Original Article

Determine the Risk Factors for Pre-Term Birth and Fetomaternal Outcome ⌾

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ABSTRACT

Introduction: Preterm birth is a major cost of perinatal mortality and long-term disability. Preterm is defined as one where labour starts before 37 completed weeks (259 days) counting from the first day of the last menstrual period. It can be associated with a stressful life situation, factors like multiple pregnancies are the major cost of preterm birth. Medical reasons like high blood pressure, pre-eclampsia maternal diabetes, asthma, thyroid diseases and heart disease increase the risk of preterm birth. Also, the consumption of tobacco, cocaine, and alcohol during pregnancy is the cost of preterm birth. Aim of the study: The study aimed to determine the risk, factors for pre-term birth and fetomaternal outcome. Methods: it study is to determine the risk factor of preterm birth and fetomaternal outcome. Result: Most of the mother's (61,61.0%) ages ranged from twenty-one to thirty. The majority of the mothers (62,62%) had multipara. Fifty-one mothers (51,51%) had a normal vaginal delivery & forty-nine mothers (49,49.0%) underwent caesarean section. Infection was the most prevalent maternal complication, present in fifty-three mothers (53,53.0%). Urinary tract infection (UTI) (30,30.0%) had the second highest prevalence. More than half of the neonates' (52.0%) birth weight belonged to 1600-2400gm. Among the ninety-nine neonates born alive in the present study, thirty-five neonates (35,35.0%) had respiratory distress syndrome, and thirty-three neonates had (33.33.0%) sepsis. Neonatal death was 61%, and the most common cause of neonatal death was septicemia. Conclusion: The study is for preterm birth risk factors and fetomaternal outcomes. Maximum patients of preterm birth were from the lower middle socioeconomic position.

Keywords: premature birth, preterm birth, preterm labour, risk factor, fetomaternal

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INTRODUCTION

Premature birth is a major cause of perinatal mortality and long-term disability. According to the world health organization, premature birth is the direct cause of 24% of neonatal deaths. In the United States, the premature birth rate is 40 to 50% [1]. Bangladesh has more than 26,100 people who died from preterm birth. Preterm labour is defined as one where labour starts before 37 completed weeks (259 days) counting from the first day of the last menstrual period. More than 85% of the baby born from 32 to 37 are aged [2]. it is characterized by cervical effacement and/or dilatation and increased uterine irritability before 37 weeks of gestation [3]. Preterm birth occurs in 5% to 10% of all pregnancies and is the most common cause of perinatal morbidity, and mortality in the world [4]. Premature birth has an enormous burden on the healthcare system. Recent evidence suggests that early identification of at-risk gravidas with a timely referral for sub-specialized obstetrical care may help identify women at risk for preterm labour and delivery and decrease the extreme prematurity (<32 WK) [4]. Preterm labour and birth can be associated with stressful life situations. Factors like multiple pregnancies are significant for preterm birth. Maternal medical reasons like high blood pressure, pre-eclampsia maternal diabetes, asthma, thyroid diseases, and heart disease increase the risk of preterm birth [5]. Also, the Consumption of tobacco, cocaine, and alcohol during pregnancy increases the chance of preterm delivery [6]. Mode of delivery is a major concern in preterm birth. The mode of delivery depends on obstetric indications, the severity of maternal diseases, and the facility of the hospital. Some studies showed a significant beneficial effect of cesarean delivery on the neonatal outcome, either mortality or psychomotor outcomes [7,8]. The most common causes are haemorrhage and infectious morbidities [9]. Limited studies are evaluating the association between mode of delivery and maternal and neonatal outcome in preterm birth [3]. The worldwide preterm birth, the range is 7-16% [10]. Risk factors for preterm deliveries include maternal age under 17 years or more than 35 years, low socioeconomic status, and low birth weight. In our country, most pregnant women have poor health conditions and stressful life situations like domestic violence, food insecurity, and the home environment. For preterm birth, babies face breathing problems, and brain problems this problem are the short effect of preterm labour [11]. modern delivery is a major concern of preterm birth. The mode of delivery depends on obstetric indications, the severity of maternal diseases, and the facility of the hospital [7]. The recommendation of a mode of delivery in preterm birth remained a controversial part. Some studies showed a significant beneficial effect of cesarean delivery on the neonatal outcome, either mortality or psychomotor outcomes [8]. In the long term, preterm birth affects the baby. They face cerebral palsy, mental retardation, visual and hearing impairment, and poor health and growth [11]. So, it is a major issue in the world also in developing countries like

Bangladesh. However, limited studies are evaluating the association between mode of delivery and maternal and neonatal outcome in preterm birth[4]. The purpose of this study is to evaluate the maternal and neonatal outcomes in preterm labour.

OBJECTIVE

General Objective

- To determine the risk, factors for pre-term birth and fetomaternal outcome in Chittagong medical college and hospital

Specific Objectives

- To detect the risk factors associated with pre-term birth.
- To detect the mode of delivery in case of preterm birth.
- To find out the fetal morbidity and mortality of preterm birth.
- To find out maternal complications related to preterm birth.

METHODS

This cross-sectional study was carried out at the Department of Obstetrics and Gynecology, Chittagong Medical College Hospital, Bangladesh. The study duration was 6 months, from January to June of 2015. The purposive sampling method was used. A total of 100 women were enrolled in the hospital. Informed verbal consent was attained from the participants before collecting data. Ethical clearance was also taken from the ethical review committee of the study hospital. Data were collected by

interview, physical & lab examination using a structured questionnaire containing all the variables of interest. A pre-designed questionnaire was used for data collection.

Inclusion Criteria

- Delivered at Gestational age of 32-37 weeks
- Patients who had approved to participate in the study.

Exclusion Criteria

- Induced preterm labour in any cases like eclampsia, APH.
- Preterm labour with Intrauterine foetal death
- Multiple births (twins, triplets)
- Gestational age of <32 weeks
- Unable to answer the question.
- Exclude those affected with other chronic diseases.

Data analysis:

The study coordinators performed random checks to verify data collection processes. Completed data forms were reviewed, edited, and processed for computer data entry. Frequencies, percentages, and cross-tabulations were used for descriptive analysis. $\chi 2$ test was used to analyze statistical significance. The data analysis was performed using Statistical Package for the Social Sciences (SPSS) Version 25.0. The significance level of 0.05 was considered for all tests.

RESULT

Among the study population (N=100), most of the mother's (61,61.0%) ages ranged from twenty-one to thirty &

mean age of the mothers was 23.6±4.4. Most of the mothers (39,39.0%) were from the gestational age of 34 weeks. The mean gestational age was found to be 33.9 ± 1.0 weeks with a range from 32 to 36 weeks. Around three-forth of the study population's (75,75.0%) monthly income was less than ten thousand. For thirty-eight mothers (38,38.0%), this was their first childbirth, while the remaining sixty-two mothers (62,62%) were multipara. The regular antenatal check-up was observed in fifty-six mothers (56,56.0%) & three mothers (3,3%) did not receive any form of check-up. Fifty-one mothers (51,51%) had a normal vaginal delivery & forty-nine mothers (49,49.0%) underwent caesarean section **[Table 1]**. Infection was the most prevalent maternal complication, present in fifty-three mothers (53,53.0%). Urinary tract infection (UTI) (30,30.0%) had the second highest prevalence, and twenty-one mothers (21,21.0% had bacterial vaginosis, seventeen mothers (17,17.0%) had pre-eclampsia. Multiple pregnancies, diabetes, and hypertension were also among the other complications **[Table 2]**. Less than half of the study neonates (48,48.0%) birth weight belonged to 1000-1500 gm. It was observed that the APGAR score was <4 at 1 minute in eight neonates (8,8.0%), and APGAR scores 4-6 at 1 minute in ninety-two neonates (92,92.0%). After 5 minutes APGAR score found <4 in six neonates (6,6.0%), 4-6 in eighty-nine (89,89.0%) neonates and >7 in five neonates (5,5.0%), majority of the neonates (61,61.0%) had an early death, thirty-eight

neonates (38,38.0%) took home alive and stillbirth occurred in one neonate (1,1.0%) **[Table 3]**. The majority of the newborns (99,99.0%) needed resuscitation, and one neonate (1,1.0%) did not need any resuscitation **[Table 4]**. Among the ninety-nine neonates born alive at the present study, thirty-five neonates (35,35.0%) had respiratory distress syndrome, thirty-three neonates had (33.33.0%) sepsis, ten neonates (10,10.0% had meconium aspiration syndrome, five neonates (5,5.0%) had jaundice and three neonates (3,3.0%) had birth asphyxia, thirteen neonates (13,13%) had no complications **[Table 5]**. Among the neonatal death (n=61), almost half of the neonates (30,49.2%) died of septicemia, nineteen neonates (19,31.1%) died of respiratory distress syndrome, three neonates (3,4.9%) died of DIC and two neonates (2,3.3%) died of birth asphyxia **[Table 6]**.

Table 1: Distribution of the study population based on Characteristics (N=100)

Characteristics	(N,%)
Age **Mean age:** 23.6 ± 4.4	
≤20	33,33.0%
21-30	61,61.0%
>30	6,6.0%
Gestational Age **Mean gestational age:** 33.9 ± 1.0	
32	12, 12.0%
33	20, 20.0%
34	39, 39.0%
35	26, 26.0%

36	3, 3.0%
Monthly Income	
>10000	75,75.0%
≤10000	25,25.0%
Parity	
Primiparas	38,38.0%
Multipara	62, 62.0%
Antenatal Check Up	
Regular	56,56.0%
Irregular	41,41.0%
Not received	3,3.0%
Mode of Delivery	
Normal Vaginal Delivery	51,51.0%
Caesarean Section	49,49.0%

Neonatal outcome	(N,%)
Birth weight (gm)	
1000-1500 gm	48,48.0%
1600-2400 gm	52,52.0%
Apgar scored at 1 minute	
<4	8,8.0%
4-6	92,92.0%
Apgar scored at 5 minute	
<4	6,6.0%
4-6	89,89.0%
≥7	5,5.0%
Take home alive	38,38.0%
Stillbirth	1,1.0%
Neonatal death	61,61.0%

Table 2: Distribution of the study population based on maternal complication (n=100)

Maternal Complications	(N, %)
Infection	53,53.0%
UTI	30,30.0%
Bacterial Vaginosis	21,21.0%
Diabetes Mellitus	8,8.0%
Pre-Eclampsia	17,17.0%
Multiple Pregnancy	9,9.0%
Gestational Hypertension	9, 9.0%
Heart Disease	3, 3.0%
Congenital Malformation of Uterus	2,2.0%
Thyroid Disease	1,1.0%
Smoking Habit	8,8.0%

Table 3: Distribution of the study neonate by cause of early neonatal outcome (n=100)

Table 4: Distribution of the neonates based on resuscitation needed (n=100)

Resuscitation **need**	(N,%)
Admission	99,99.0%
Not resuscitation needed	1,1.0%

Table 5: Distribution of neonates by perinatal complication (n=99)

Perinatal Complication	(N, %)
Respiratory Distress Syndrome	35, 35.35%
Sepsis	33, 33.33%
Meconium Aspiration Syndrome	10, 10.10%
Jaundice	5, 5.05%
Birth Asphyxia	3, 3.03%

| No Complication | 13, 13.13% |

Table 6: Distribution of the study neonate by cause of early neonatal death (n=61)

Cause of early neonatal death	(N,%)
Septicemia	30,49.2%
Respiratory distress syndrome	19,31.1%
Meconium aspiration	7, 11.5%
DIC	3, 4.9%
Birth asphyxia	2, 3.3%

DISCUSSION

Pregnancy is commonly referred to as a naturally occurring life transition or health event to motivate mothers to adopt risk-reducing health behaviours [12]. Premature birth was the leading cause of death in the early month of life and it also was a factor in greater than 75% of early deaths in the neonatal period [13]. The present study was conducted to observe risk factors associated with preterm birth and fetomaternal outcome. In this current study, it was observed that the majority (61.0%) of patients belonged to the age group of 21-30 years. Similar mean age was also obtained by another author [11,14,15]. Another study found that the predominant age group were 20—34 years of the patients in preterm labour [15,16]. Another relevant study carried out in Muscat, Oman showed a median age of 30 years, with the age of the participants ranging from 18-42 years [17]. The present analysis showed that 39.0% of patients were gestational age of 34 weeks. The mean gestational age was found 33.9 ± 1.0 weeks with a range from 32 to 36 weeks. Another article found gestational age is 25 to 35 weeks of gestation and that 5.0% of cases had a pregnancy duration of 32 to 34 weeks [11]. In this series, it was observed that three fourth (75.0%) of the patients came from > 10,000 BDT monthly income. This current study found that more than half of the patients (56.0%) did recurrently antenatal checks up., 41% were irregular and the remaining 3% did not receive any form of check-ups. A specific antenatal check-up is expected to be a vital factor in inhibiting preterm birth. Antenatal screening also has a positive impact on identifying some pregnancy impediments and this can initiate the benefit of perinatal treatment to develop the outcomes and prognosis for preterm infants [18]. In Bangladesh, 90% of mothers do not get regular antenatal check-ups [19]. The present study found that about half of the patients (51.0%) underwent normal vaginal delivery and 49.0% of mothers experienced caesarean section. An article mentioned that cesarean delivery is associated with more respiratory distress syndrome highlighting the uncertainty of the premise that cesarean deliveries provide a benefit for all preterm neonates [15]. Cesarean deliveries are associated with increased short-term and long-term risk for the mother. Another study suggested that caesarean birth in the other phase of term labour is related to an increased warning of later impulsive preterm birth, whereas cesarian birth in prompt labour is related to subsequent medically indicated preterm birth, associated with vaginal birth[20]. More

than half of the participants (53%) had some form of infection, such as urinary tract infection observed in 30% of the participants, and bacterial vaginosis in 21%. Smoking habit was identified in 8% of the participants. An article revealed that severe maternal difficulties accompany haemorrhage, infection, intensive care unit admission, or death [21]. The current study observed that around half of the newborn (52.0%) weight is 1600-2400 gm. A study showed a similar result where birth weights of preterm babies were <2.4 kg. APGAR scores 4-6 at 1 minute in ninety-two neonates (92,92.0%) [22]. After 5 minutes APGAR score found 4-6 in eighty-nine (89,89.0%) neonates. sultana shows that the APGAR score at 1 minute found in 68.0% of the newborn belongs to <7 and 5 minutes in 16.0% on her study [23]. This current analysis showed that among neonates, 1 was a stillbirth, 61 had newborn death, and only 38% were alive while they were free from the hospital. Perinatal death was high in our study, in contrast with the study conducted in Nepal, where perinatal death occurred in 1.46% of the participants [24]. In this recent study, some perinatal complications were detected such as respiratory distress syndrome (35.35%), sepsis (33.33%), meconium aspiration syndrome (10.10%), jaundice (5.05%) and birth asphyxia. Only 13.13% of the neonates had no perinatal complications. Among the 61 neonates who died during a hospital stay, the foremost cause of death was septicemia, respiratory distress syndrome, meconium aspiration, disseminated intravascular coagulation and birth asphyxia. The maximum common reason for perinatal death was septicemia, followed by respiratory distress syndrome. Another relevant analysis suggested that late preterm neonates were at high risk for feeding difficulty, jaundice, hypoglycemia, temperature instability, apnea and respiratory diseases [25]. A group of newborns will develop multiple acute diseases or an adverse outcome. Necessary steps should be taken by the authority to lessen neonatal death all over the country.

CONCLUSION

The study was undertaken to determine the risk factor for pre-term birth and the fetomaternal outcome. The majority of the patient was in the 3rd decade, and the majority of those who had premature labour came from the lower middle socioeconomic position. The most common risk factor for preterm labour was preeclampsia, preterm rupture of membranes, and H/O preterm labour. Respiratory distress syndrome, sepsis and lower birth weight are all linked to lower birth weight .6 predominant and neonatal death was 61.0%.

RECOMMENDATION

Public health efforts in Bangladesh should discourse the urgency for the progression of the educational status of the mother. Government should certify regular antenatal check-ups. There is a requirement for setting a screening docket to cover all age groups for prompt revealing and treatment of cases and to develop a consciousness of

pregnant mothers who are at high risk for preterm labour. To get vigorous data, multicenter lessons are of great urgency for policymakers to understand the demonstrable scenario and to take necessary steps toward alleviating this problem.

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