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Original Research Article

A Study of Perinatal Outcome in Women with Preterm Labour at a Tertiary Care Hospital

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Abstract

Introduction*:** Preterm labor is the leading cause of neonatal morbidity all over the world. Over the past two decades despite major preventive efforts, the incidence of preterm birth has remained constant at about 5-10% of live births. The etiology is often multifactorial and poorly understood. Neonatal complications which arise from preterm births are birth asphyxia, respiratory distress, low birth weight, infective neonatal hypoglycemia and neonatal death. With this background the present study was done to find out perinatal outcome in women presenting with preterm labour. ***Material and methods: The present study was a descriptive study conducted in the Department of Obstetrics and Gynaecology. 100 consecutive women presented with preterm labour between 28 to <37 weeks were included in the study after obtaining written informed consent. Mode of delivery and neonatal outcome were noted. Data were compiled and analyzed. ***Results:*** Majority of the women were between 20 to 35 years of age, Hindu, Literate, belonging to rural area, low socio-economic status, and had normal BMI. 60% women were primigravida. 65% women had gestational age ≥34 weeks. Mean weight of the babies in our study was 1.7 ± 0.4 Kg and mean APGAR score at 5 min was 7.02 ±1.03. 46% babies were admitted in NICU for various reasons and 12% babies had perinatal death. Most common reason for NICU admission was birth asphyxia (42%) followed by extreme prematurity (16%), septicemia (12%) and jaundice (11%). ***Conclusion:*** Appropriate and innovative preventive intervention, customized individuals need may prevent preterm births and improve neonatal outcomes.

Keywords: Preterm birth, neonatal outcome, perinatal morbidity, perinatal mortality.

INTRODUCTION

Preterm birth is still one of the biggest problems in obstetrics all over the world. Preterm birth is defined by WHO as any birth after the gestation of viability (20-28 weeks, depending on definition) and before 37 completed weeks of gestation or fewer than 259 days since the last day of menstrual period [1]. 60% of preterm birth occurs in developing countries such as Africa and South Asia and rest of the world contributes to 40% of preterm, hence having an impact globally [1]. Preterm labor is the leading cause of neonatal morbidity in developed as well as developing countries.

Over the past two decades despite major preventive efforts, the incidence of preterm birth has remained constant at about 5-10% of live births in developed and more in developing countries [2, 3]. It is estimated that 50 to 60% of preterm births occur following spontaneous labor, 30 % due to PROM and rest are iatrogenic termination for maternal or fetal benefit [4-6]. Though perinatal mortality in the UK has been fallen by two thirds over the last 30 years, the fall has been due to improved survival of preterm infants largely brought about by advance in neonatal care, but the incidence of preterm labour has not fallen significantly [7].

The etiology is often multifactorial and poorly understood. Contributory features include hormonal changes, uterine overdistension, cervical disease, infection/inflammation, uteroplacental ischemia/ hemorrhage, or immunologic pathology [8, 9]. Various predisposing factors for preterm birth include

increasing age, illiteracy, poverty and people living in the rural areas [10]. Neonatal complications which arise from preterm births are birth asphyxia, respiratory distress, low birth weight, infective neonatal hypoglycemia and neonatal death [11]. With this background the present study was done to find out perinatal outcome in women presenting with preterm labour.

MATERIAL AND METHODS

The present study was a prospective descriptive study conducted in the Department of Obstetrics and Gynaecology, S.M.S. Medical College Jaipur, Rajasthan over a period of 6 months from June 2019 onward. 100 consecutive women presented with preterm labour between 28 to <37 weeks were included in the study after obtaining written informed consent. Women with premature rupture of membrane, any associated medical disorders, congenital malformation of the foetus and intrauterine foetal death were excluded from the study. After examination of the women on admission they were managed and monitored and mode of delivery and neonatal outcome in terms of gender, APGAR at 5 minutes, birth weight, need for NICU admission, and perinatal death were noted. Data were compiled and statistically analyzed.

RESULTS

Socio-demographic profile of the women presented with preterm labour is shown in table 1. Majority of the women (85%) were between 20 to 35 years of age with mean age 23.5 ± 3.9 years. Maximum number of women were Hindu (89%), Literate (57%), belonging to rural area (54%), low socio-economic status (46%) and admitted as unbooked cases (53%). Majority of the women had their weight between 45 – 60 Kg (52%), height between 155 – 170 cm (49%) and normal BMI (73%). Mean weight, height and BMI were 58.3 ± 9.8Kg, 156.2 ± 5.9cm and 23.9 ± 3.5Kg/m^2 respectively.

Table 2 shows obstetric profile of the women. Majority of the women were primigravida (60%). 63% women were nulliparous. Mean gravidity and parity was 1.5 ± 0.7 and 1.3 ± 0.5 respectively. Past history of preterm delivery and abortion was present in 5 % and 4% women respectively and 3 % women had previous cesarean delivery. 65% women had gestational age 34 weeks or above. 77% women had none or inadequate ANC visit before admitting to the hospital. 96% women delivered vaginally.

Neonatal outcome is shown in table 3. 41% neonates were male and 59% were female. 72 % babies had birth weight 1.5 Kg or more. Mean weight of the babies in our study was 1.7 ± 0.4 Kg. 58% babies had APGAR score 7 or more at 5 minute. The mean APGAR score at 5 min in our study was 7.02 ±1.03. 46% babies were admitted in NICU for various reasons and 12% babies had perinatal death.

Table 4 shows various reasons for NICU admission. Most common indication was birth asphyxia (42%) followed by extreme prematurity (16%), septicemia (12%) and jaundice (11%).

Table-1: Socio-demographic profile of the women presented with preterm labour

Variables	Number	Percentage
Age		
<20	9	9
20-35	85	85
>35	6	6
Religion		
Hindu	89	89
Muslim	11	11
Residence		
Urban	46	46
Rural	54	54
Literacy status		
Literate	57	57
Illiterate	43	43
Socio-economic status		
Lower	46	46
Middle	29	29
Upper	25	25
Booking status		
Booked	47	47
Unbooked	53	53
Weight		
<45	12	12
45-60	52	52
>60	36	36
Height		
<155	47	47
155-170	49	49
>170	4	4
BMI		
18.5-24.9	73	73
25-29.9	14	14
>30	13	13

Table-2: Obstetric profile of the women

Obstetric profile	Number	Percentages
Gravidity		
Primigravida Mulltigravida	60 40	60 40
Parity		
Nullipara Primipara Multipara	63 26 11	63 26 11
Past h/o preterm delivery	5	5
Past h/o abortion	4	4
Past h/o cesarean delivery	3	3
Gestational age (weeks)		
<34 ≥34	35 65	35 65
No of ANC visit before admission		
None 1-3 ≥4	46 31 23	46 31 23
Present Mode of delivery		
Vaginal delivery Cesarean delivery	96 4	96 4

Table-3: Neonatal Outcome

Neonatal Outcome	Number	Percentage
Mode of delivery		
Vaginal Delivery Cesarean Delivery	96 4	96 4
Gender of the baby		
Male Female	41 59	41 59
Birth weight		
<1.0 1.0-1.5 1.5-2.0 >2.0	3 25 38 34	3 25 38 34
APGAR score		
<7 >7	42 58	42 58
NICU admission		
Yes No	46 54	46 54
Perinatal Mortality		
Yes No	12 88	12 88

Table-4: Reasons for NICU admission

Reasons for NICU admission	Number	Percentage
Extreme prematurity	16	16
Birth asphyxia	42	42
Jaundice	11	11
Septicemia	12	12
Convulsion	5	5
Hypoglycemia	7	7
RDS	10	10
Hypothermia	5	5

DISCUSSION

Preterm birth remains the leading cause of morbidity and mortality worldwide occurring in 7-11% of all deliveries [12]. Preterm births are influenced by many factors like maternal risk factors, pregnancy related complications, social and environmental factors.

In our study majority of the women (85%) were in the age group 20 to 35 years. Our results were consistent with results of various studies done in the past [13-16]. Extremes of maternal age play large role in preterm birth. In present study 9% of the women were below 20 years of age, and 6% above 35 years as shown in Table 1. Result of our study was comparable with that observed by Shetty MB *et al*. [15]. Mean age of the women in our study was 23.45 ± 3.9 years which was comparable to 23.7 ± 5.5 years observed by Goldenberg *et al*. [2]. In our study 47% women with preterm labour had height less than 155 cm. Percentage of the women having height <155 cm is much higher in our study than that observed by Smith GC *et al*. [13] and Alijahan *et al*. [17] in their study. Women who were living in urban areas during pregnancy have a slightly less chance to have preterm delivery. Our results were consistent with the results observed by Theresia B Temu *et al*. [18] but were in contrast with the results observed by H Xu *et al*. [19]. They observed that the incidence of preterm birth in urban areas was about 1.5 times that of rural areas. This was explained by them as the shift to an urban lifestyle leads to increased work pressure, a delay of child-delivering age, and increased adolescent pregnancy (early marriage) risk, which are all factors associated with high rates of preterm births [20]. 43% women in our study were illiterate i.e. had no formal education. Our results were consistent with the results observed by Wagura *et al*. [21] in their study. We observed that women with low socioeconomic status had more preterm deliveries. Our observation was consistent with study conducted by Purvi K Patel *et al*. [22] where low socio-economic status was found to be a significant risk factor. This might be attributed to the fact that low income women normally suffer from nutritional deficiency, insufficient health care, low education, drug abuse, cigarettes and alcohol consumption, domestic violence, and stressful life, all of them may cause preterm delivery [23].

In our study 73% women had normal BMI and 13% women had BMI more than 30 Kg/m^2. In the study done by Alijahan *et al*. [17], 50.5% women had normal BMI and 15.7% women had BMI more than 30 Kg/m^2. Similarly Leal CM *et al*. [16] in their study observed that 64% women had normal BMI, 20.5% had BMI between 25 to 29.9 Kg/m^2 and 6.7% had BMI >29.9 Km/ m^2.

We observed in our study that preterm birth was higher in primigravida than multigravida women (60% in primigravida v/s 40% in multigravida). Our results were comparable with the observation made by Ahankari A *et al*. [24] who observed that preterm delivery was more in primigravida, but in contrast with that observed by Alijahan *et al*. [17], Sonia Arogya *et al*. [25] and Shetty MB *et al*. [15]. Sonia Arogya *et al*. [25] study shows that multiparous women have higher chances at preterm delivery. History of prior preterm birth and abortion in women with preterm pregnancy in our study was lower than that observed by various previous studies [16-18,21] Only 3% women had prior cesarean delivery which was much lower than that observed by Leal CM *et al*. [16] and Alijahan *et al*. [17]. In our study 77% women with preterm labour had no or inadequate ANC visit before admission to the hospital. Percentage of the women with no or inadequate ANC visit in our study was much higher than that reported by Leal M C *et al.* [16].

Period of gestation is the most important determinant of postnatal outcome. Lesser the gestational age, worse would be the outcome [26]. In our study 65% women had gestational age of ≥34 and 35% had gestational age <34 weeks and this is consistent with the observation made by other studies done in the past [16, 19, 21, 22]. Singh U *et al*. [27] in their study reported that the maximum number of women (48.5%) was in gestational age grouping of 34-36 weeks. This could be due to the fact that with increasing gestational age there is more uterine distention which might stimulate the labour process. Mean Gestational age in our study was 33.8 ± 2.1 weeks which was comparable with mean gestational age observed by Akhter *et al*. [28] and more than mean gestational age of 30 ± 1.7 weeks observed by Dannapanenin *et al*. [29] in their study.

In our study 41% neonates were male and 59% were female, this mimics with the study done by Dannapanenin *et al*. [29] where 48% babies were male but in contrast to the previous studies done by various authors where majority of the neonates were female[19,26,30-31].

Perinatal morbidity and mortality is quite dependent on weight of the neonate at birth. In our study 72% neonates were > than 1.5 kg and 28% were < than 1.5 kg, this is consistent with previous studies done by various authors [26, 30]. Mean birth weight of the babies in our study was 1.7 ± 0.4 Kg which was less than mean weight observed by Akhter *et al*. [28] in their studies but more than that observed by Dannapaneni n *et al*. [29] in their study.

The optimal mode of delivery for preterm babies is controversial. In our study 96% women delivered vaginally and only 4 % women delivered by cesarean section. In practice however the rate of elective caesarean deliveries in preterm babies has markedly increased over the last decade but it has been observed in various studies that caesarean delivery did not enhance neonatal survival of preterm infants nor did it decrease the morbidity in these infants [26,32] Rate of cesarean section for preterm babies varied from 13.9% to as high as 61% as observed by various authors in their studies[17,18,21,26,33]. In our study 42% babies had APGAR score <7 at 5 minute and 58% babies had APGAR 7 or more. The mean APGAR score at 5 min in our study was 7.02 ±1.03 which was higher than that observed by Akhter *et al*. [28] in their study.

All over the world perinatal morbidity in preterm babies are observed frequently in developed as well as developing countries and preterm infants are more likely to be admitted to the Neonatal Intensive Care Unit as compared to term infants[34]. In our study 46% babies require neonatal admission which was lower than observed bu Akhtar *et al*. [28]. This difference could be because of difference in study design, local pediatric practice and relatively small sample size of our study. In our study various perinatal morbidities observed were birth asphyxia, extreme prematurity, neonatal jaundice, septicemia, convulsion, respiratory distress syndrome, neonatal hypoglycemia and hypothermia. Birth asphyxia was the commonest morbidity, 42% neonates had birth asphyxia. Extreme prematurity was the second commonest morbidity observed in this study (16%).12 % neonates developed septicemia. Akhtar *et al*. in [28] their study also observed that most common indication for NICU admission was RDS, Sepsis and Low birth weight. Nargis Iqbal *et al*. [26] in their study observed birth asphyxia, RDS and feeding difficulties to be the common indications for NICU admission.

Neonatal hypoglycemia is a common morbidity in preterm neonates as the result of an insufficient metabolic response to the abrupt loss of maternal glucose supply after birth. In our study, hypoglycemia was diagnosed in 7% neonates. This is similar with other study [30]. Hypoglycemia may be symptomatic or asymptomatic. Prolonged hypoglycemia may result in neurological impairment and death [26].

Neonatal jaundice is a common morbidity seen in preterm infants. This is due to the immaturity of the hepatic enzymes. In our study, 11% neonates had hyperbilirubinemia. Phototherapy was required in these neonates. Previous studies also showed similar trends [2, 26, 35]. Neonatal septicemia occurred in 12% babies. Our results were consistent with other studies [26, 30, 35]. Preterm infants have high neonatal mortality rate than term infants. Perinatal mortality in our study was 12% which was comparable to that observed by Dannapaneni n *et al*. [29]. Perinatal mortality in our study was lower than that observed by Akhter *et al*.[28] Vidyadhar B. Bangal *et al*. [20]

observed a very high perinatal mortality in their study (42.4%).

CONCLUSION

Preterm labour is a significant cause of perinatal mortality (12%) and morbidity (46%). Perinatal survival can be improved by improving health services and NICU care. Providing proper education, pre-conceptional counseling regarding family planning, nutrition, hygiene and antenatal care will significantly reduce the incidence of preterm birth. The use of tocolysis, steroids prophylaxis, and antibiotics, along with timely referral to tertiary care, reduces the neonatal morbidity and mortality. Appropriate and innovative preventive intervention, customized individuals need may prevent preterm births and improve neonatal outcomes.

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