Obstetric Outcome and its Relationship with Mode of Delivery in Preterm Labour- A Study of 86 Patients in Combined Military Hospital, Dhaka

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ABSTRACT

Background: Caesarean section in preterm pregnancy may add further pressure to the already existing poorly developed facilities for intensive perinatal care in low resource countries. The objective of the study was to determine the feto-maternal outcome and its relationship with mode of delivery in preterm labour.

Methods: This was a descriptive type of cross-sectional study conducted at Department of Obstetrics and Gynecology, Combined Military Hospital (CMH), Dhaka, during March to August 20l8. The study population was total eighty-six patients having 28 to 36 weeks of gestation who were admitted in the above department and were in labour. Data were edited and analyzed by using computer-based software, statistical package for social sciences (SPSS) version 20.0.

Results: Majority of the patients belonged to 26-30 years age group and were from low socioeconomic family (71.4 to 72.7) % and had below average nutritional status (88.1 to 93.2) %. The mean gestational age was 31 weeks and 35 weeks. Nulliparous (77.3 to 85.7) % and patients taking irregular antenatal check-up (69.0 to 72.8) % were predominant. About (59.1 to 66.7) % patients had vaginal delivery and (33.3 to 40.9) % patients had undergone caesarean section. Maternal morbidity was more in caesarean section (37.5%) than vaginal delivery (33.3%). Live birth babies were found 100% in caesarean section and 94.4% in vaginal delivery and among them 95.7% were from group I and 97.6% were from group ll. Perinatal mortality was higher in vaginal delivery than caesarean section (7.40% vs 2.7%) and also higher in group I than group ll (8.3% vs 2.3%). But late perinatal complications were more in caesarean section (47.2%) than vaginal delivery (45.1%) baby, and majority (60%) of them were from group l.

Conclusion: Preterm pregnancy when leads to an early delivery, brings a grave consequence for both the mother and foetus. After birth, the premature newborn is at risk for complications related to incomplete development of its organ system. Caesarean section delivery in preterm labour improves foetal outcome to some extent, but not significantly, and leads the mother to more maternal morbidity. Perinatal mortality and morbidity is also inversely related to the gestational age at the time of delivery, in preterm labour - more the gestational age, less the perinatal mortality and morbidity.

Keywords: Mode of delivery, Puerperal complication, APGAR score, Neonatal resuscitation and Perinatal period conditions

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INTRODUCTION

One of the main causes of perinatal mortality and long-term impairment is premature delivery.[1-2] The newborn weight at delivery and gestational age has an inverse relationship with the likelihood of a poor outcome. It's one of the clinical occurrences that can make a healthy pregnancy dangerous for both the mother and the developing child.[3] When labor begins earlier than 37 completed weeks (259 days), counting from the first day of the last menstrual cycle, it is referred to as preterm labor. It is characterized by cervical effacement and /or dilatation and increased uterine irritability before 37 weeks of gestation.[4]

Preterm birth is the most prevalent cause of perinatal morbidity and mortality worldwide, accounting for 5% to 10% of pregnancies. Low birth weight, sepsis, and respiratory distress syndrome are the main causes of preterm birth.[2,5] The provision of treatment for preterm neonates with bad outcomes places a significant strain on the healthcare system.[6] According to recent research, women who are at risk of preterm labor and delivery may be identified and their extreme prematurity (<32 weeks) rate may be lowered, which would lower the morbidity, mortality, and costs related to prematurity. This would allow for the timely referral of at-risk gravidas for subspecialized obstetrical care.[7]

Premature newborns have significant rates of morbidity and mortality (80% of all perinatal deaths in particular situation). The synthesis of alveolar surfactant starts between weeks thirty and thirty-two. Preterm babies born before 30 weeks are therefore most at danger.[8]

One of the main concerns in modern obstetrics about preterm birth is the technique of delivery. The type of birth is determined by the hospital's facilities, maternal illness severity, and obstetric indications. The recommended delivery method for preterm births is still up for debate and lacks clear guidelines. According to certain research, cesarean deliveries significantly reduce the risk of newborn mortality.9-10 According to other research, the technique of delivery had very little effect on mortality or psychomotor outcomes in neonates.[11-12] Although there may be benefits for the fetus from cesarean birth, there are more risks for the mother after the procedure. The most frequent reasons were infectious morbidity and bleeding.[13]

Bangladesh is a developing country. Here preterm labour is considered as a health hazard both for mother and child. Most of our pregnant women have a poor health condition. They are also prone to develop infection and there by susceptible to various morbidities even to modality (e.g. puerperal sepsis, Chorioamnionitis etc.). So inadequate obstetric care at the time of delivery further magnifies the problem. Few research has investigated the relationship between the mode of delivery and the outcomes for the mother and the newborn in preterm birth. The purpose of this study was to determine the feto-maternal outcome and to find out the relationship of maternal and neonatal outcomes with modes of delivery.

METERIALS AND METHODS

This was a descriptive type of cross-sectional study conducted at Department of Obstetrics and Gynaecology, Combined Military Hospital (CMH), Dhaka, during March to August 2013. Total study population was 86 patients (44 in group 1 and 42 in group ll) having 28 to 36 weeks of gestation, who were admitted in the above department and were in labour were enrolled in this study purposively. In perspective of our country, usually after 34 weeks of gestation better foetal outcome was

observed, so to get actual and detail foetal outcome results, study population was divided into two groups. Patients with 28 to 33 weeks gestation were in group I and 34 to 36 weeks gestation were in group ll.

The inclusion criteria were patient of more than 28 weeks duration but less than 37 completed weeks of gestation, patient's both primi-gravida and multi-gravida of 28 to 36 weeks gestation having vaginal or caesarean section delivery and patient who were in labour. The exclusion criteria were the patients whose labour started before 28 weeks of pregnancy, induced preterm labour in any cases like PlH, eclampsia, pre-eclampsia, APH, fetal IUGR, PROM etc and Preterm labour. Collected data were compiled and necessary calculations such as mean, standard deviation etc, and statistical analysis such as chi-square test, etc were performed using computer-based software, Statistical Package for Social Sciences (SPSS) version 23.0.

RESULTS

In this study, patients having 28 to 33 weeks gestation belonged to group I and 34 to 36 weeks gestation belonged to group II.

Table-I: Socio-demographic characteristic of the respondents (n=86)

	Group I n(%)	Group II n(%)	p-value
Age (Years)			
≤20	12(27.3)	9(21.4)	
21-25	14(31.8)	15(35.7)	
26-30	16(36.4)	18(42.9)	
>30	2(4.5)	0(0)	
Mean±SD Range (min-max)	24.91±4.65 (19-38)	24.82±3.81 (18-30)	0.913
Socio-economic condition			
Lower-income	32(72.7)	30(71.4)	0.893
Lower-middle	12(27.3)	12(28.6)	
Upper middle	0(0)	0(0)	

Table-I shows that the majority of patients were in the age group 26-30 years in both groups. The mean age was found 24.91+4.65 years in group I and 24.82+3.81 years in group ll and the difference was not statistically significant (p>0.05). In case of income almost three fourth (72.7% and 71.4%) of the patients came from lower-income group family in both groups respectively. The difference was not found statistically significant (p>0.05).

Table-II: Distribution of respondents by obstetric characteristics of the respondents (n=86)

	Group I n(%)	Group II n(%)	p-value
Nutritional status			
Average	2(4.5)	3(7.1)	0.606
Below average	42(95.5)	39(92.9)	
More than average	0(0)	0(0)	
Mean gestational age	31.73±1.19	35.0±0.7	<0.001
Parity			
Nulliparous	32(72.7)	34(81.0)	0.366
Para 1 or more	12(27.3)	8(19.0)	
Associated risk factor			
History of previous preterm delivery	5(11.36)	3(7.14)	-
Anemia	20(45.45)	15(35.71)	-
Twin pregnancy	4(9.09)	02(4.76)	-
Diabetes mellitus	6(13.63)	2(4.7)	-
UTI	9(20.45)	6(14.28)	-

It was observed from table-II that the majority 41(93.2%) in group I and 37(88.1%) in group ll patients had below average nutrition. The difference was not statistically significant (p>0.05). Mean gestational age was found 31.73+1.19 weeks in group I and 35.0+0.7 weeks in group ll and the difference was found statistically significant (p<0.05). Nulli para were predominant in both groups, which was 34(72.7%) in group I and 36(81.0%) in group ll and the difference was not statistically significant (p>0.05) between two groups.

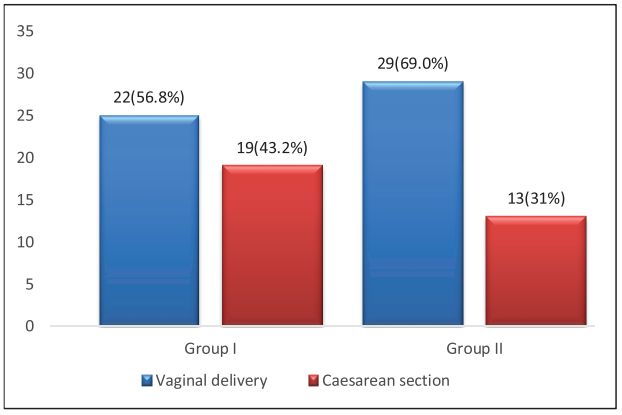

Fig-1: Distribution of the study patients by mode of delivery (n=86)

Fig-1 reveals that the majority of the patients had normal vaginal delivery in both groups, which was 22(56.8%) in group I and 29(69.0%) in group ll. Caesarean section was 19(43.2%) in group I and 13(31.0%) in group ll. The difference was not statistically significant (p=0.467) between the two groups.

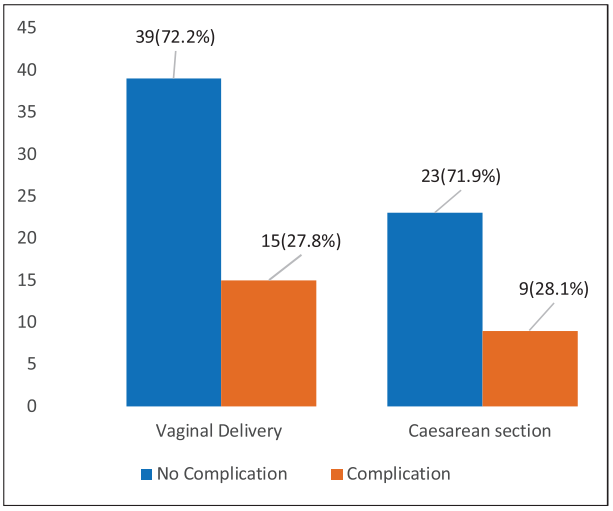

Fig-2: Distribution of the study patients by outcome of mother according to the mode of delivery (n=86)

Fig-2 shows outcome of mother, it was observed that 15(27.8%) patients developed complications in vaginal delivery group and 9(28.1%) developed in caesarean section group.

Table-III: Distribution of the study patients by early perinatal outcome according to the mode of delivery (n=86)

	Vaginal delivery (n=54)	Caesarean section (n=32)	p-value
Birth status			
Twin	02(3.7)	2(6.25)	0.051
Live birth	53(98.14)	32(100)	
Still birth	1(1.85)	0(0)	
Neonatal death	1(1.9)	1(3.13)	
Perinatal mortality	4(7.4)	1(3.13)	
APGAR score as 1foetus was still born			
At 1 min			
≤7	13(24.07)	06(18.75)	0.190
>7	44(81.5)	26(81.25)	
At 5 min			
≤7	4(7.4)	02(6.25)	0.001
>7	50(92.59)	30(93.75)	
Late perinatal outcome			
No complication	31(57.4)	17(53.3)	0.665
Complication	23(42.59)	15(46.17)	

Table-III depicts that live birth babies were found 53(98.14%) in vaginal delivery and 32(100.0%) in caesarean section. Still birth was found 1(1.85%) in vaginal delivery but not found in caesarean section. Early Perinatal death was found 4(7.4%) in vaginal delivery and 1(3.13%) in caesarean section. At 5 min APGAR score ≤7 was found in 4(7.4%) in vaginal delivery and 2(6.25%) in caesarean section. APGAR score at 5 min difference was statistically significant (p<0.05) between two groups.

Table-IV: Distribution of the respondents by late perinatal complications and hospital stay according to the mode of delivery (n=86)

	Vaginal delivery (n=54)	Caesarean section (n=32)	p-value
Complication			
Birth asphyxia	8(14.81)	2(6.25)	-
RDS	4(7.4)	5(15.6)	-
Umbilical sepsis	2(3.7)	0(0)	-
Pathological jaundice	5(9.3)	4(12.5)	-
Neonatal septicaemia	2(3.7)	2(6.25)	-
Neonatal convulsion	0(0)	2(6.25)	-
Hospital Stay			
≤3	49(90.7)	4(12.5)	0.001
>3	5(9.3)	28(87.5)	

Table-IV shows that among complications majority of the babies had birth asphyxia 8(14.81%) and pathological jaundice 5(9.3%) in vaginal delivery group and 4(12.5%) babies had complications due to IUGR and Respiratory Distress Syndrome (RDS) 5(15.6%) in caesarean section group. It was observed that in vaginal delivery group majority 49(90.7%) patients hospital stay <3 days and caesarean group majority 28(87.5%) patient's hospital stay >3 days. The difference was found statistically significant ($p<0.05$) between two groups.

DISCUSSION

This cross-sectional study was carried out to determine the feto-maternal outcome and relationship with mode of delivery in preterm labour of patient with 28-36 weeks gestation.

ln this current study it was observed that majority of the patients belonged to 26-30 years age in both groups, which were 34.1% and 40.5% respectively. The mean age was found 24.91+4.81 years in group I and 25.2+4.43 years in group ll. The mean age difference was not statistically significant ($p>0.05$) between two groups which is almost similar with the done by Werner et al. and Sonkusare et al.[14,15] On the other hand Sangkomkamhang et al. and Ghi et al. found the predominant age group 20-34 years of the patients in preterm labour.[16,17]

The majority of the patients in this study were found to be from the lower middle class (71.4% in group ll and 70.5% in group l). According to Basso et al. there is a slight increase in the chance of recurrence related with social degradation.[18] The risk of preterm delivery linked to moving from a rural to an urban municipality in the reference cohort.

In this present study it was observed that mean gestational age 31.73+1.19 weeks in group I and 35.0+0.7 weeks in group ll. A study conducted by Werner et al. was limited to women delivering vertex presentation, singleton neonates between 25 and 34 6/7 weeks of gestation.[14] Sangkomkamhang et al. analyzed data of preterm births with gestational age between 28 and 36 weeks.[16] In another study, Sonkusare et al. evaluate the perinatal outcome of premature babies between 30 to 35 weeks of gestation.[15]

In the present study, most (72.7% vs. 81.0%) of the patients were nulliparous. Almost similar results have been shown in many other studies reflecting the fact that preterm is more common among primi-gravid.[19-25]

The type of birth is determined by the hospital facilities, maternal illness severity, and obstetric indications. According to the study by Ghi et al. 45.8% of severely preterm babies had cesarean sections and 54.2% had vaginal deliveries, the mode of delivery has no bearing on the babies' prognosis.[17] In the current study it was found that normal vaginal delivery was 59.1% in group I and 66.7% in group ll. Rest 40.9% and 33.3% patients underwent caesarean section in group I and group ll respectively. The difference was not statistically significant ($p>0.05$) between two groups. According to the findings of Ghi et al. increased respiratory distress syndrome is linked to cesarean deliveries casts doubt on the idea that cesarean deliveries are beneficial for all preterm newborns.[17] A study conducted by Lydon-Rochelle et al. found that cesarean births are linked to an increase in the mother's short- and long-term risks, such as infection, bleeding, and subsequent surgical difficulties brought on by scarring.[26] However, there was no statistically significant benefit for preterm infants associated with cesarean birth as opposed to vaginal delivery in the Ghi et al. trial.[17]

According to research by Vimercati et al. and Malloy et al., the mode of delivery had very little effect on mortality or psychomotor outcomes in neonates.[11,12] Although there may be benefits for the fetus from cesarean birth, there are more risks for the mother after the procedure. The most frequent causes were infectious morbidity and bleeding.[14]

Live birth babies were found 98.14% in vaginal delivery group and all babies in caesarean section group. Still birth was found 1.85% in vaginal delivery group but not found caesarean section group. Neonatal death was found 1.9% in vaginal delivery and 3.31% in caesarean section group. APGAR score at 5 min difference was statistically significant ($p<0.05$) between two groups. In the group of babies delivered vaginally, 42.59% experienced complications, while 46.17% underwent cesarean sections. Among complication, majority 14.81% babies had birth asphyxia in vaginal delivery group and 6.25% in caesarean section group. Werner et al. and Sonkusare et al. also had almost similar APGAR score at 1 minute and at 5 minutes.[19,21]

It was observed that in vaginal delivery majority (90.7%) patients had hospital stay <3 days and in caesarean section, majority (87.5%) patients had hospital stay >3 days. The difference was statistically significant ($p<0.05$).

CONCLUSION

Bangladesh is a developing country. Here, preterm birth is considered as a health hazard for both mother and child. As preterm labour brings grave consequences for both the mother and foetus, prevention of it should be the aim. Optimum mode of delivery for preterm labour is a major concern in modern obstetrics. As caesarean section does not improve foetal outcome significantly and also increase maternal morbidity, so it will be wise not to recommend caesarean section routinely unless there are obstetric indications.

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