

STUDY OF RISK FACTORS IN CHILDREN WITH BIRTH ASPHYXIA IN TERTIARY CARE HOSPITAL: OBSERVATIONAL STUDY

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Article Info: Received 05 December 2021; Accepted 05 January 2022

DOI: <https://doi.org/10.32553/ijmbs.v6i1.2513>

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Conflict of interest: No conflict of interest.

Abstract

Introduction: Birth asphyxia is associated with a complex list of risk factors, ranging from industrialized and non-industrialized countries. With this objective present study was planned to study of risk factors in children with birth asphyxia in tertiary care hospital.

Study Methodology: The present study was a prospective observational study conducted during last one year in our department. We included , neonates born at AVBRH who needed resuscitation (*basic and/or**advanced) at birth. While we excluded , neonates whose parents didn't give consent. & Neonates who needed only #Initial steps of resuscitation.

Results: In our study, we reported 54 % mothers were with less than 25 years while 46% were more than 25 years. In our study, only 2% mothers were reported from upper class, 63% reported from middle class while 35 % were reported from lower class. In our study , 54 % mothers were primi while 46% were with two or more gravida. On the basis of mothers HB count , 50% mothers were with less than 7 , 38 % were 7 to 11 while only in 12 % reported more than 11 gm%. In our study , we found 28% mothers were with PIH , 14% oligohydraminous , 12% polyhydramnious , 5% multiple gestation, 2% tobacco chewers , 6% diabetes mellitus while 7% GDM. In our study , we reported 64 % mothers as registered ANC.

Conclusion: The results of this study highlight the need for better maternal care, awareness of the causes of congenital asphyxia in obstetricians, careful monitoring of contractions, diagnosis and appropriate action can help reduce the risk of congenital asphyxia.

Keywords : Birth asphyxia , PPH , Congenital anomalies , ANC

Introduction

Birth asphyxia is defined by the World Health Organization (WHO) as 'failure to initiate and support breathing at birth' [1]. It has a major impact on infant mortality worldwide [2,3,4,5], accounting for 24% of all newborns [3] and 11% of infant mortality [5]. Almost all asphyxia-related deaths (98%) occur during the first week of life [6]. About 75% of such deaths occur on the first day, and less than 2% after 72 h birth [5]. It is a leading cause of brain damage. In severe cases, it can damage brain cells and cause potentially fatal conditions, including hypoxic-ischemic encephalopathy, brain damage, autism, impaired attention span, disorientation, and cerebral palsy [7]. Survivors often experience lifelong health problems (80%), such as disability, developmental delays, disability, mental retardation, and behavioral problems [7,8]. In addition, congenital asphyxia places financial and emotional burdens on the families and communities involved.

Birth asphyxia is associated with a complex list of risk factors, ranging from industrialized and non-industrialized countries. With this objective present study was planned to study of risk factors in children with birth asphyxia in tertiary care hospital.

Methodology:

The present study was a prospective observational study conducted during last one year in our Department.

Inclusion criteria : Neonates born at AVBRH who needed resuscitation (*basic and/or**advanced) at birth.

Exclusion criteria : Neonates whose parents didn't give consent. & Neonates who needed only #Initial steps of resuscitation.

***Basic resuscitation:** Clearing airways, (suctioning if necessary), positioning the head and giving positive pressure ventilation via bag and mask.

****Advanced resuscitation:** Basic resuscitation (as above) plus endotracheal intubation, chest compression and epinephrine/volume administration as required.

Maternal obstetric history was taken which included the gravity, parity, abortions and living issues and was entered in the GPAL format.

• Gravida indicating the number of times a woman is or has been pregnant, regardless of the pregnancy outcome. A

current pregnancy, if any, is included in this count. Twin pregnancy was counted as 1

- Parity, or "para" indicating the number of pregnancies reaching viable gestational age (26-28 weeks in India). The number of fetuses does not determine the parity. Twin pregnancy carried to viable gestational age was counted as 1

- Abortus is the number of pregnancies that were lost for any reason, including induced abortions or miscarriages. Stillbirths were not included

- Living issues means number of live children the mother has at present.

Mother's ANC status i.e. booked/unbooked pregnancy was asked.

Socioeconomic status was taken according to the Modified Kuppuswamy Scale

History of maternal health conditions like pregnancy induced hypertension, eclampsia, polyhydramnios, oligohydramnios and gestational diabetes mellitus were asked for.

Sample Size: 100

Calculated using the formula below.

Sample size = $Z_{1-\alpha/2} p(1-p) / d^2$

The data were entered into EpiData software (version 3.1) and analyzed using SPSS software (version 24.0).

Results:

Table 1: Age wise distribution of mothers.

Age (In years)	Number of mothers	Percentage
<25	54	54
> 25	46	46

In our study, we reported 54 % mothers were with less than 25 years while 46% were more than 25 years.

Table 2: Distribution of neonates according to maternal socio-economic status

Maternal socio-economic status	Number of mothers	Percentage
Upper class	2	2
Middle class	63	63
Lower class	35	35

In our study, only 2% mothers were reported from upper class, 63% reported from middle class while 35 % were reported from lower class.

Table 3: Distribution of neonates according to mother's parity.

Mother's parity.	Number of mothers	Percentage
Primi	54	54
2 OR more	46	46

In our study , 54 % mothers were primi while 46% were with two or more gravida.

Table 4: Distribution of neonates according to mother's haemoglobin status.

Mother's haemoglobin status (gm%)	Number of mothers	Percentage
< 7	50	50
7-11	38	38
> 11	12	12

On the basis of mothers HB count , 50% mothers were with less than 7 , 38 % were 7 to 11 while only in 12 % reported more than 11 gm%.

Table 5: Distribution of maternal risk factors

Maternal risk factors	Number of mothers	Percentage
PIH	28	28
Oligohydramnios	14	14
Polyhydramnios	12	12
Multiple gestation	5	5
Tobacco chewing	2	2
Diabetes mellitus	6	6
GDM	7	7

In our study , we found 28% mothers were with PIH , 14% oligohydraminious , 12% polyhydramnious , 5% multiple gestation, 2% tobacco chewers , 6% diabetis mellitus while 7% GDM.

Table 6: Distribution of registration of status of mothers.

Registration of status of mothers	Number of mothers	Percentage
Booked	64	64
Non booked	36	36

In our study , we reported 64 % mothers as registered ANC.

Table 8: Distribution of neonates according to fetal factors.

Neonates according to fetal factors.	Number of mothers	Percentage
IUGR	29	29
Fetal distress	35	35
Prematurity	21	21
Congenital malformation	6	6
Breech/Malpresentation	2	2

On the basis of distribution of neonates according to fetal factors , 29% were IUGR, 35% fetal distress , 21 % prematurity , 6% congenital malformation , 2% with breech.

Table 9: Distribution of neonates according to birth weight.

Neonates according to birth weight.(KG)	Number of mothers	Percentage
<1.5	8	8
1.5 to 2.5	70	70
> 2.5	22	22

On the basis of weight distribution, only 8% were with less than 1.5 KG , while 70% reported weight in range 1.5 to 2. 5 kg while 22 % were with more than 2.5 KG.

Discussion:

Perinatal asphyxia, neonatal asphyxia or birth asphyxia is a health condition caused by a lack of oxygen in a newborn baby that lasts long enough at birth to cause physical damage, usually to the brain. Hypoxic damage can occur in many fetal organs (heart, lungs, liver, intestines, kidneys), but brain damage is the most common and probably the least likely to heal quickly or completely. In more specific cases, the baby will survive, but only with brain damage that appears to be a mental retardation, such as a delay in growth or mental retardation, or physical, such as respiratory illness.

The present study objective was planned to study of risk factors in children with birth asphyxia in tertiary care hospital. In our study, we reported 54 % mothers were with less than 25 years while 46% were more than 25 years. In our study, only 2% mothers were reported from upper class, 63% reported from middle class while 35 % were reported from lower class. In our study , 54 % mothers were primi while 46% were with two or more gravida. On the basis of mothers HB count , 50% mothers were with less than 7 , 38 % were 7 to 11 while only in 12 % reported more than 11 gm%. In our study , we found 28% mothers were with PIH , 14% oligohydraminious , 12% polyhydramnious , 5% multiple gestation, 2% tobacco chewers , 6% diabetis

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On the basis of distribution of neonates according to fetal factors, 29% were IUGR, 35% fetal distress, 21 % prematurity, 6% congenital malformation, 2% with breech. On the basis of weight distribution, only 8% were with less than 1.5 KG, while 70% reported weight in range 1.5 to 2.5 kg while 22 % were with more than 2.5 KG.

In a study by Nishant Yadav et al, the average age of mothers was 24.28 years ranging from 20 to 29 years. Most people were from the middle class and above the low level according to the Kuppuswamy Transformed rate. 51% of newborns are born to new mothers. Anemia was more common in mothers of newborns who needed rehabilitation. Risk factors for newborn mothers in need of rehabilitation are PIH (23.7%), oligohydramnios (15%), multiple pregnancies (3.75%), PROM (2.5%), diabetes (2.5%) and UTI (2.5 %). a third of newborns in need of rehabilitation were born to unregistered mothers. On newborn infants in need of rehabilitation, the ratio of male and female was 1: 1. The fetal characteristics associated with neonatal regeneration were IUGR (33.75%), fetal depression (31.25%), premature (26.25%), MAS (12.5%) and misalignment (5%).

Nadeem et al reported, a total of 426 newborns (213 cases and 213 controls) were registered. In the cases, there were 132 males and 81 females while 115 males and 98 females were in the control group ($P = 0.09$). The majority of 132 mothers (62%) of cases were uncommon compared with 110 (52%) mothers who were able to control. Differences in maternal equality and control mothers ($P = 0.03$) were significant. Long-term birth was observed in 123 cases (58%) compared with 55 controls (26%) ($P = 0.001$) while fetal stress was diagnosed in 120 cases (56%) and 45 controls (21%) ($P = 0.001$). Meconium was detected in amniotic fluid in 171 cases (80%) and 86 controls (40%) ($P = 0.001$). All other risk factors appeared to be insignificant between cases and controls ($P > 0.05$). He concluded that meconium stained liquor is a major risk factor for the birth of asphyxia. Prolonged obstruction for more than 24 hours, as well as fetal depression, is also a major risk factor for perinatal asphyxia. Involving obstetricians in current research provides reliability and reproduction of collected data.¹⁰

Conclusion:

Birth asphyxia is still prevalent in the study program. Primigravida, prolonged miscarriage, premature birth, and nomama 35-year-old mother meconium stained amniotic

fluid and strong nuchal cord have contributed to birth defects such as asphyxia. The results of this study highlight the need for better maternal care, awareness of the causes of congenital asphyxia in obstetricians, careful monitoring of contractions, diagnosis and appropriate action can help reduce the risk of congenital asphyxia.

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