Preterm Delivery Associated Risk Factor And Its Incidence

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Aims*: To analyse the risk factors and incidence of preterm delivery at Nepalgunj Medical College Teaching Hospital, Kolhapur.*
Method*: A retrospective study was conducted at Nepalgunj Medical College Teaching Hospital, Kohalpur. All consecutive patients were included for the study and data were collected from record book of labour room and discharge book from statistic department.*
Results: *Total no. of deliveries occurred in our hospital was 3956 during study period, overall incidence of preterm delivery was 512 accompolish (12.94%) total no. of delivery.). Incidence of preterm labour was more among primigravida 293(57.02%) as compared to less than 5ᵗʰ gravida 128 (38.7%) and >5ᵗʰ gravida 21 (4.1%). Most of the preterm delivery was occurred in nullipara contributes 315(61.5%) followed by multipara 192 (37.5%) and grand multipara 5(1%). 88.86% were idiopathic, 8.39 % IUFD related,7.42% were feto-maternal and multiple pregnancy , 11.52% abortion related.*
Conclusions: *Preterm delivery contributes 12.94% among the hospital deliveries in a teaching hospital. Preterm delivery was more common among primigravida and PIH .*
Keywords: *Preterm labour, IUFD, Neonatal outcome*

I. Introduction

According to Liu et al, per year, approximately 1.1 million neonates die from complication related with preterm delivery as estimated in 2010. (1)preterm delivery –according to WHO definition if delivery of a baby occurs prior to 37 complete WOG or delivery of baby prior to 259 days of gestation if regularly menstruating from the 1ˢᵗ day of last menstrual period or if a baby delivered more than 500 gm at birth (if <500 gm- abortus). Preterm delivery in recent years in increasing trends due to neonatal morbidities and maternal morbidities, outcome of assisted reproductive technique –induced preterm delivery. Spontaneous preterm delivery it's a major clinical challenge for obstetrician, reason behind this poorly understood its etiology and pathophysiology of preterm delivery. Overall incidence of preterm delivery worldwide found between 5-13%, even in developed country, like United States of America contributes 13% of preterm delivery [2, 3]. Now a day preterm survival in increasing trends due to improving neonatal care services, but again remain a bigger challenge for us to maintain or improve neurological development in preterm delivery. Despite of improving obstetric care worldwide In 4 decades incidence of preterm delivery remain same or in increasing trends and its lead more consumption of resources to manage its short term complication and long term complication(3). Making an effort to develop intrapartum management with antibiotic, corticosteroid, tocolytics, and postpartum improvement neonatal care facility, kangaroo mother care for preterm babies somehow improving neonatal outcome. Estimated by IOM of USA, approximately management of preterm birth cost contributes of a country 26.2 billion dollar of states or 51600 dollors / per preterm infant in a year (5). Incidence was contributes 13% but cost consumption contributes 60% of total spending cost of initial neonatal care (6, 7). The burden of prematurity and its related morbidity and mortality too high in Asia and Africa, approximately 85 % of preterm birth occurs in this region (31% in Africa and 54% in Asia) (8). Etiological factor for preterm birth include medical maternal condition like PIH, in neonate IUGR severe oligohydroamnions, genetic influence, environmental exposure, infertility related treatment, behavioural and socioeconomic factors and iatrogenic prematurity. (9). Burden of prematurity contains public health problem thinking of this, attempts to prevention preterm birth, frustrating and challenging job till date in public health. (10)MDG sets targets to reduce 50% of neonatal mortality by 2025. Actual data for neonatal morbidity and mortality lacking in developing country due to poor recording and reporting system like our country, this hospital data helps to analyse etiology of preterm delivery and intervening in these factor help to achieve MDG.

II.   Aims And Objectives

- To analyse the risk factor and incidence of preterm delivery in Nepalgunj Medical College Teaching Hospital, Kolhapur.
- To determine etiology of preterm delivery
- To determine neonatal outcome at time of birth
- Incidence of preterm delivery in primi gravida vs multi gravida
- Ethinicity associated relation with preterm delivery.

III.   Methods And Materials

This study was conducted in a Nepalgunj medical college teaching hospital, Kohalpur. All of 3956 patients who had delivered in our hospital during the study period of one year from 16th July 2016 to 15th july 2017 were included for the study. The study purpose was explained and verbal consent was obtained from study participants. According to WHO preterm babies were defined as those babies whose delivery occurred between gestational age 28 weeks and less than 37 completed weeks while term babies were those whose delivery occurred at or beyond a gestational age of 37 completed weeks but before 42 completed weeks.

Data collection was done by interview technique. Predesigned structured proforma was used for data collection. Data collected on maternal profile included maternal age, parity, antenatal care and health problems like antepartum hemorrhage, previous history of pre-term delivery and previous obstetric history.

IV.   Results

Total 3956 deliveries occurred during study period; out of them majority of deliveries were full term 3444 (87.05%), 512 (12.95%) were preterm. Hence the incidence of preterm delivery in the present study was 12.95%. Out of 512 cases of preterm labour, 286 (55.66%) cases were booked and 227 (44.34%) cases were unbooked cases. Age wise most of the women belongs to reproductive age group it means 351 (68.6%) followed by young mother it means < 20 yrs. Of age contributes 110 (21.5%) and least elder group 51 (105). Incidence of preterm labour was more among primigravida 293(57.02%) as compared to less than 5th gravida 128 (38.7%) and >5th gravida 21 (4.1%).

According to parity most of nullipara contributes 315(61.5%) followed by multipara 192 (37.5%) and grand multipara 5(1%). In relation to no. of birth most of them are singleton contributes 440 (85.9%) followed by twin 70 (13.7%) and triplet 2(0.45) are preterm delivery. Presentation wise most of them cephalic contributes 473 (92.4%) followed by breech 38 (7.4%) and transverse lie 1(0.2%). Condition at birth most of them was alive contributes 453 (88.5%) followed by dead 59(11.5%). According to birth weight of 1st baby low birth weight contributes 266 (52%) followed by appropriate for birth weight 166(32.4%), very low birth weight 56(10.9%) and extreme low birth weight 24(4.7%). In 2nd baby baby low birth weight contributes 54 (74%) followed by very low birth weight 9(12.3%), extreme low birth weight 6(8.2%) and appropriate for birth weight 4(5.5%). Out of 39 associated with identifiable risk factor for preterm delivery according to fetomaternal factors contributes eclampsia 13(33%) followed by APH 6 (15.4%), IUGR and placenta previa 4(10.3%) each, APH with placenta previa 2(5.1%) and completete placenta previa, oligohydroamnions and preeclamsia contributes 1(2.6%) each. Other pathology contributes total 18 among them previous c-section contributes 11(61.1%) followed by anencephaly 2 (11.1%) and antepartum haemorrhage, congenital anomaly, cord prolapse and preterm prelabour rupture of membrane each1(5.6%). In our study out of 512 preterm labour cases 64 (12.5%) women delivered by caesarean section while 448 (87.5%) women delivered vaginally. According to ethinicity developed by government of Nepal maximum no. of womens belongs to brahman/chhetri group 202(39.5%) followed by janjati 180(35.2%), dalit 84(16.45), others 27(5.3%) muslim 13(2.5%) and Madheshi 6(1.2%).

Table1. According to age incidence of preterm delivery (n=512)

Age group in years	Number	Percentage
<20 Yrs	110	21.5
20-30 Yrs	351	68.6
≥ 30 Yrs	51	10.0

Above table shows age of mother related with preterm birth. Age wise most of the women belongs to reproductive age group it means 351 (68.6%) followed by young mother it means < 20 yrs. Of age contributes 110 (21.5%) and least elder group 51 (105).

Table II. Gravida distribution of preterm delivery (n=512)

Gravida	Number	Percentage
Primi	293	57.2
<5 Gravida	198	38.7
≥5 Gravida	21	4.1

This table shows inncidence of preterm labour were more among primigravida 293(57.02%) as compared to less than 5th gravida 128 (38.7%) and >5th gravida 21 (4.1%).

Table III. Parity was distribution of preterm delivery (n=512)

Parity	Number	Percentage
Nullipara	315	61.5
<5 Parity	192	37.5
>=5 Parity	5	1.0

Above table shows most of them were nullipara contributes 315(61.5%) followed by multipara 192 (37.5%) and grand multipara 5(1%).

Figure1.given figure shows no. of birth in relation to preterm delivery. Most of them are singleton contributes 440 (85.9%) followed by twin 70 (13.7%) and triplet 2(0.45)

Figure2.figure below shows relation of presentation to preterm delivery, most of them cephalic contributes 473 (92.4%) followed by breech 38 (7.4%) and transverse lie 1(0.2%).

Figure3.in this figure shows condition of neonates at time of birth. Most of them were alive, contributes 453 (88%) followed by dead 59(12%).

Table IV. Birth weight of 1st baby delivered in preterm (n=512)

Birth weight in gram	Number	Percentage
<1000	24	4.7
1000-1500	56	10.9
1500-2500	266	52.0
>=2500	166	32.4

Most of them contributes low birth weight were 266 (52%) followed by appropriate for birth weight 166(32.4%), very low birth weight 56(10.9%) and extreme low birth weight 24(4.7%).

Table V. Birth weight of 2nd baby delivered in preterm (n=73)

Birth weight in gram	Number	Percentage
<1000	6	8.2
1000-1500	9	12.3
1500-2500	54	74.0
≥2500	4	5.5

Above table shows birth weight of 2nd baby in twin pregnancy. In 2nd baby baby low birth weight contributes 54 (74%) followed by very low birth weight 9(12.3%), extreme low birth weight 6(8.2%) and appropriate for birth weight 4(5.5%).

Figure3.figure given below shows feto maternal risk factor associated with preterm delivery. In identifiable risk factor, fetomaternal factors contributes eclampsia 13(33%) followed by APH 6 (15.4%), IUGR and placenta previa 4(10.3%) each, APH with placenta previa 2(5.1%) and completete placenta previa, oligohydroamnions and preeclamsia contributes 1(2.6%) each.
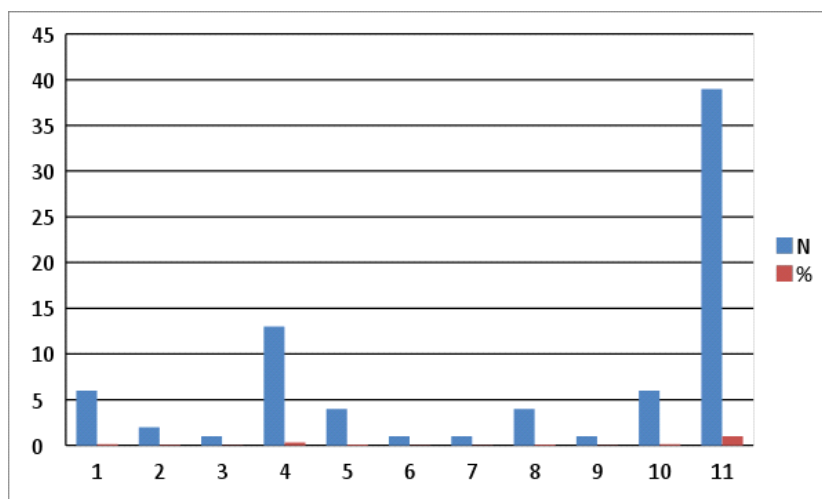

Figure 4 given pie diagram shows risk factor for preterm delivery associated with other pathology.in this figure shows previous c-section contributes 11(61.1%) followed by anencephaly 2 (11.1%) and antepartum haemorrhage, congenital anomaly, cord prolapse and preterm prelabour rupture of membrane each1(5.6%).

Table VI. ethnicity wise distribution (n=512)

Ethnicity group	Number	Percentage
Dalit	84	16.4
Janjati	180	35.2
Madhesi	6	1.2
Muslim	13	2.5
Brahaman/Chhetri	202	39.5
Other	27	5.3

Above table shows relation of ethinicity in relation of preterm. Maximum no. of womens were belongs to brahman/chhetri group 202(39.5%) followed by janjati 180(35.2%), dalit 84(16.45), others 27(5.3%) muslim 13(2.5%) and Madheshi 6(1.2%).

V.   Discussion

Preterm birth rates reflect the stark health disparities between developed and developing countries, like many other indicators in the area of maternal and perinatal health. Incidence of preterm labour reported in developing countries is 9-16%[11]. In our study the incidence of preterm labour was 12.95%. However Begum et al[12] reported the incidence as 23.3% in their study conducted in North India. Similar to present study, a hospital based study in Nigeria reported the incidence as 12% and the incidence reported in the United States was 12.8%.[13,14] As mentioned in Bulletin of WHO,5 approximately 45-50% preterm labors are idiopathic. In present study 88.86 % preterm labors were idiopathic. Compare to other studies little bit high in our study due to lack off facility of paraclinical method for diagnosis of identifiable risk factor demonstrated this association.[13,15,16] This may be due to the persistence of unidentified factors in some women precipitating preterm delivery. In present study maternal or fetal problems were important determinants of preterm labour; similar finding was observed in studies conducted in Nigeria and Brazil.[13,17]

VI.   Conclusion

Preterm delivery is a major problem in developing country like us and least tool to intervention to prevent and manage the consequences due to lack of recording and reporting system, fund and facility of neonatal care. This study helps to find out incidence of preterm delivery in developing country like Nepal and

one of the most induced preterm contributes maternal PIH which can be managed by early diagnosis early intervention to improve neonatal outcome. In our study most of the patients were primigravida, as it may cause psychological trauma to the mother.

VII. Recommendation

Further study required to analyse preventable and non-preventable risk factor for preterm delivery and develops another tool to manage preterm delivery by decreasing its incidence and also required improve neonatal care unit to manage preterm baby to decrease consequences related with preterm delivery. Autopsy and genetical analysis required in IUFD cases. Improvement of quality of ANC required. Make availability of men power to diagnose by paraclinical method and timely intervention is a key to decrease preterm related consequencies.

LIMITATION OF THE STUDY
Poorly educated patient poorly gives history, poorly investigated regarding risk factor and outcomes and limitation of paraclinical method difficult to conclude study.

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CONFLICT OF INTEREST
There is no conflict of interest

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