. Out of the total 340 cases, 74.12% of the preterm babies were AGA babies, followed by SGA (24.12%) and LGA (1.76%). It was observed that, with an increase in the gestational age, the mortality rate decreases. That is, the mortality rates were higher if the gestational age was lesser. The major cause for the mortality of preterm babies observed was observed to be RDS (46/70; 65.71%). The major morbidity pattern in present study was HMD (55.59%), neonatal hyperbilirubinemia for Phototherapy (30.29%) and Hypoglycemia (13.53%). The survival of preterm birth especially when born less than 34 weeks of gestation requires NICU care which leads to significant direct and indirect costs that have to be borne by parents and society.

KEYWORDS

Mortality, morbidity, preterm, neonates, RHD, HMD.

INTRODUCTION

The major causative factor for the neonatal morbidity and mortality is preterm birth (<37 weeks of gestation) which is a significant public health burden. Every year, there are 15 million (11.1%) preterm births of all births worldwide, and 13.3% of these births occur in South Asia alone.¹ With the limited available resources in a country like India, complications of preterm birth is a mammoth burden. Annually, around 3.1 million preterm births are recorded in India and approximately one million deaths are recorded each year. Availability of intensive neonatal care facilities and gestational age at birth has a direct relationship with the adverse outcomes. Death risk for preterm born babies is higher as per the reports from the research studies conducted in various countries of lower and middle income groups. Neonatal infections are the major risk factors associated with the greater risk of infant mortality. Preterm infants are more prone to short and long-term neurocognitive and motor impairments in comparison with the term infants. The preterm births are also associated with the increased levels of malnutrition, chronic diseases and early deaths. Several factors have been identified as risk factors for preterm birth. Socio-demographic risk factors for the preterm birth include, ethnicity, older age of mothers and smoking. However, many research studies have also reported that, lack of awareness among mothers due to their low levels of education have also been the risk factors for preterm birth. In addition to this, primiparity has also been reported to be one of the obstetric risk factor for preterm birth. Studies have also demonstrated that, poor access to antenatal care services during pregnancy and poor pregnancy also result in preterm birth.

According to the definition of WHO, birth prior to 37 completed weeks is considered as preterm birth. There is a direct correlation between gestational age at birth and neonatal outcome. For getting a new insight into the gross burden afflicted by preterm birth, setting the lower limit of gestational age and reporting all births including still births before 37 completed weeks. It is highly important and it is necessary to get newer insights that lead to new discoveries, for the prevention and management of preterm births.

AIMS AND OBJECTIVES

In the current study, the risk factors and burden of preterm births in a referral centre in Ajmer, Rajasthan were investigated. The objective of present study was to investigate the risk factors for the preterm babies such that the trend of indicated preterm deliveries at the referral centre would enable to evaluate the neonatal outcome in terms of NICU admissions and early neonatal deaths.

METHODOLOGY

The current prospective study was conducted at the Department of

Obstetrics and Gynecology, J.L.N. Medical College, Ajmer, Rajasthan. The study was conducted on 340 cases during July 2021 to December 2021.

Inclusion Criteria:

Traditionally, preterm births have been divided into spontaneous and indicated or provider initiated preterm labor. In the present study, the cases of the established preterm labor such as spontaneous as well as induced preterm labors that were presented in the labor ward were included. All singleton deliveries before 37 completed weeks were included in the study.

Exclusion Criteria:

Pregnancies before 26 weeks and beyond 37 completed weeks are not considered for the study. Incomplete documentation or records were excluded from the analysis.

As the last menstrual period of the pregnant women is not known or early the ultrasound report for the pregnant women was not available. In the current study, gestational age assessment is done at the time of admission. Based on the availability of reliable dates from the patients, gestational age was calculated from their last menstrual period. In those patients, who had no reliable dates, an early ultrasound (less than 24 weeks as per the recommendations of WHO) report was to confirm the gestational age. The booking status of the patient was defined as at least one contact with the antenatal caregiver. For the assessment of demographic, obstetric, and medical history of the patients, an unstructured questionnaire was used. To assess the gestational age and liquor status of all the patients, the patients were subjected to at least one sonography examination in the labor room. Electronic weighing scale was used to assess the birth weight of neonates.

APGAR is a useful mnemonic to describe the components of the score: Appearance, Pulse, Grimace, Activity, and Respiration. The score is a rapid method that evaluates neonates immediately after birth and in response to resuscitation. For the current study, the APGAR score was assessed by a neonatologist and the data was obtained from the records of Neonatal Intensive Care Unit (NICU). The data was collected on sepsis, hyaline membrane disease (HMD) and hyperbilirubinemia.

Post natal mortality (alive, stillborn and neonatal death) as well as morbidity due to immediate neonatal complications such as HMD, sepsis and hyperbilirubinemia were analysed. Gestation age, maternal age, occupation of the partner, outcomes of the previous pregnancy, parity, pregnancy order and the presence of medical (diabetes, anemia, hypertension, heart disease and maternal infections) as well as obstetric (foetal abnormalities) risk factors were observed.

The demographic profile, level of antenatal care sought, mode of preterm labour, complications and neonatal outcome were studied. Hypertensive disorder of pregnancy was defined as BP >140/90, with or without proteinuria. Fetal growth restriction was defined as birth weight 3 centimetres and effacement of >80%, along with tocographic documentation of uterine contractions. Early neonatal death was defined as death occurring within first 7 days of life. NICU admission was defined as stay in nursery for >24 hours. The data was collected from Medical Records Department of the hospital. The demographic profile, level of education, place of admission (elective or emergency) was studied. The details of investigations done, and ultrasonography were also obtained.

RESULTS

Gestational Age And The Outcome:

The appropriate gestational age (AGA), small gestational age (SGA), and Large gestational age (LGA) were considered for assessing mortality among the babies. It was found that, mortality in male babies was more (22.54%) when compared to female babies, which was 12.7%.

Table 1: Babies Birth Weight Wise Distribution

Gestational age	No of babies	percentage
SGA	82	24.12%
AGA	252	74.12%
LGA	6	1.76%
Total	340	100%

Table 2: Mortality Pattern Among Preterms

Causes for mortality	Frequency	Percentage
RDS	46	65.71%
Severe birth asphyxia	11	15.71%
Sepsis	9	12.86%
Others	4	5.71%
Total	70	100%

Table 3: Gestational Age Versus Mortality

Gestation al age (in weeks)	Alive in numbers	In percentage	Dead In numbers	In percentage	Total for gestatio nal age
23-24 weeks	-	-	1	100	1
25-27 weeks	-	-	6	100	6
28-30 weeks	9	24.32%	28	75.67%	37
31-33 weeks	83	80.58%	20	19.42%	103
34-36 weeks + 6 days	178	92.23%	15	7.77%	193
Total (Alive & Dead)	270	79.41%	70	20.59%	340

Table 4: Morbidity Pattern Among The Preterm Babies

	Babies number	Babies percentage
Respiratory distress		
1.HMD	189	55.59%
2. CHD	16	4.70%
3. Asphyxia	15	4.41%
4. Pneumonia	11	3.23%
Preterm care		
Neonatal hyperbilirubinemia		
1. Phototherapy	103	30.29%
2. Exchange transfusion	10	2.94%
Metabolic abnormalities		
1. Hypoglycemia	46	13.53%
2. Hypocalcemia	39	11.47%
Congenital heart disease		
1. Acyanotic	17	5%
2. Cyanotic	4	1.18%
Congenital malformations		
1. Cleft lip	8	2.35%
2. Cleft palate	8	2.35%

3. CTEV	10	2.94%
4. TEF	5	1.47%
5. Multiple abnormalities	5	1.47%
Sepsis		
1. Early	12	3.53%
2. Late	7	2.06%
Birth asphyxia		
1. Mild	3	0.88%
2. Moderate	19	5.59%
3. Severe	19	5.59%

Out of the total 340 cases, 74.12% of the preterm babies were AGA babies, followed by SGA (24.12%) and LGA (1.76%). (Table 1)

Causes Of Mortality:

The major cause for the mortality of preterm babies observed was observed to be RDS (46/70; 65.71%). (Table 2)

It was observed that, with an increase in the gestational age, the mortality rate decreases. That is, the mortality rates were higher if the gestational age was lesser. (Table 3)

Table 4 summarizes the morbidity pattern observed among the preterm babies.

DISCUSSION

Preterm birth is one of the major clinical problems in obstetrics and neonatology as it is associated with perinatal mortality, serious neonatal morbidity and in some cases childhood disability. Preterm labour and delivery are very challenging obstetric complications encountered by obstetricians, as are preterm neonates for the pediatricians.

Out of the 340 babies born, 24.12% were SGA, AGA 74.12% and LGA 1.76%. Babies born between 22 - 27 Weeks were 7 (2.06%), 28 - 33 Weeks 140 (41.18%) and 34 - 36 Weeks + 6 days 193 (56.76%). In a study done at Louis Packard children hospital was < 28 Weeks (6%), between 28 - 33 Weeks (23%), and 34 - 36 Weeks + 6 days (71%).

The morbidity patten in present study was HMD (55.59%), neonatal hyperbilirubinemia for Phototherapy (30.29%) and Hypoglycemia (13.53%) which was more or less comparable to study by Sehgal et al.,² where neonatal hyperbilirubinemia (78%) and RDS (65%) were the most common causes of morbidity and in the study by Aravind sehgal et al.,³ HMD (65%) and neonatal hyperbilirubinemia (78%) and hypoglycemia (38%) were the most common causes.

In the current study, the causes for the mortality are RDS (65.71%), severe birth asphyxia (15.71%) and sepsis (12.86%), which was similar to the study by Singh uma et al.,⁴ it was RDS (62%) Septicaemia (16.8%) and Hypoxic ischaemic encephalopathy (9.2%), in a study by Roy K.K. et al.,⁵ major causes of mortality are RDS, intracranial haemorrhage and sepsis (20.3%). In a Study by Michael G Ross et al.,⁶ RDS, IVH and Sepsis were the major causes of mortality and it was more in babies born in lower gestational ages.

CONCLUSION

The survival of preterm birth especially when born less than 34 weeks of gestation requires NICU care. They need to spend time in NICU till they reach close to the term to allow sufficient multi-organ maturation, resulting in prolonged hospital stay for both mother and infant. Therefore, the consequences of preterm birth often continue beyond the neonatal period and can lead to significant direct and indirect costs that have to be borne by parents and society. Hence, it is a time felt need to ascertain maternal antenatal factors contributing to preterm birth and need for improvement of perinatal care to increase the neonatal survival.

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