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ORIGINAL RESEARCH

Analysis of incidence of pre-term birth among known population

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Abstract
Background: The present study was conducted for analyzing incidence of pre-term birth among known population.
Materials & methods:108 control & 108 cases admitted in BMC Sagar who were satisfying the inclusion and exclusion criteria of the study were enrolled conveniently after their written informed consent. For Cases, patients of High-risk pregnancy were enrolled. For controls, Primigravida & Multigravida subjects with no risk pregnancy were enrolled. General physical examination and systemic, abdominal, and pelvic examinations were carried out. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.
Results: In our study, out of 108 control maximum patients occurred between the age group 18-25 years (34%) followed by the age group 26-30 (13%) and age group 31-35 (1%), and the age group 36-40 years (0%). Incidence of pre-term deliveries was 3.703 percent in the control group an was 7.407 in the high-risk pregnancy group.
Conclusion: Preterm is a significant health issue prevalent among a significant patient population. Addressing the burden of preterm birth is crucial for reducing preterm-related neonatal and child mortality.
Key words: Pre-term, high risk pregnancy, primigravida

Introduction

Premature births occur before the 37th week of pregnancy, though local variations exist in the low-gestational age cutoff that distinguishes them from spontaneous abortion. Preterm deliveries cause more than half of long-term morbidity and 75% of perinatal mortality. Preterm newborns are more prone to suffer from respiratory, gastrointestinal, and cognitive issues even though they often survive. Rising indicated preterm births are primarily responsible for the singleton preterm birth rate.[1- 3] Preterm premature rupture of the membranes, or PPROM, is a spontaneous rupture that happens less than 37 weeks into the pregnancy and at least one hour before labor begins. Even though the origin is usually unclear, asymptomatic intrauterine infection is typically preceded by membrane rupture.[4]

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A greater increase in the survival of preterm infants is seen in recent decades, mostly by timely interventions, antenatal administration of corticosteroids, better NICU care, and exogenous surfactant therapy but still prematurity is the leading cause of neonatal morbidity and mortality.Earlier is the preterm birth, greater is the risk of adverse outcomes; however, infants born late preterm still have considerable higher morbidity and mortality compared to infants born at term.Preterm labor can be spontaneous or iatrogenic where labor is induced due to medical, fetal, or obstetric indications. The etiology of preterm birth is multifactorial and it is affected by social, psychological, biological, and genetic factors.[5- 8] Hence; the present study was conducted for analyzing incidence of pre-term birth among known population.

Materials & methods

The present study was conducted for analyzing incidence of Pre-Term Birth among known population. 108 control & 108 casesadmitted in BMC Sagar who were satisfying the inclusion and exclusion criteria of the study were enrolled conveniently after their written informed consent. For Cases, patients of High-risk pregnancy were enrolled. For controls, Primigravida & Multigravida subjects with no risk pregnancy were enrolled. General physical examination and systemic, abdominal, and pelvic examinations were carried out. Investigations like complete blood count, sugar, liver function test including SGOT (AST), SGPT (ALT), alkaline phosphatase, renal function tests including serum urea, creatinine, uric acid, coagulation profile, serum TSH, LDH, obstetric USG, and routine microscopy were studied. Incidence of preterm birth was recorded. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results

In our study, out of 108 control maximum patients occurred between the age group 18-25 years (34%) followed by the age group 26-30 (13%) and age group 31-35 (1%), and the age group 36-40 years (0%). Out of 108 cases, the maximum number of patients occurred between the age group 18 years (31%) followed by the age group 26-30 (15%) and age group 31-35year (2%), and age group36-40 years (0.46%). The youngest age was 19years and the oldest age was 37 years. The majority of them reported no family history, in control 108(100 %) had no family history. In(high-risk) cases out of 108, 97(94.9%) had no family history while 11(10.18%) of them a had history of hypertension and twin delivery in their family. Incidence of pre-term deliveries was 3.703 percent in the control group an was 7.407 in the high-risk pregnancy group.

Table 01: Age Distribution

S. No.	Age Group	Control		High Risk Pregnancy	
		No.	Percentage	No.	Percentage
1	18-25	74	34.259	67	31.018
2	26-30	30	13.888	34	15.74
3	31-35	4	1.851	6	2.777
4	36-40	0	0	1	0.462

Table 2: Family History

S. No.	Family history	Control		High Risk Pregnancy	
		No.	Percentage	No.	Percentage
1	Hypertension	0	0	8	7.45
2	Twin	0	0	3	2.77

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Table 3: Incidence of pre-term

Pre-term	Control		High Risk Pregnancy		p-value
	No.	Percentage	No.	Percentage	
Present	8	3.703	16	7.407	0.001 (Significant)
Absent	100	96.297	92	92.593	
Total	108	100	108	100	

Discussion

Preterm birth (< 37 weeks of gestation) is one of the leading causes of neonatal morbidity and mortality and a significant public health burden. In Nepal, it is reported that around 81,000 newborns are born preterm every year. A study conducted by Lee and colleagues in 2010 reported 14% preterm births. Despite the increase in burden of preterm births worldwide, the data available from developing countries like Nepal is very scarce. In order to achieve the Sustainable Development Goal 3 target of reaching the neonatal mortality rate to 12 per 1000 live birth by 2030, it is critical to address the burden of preterm births.[7- 11] Hence; the present study was conducted for analyzing incidence of pre-term birth among known population.

In the present study, the youngest age was 19years and the oldest age was 37 years. The majority of them reported no family history, in control 108(100 %) had no family history. In(high-risk) cases out of 108, 97(94.9%) had no family history while 11(10.18%) of them a had history of hypertension and twin delivery in their family. Incidence of pre-term deliveries was 3.703 percent in the control group an was 7.407 in the high-risk pregnancy group.Reddy, K. M et al analyzed the incidence of preterm in a previous study. Of the 1243 deliveries during the study period, 135 births that occurred at <37 weeks were taken as cases and 248 term neonates were taken as control group. Data were collected retrospectively through review of prenatal and hospital delivery records.The prevalence rate of preterm birth was 10.86%. History of previous preterm birth (OR = 4.88, C.I: 1.50–15.87, P = 0.0084), previous LSCS (OR = 2.16, C.I: 1.36–3.44, P = 0.001), inter-pregnancy interval <12 months (OR = 2.78, C.I: 1.13–6.84, P = 0.026), hypertension (OR = 3.10, C.I: 1.78–5.42, P = 0.0001), PROM (OR =0.73, C.I: 2.36–9.49, P < 0.0001), Oligohydramnios (OR = 3.58, C.I: 1.29–9.9, P = 0.01), and multiple pregnancy (OR = 24.09, C.I: 3.09–187.46, P = 0.0024) were found to be significant risk factors for preterm birth. Though the NICU admission rate was high (52%), neonatal outcome was found to be satisfactory.[12]Gurung, A et al evaluated the incidence, risk factors and consequences of preterm birth in Nepal.The incidence of preterm was found to be 93 per 1000 live births. Mothers aged less than 20 years (aOR 1.26;1.15–1.39) had a high risk for preterm birth. Similarly, education of the mother was a significant predictor for preterm birth: illiterate mothers (aOR 1.41; 1.22–1.64), literate mothers (aOR 1.21; 1.08–1.35) and mothers having basic level of education (aOR 1.17; 1.07–1.27). Socio-demographic factors such as smoking (aOR 1.13; 1.01–1.26), use of polluted fuel (aOR 1.26; 1.17–1.35) and sex of baby (aOR 1.18; 1.11–1.26); obstetric factors such as nulliparity (aOR 1.33; 1.20–1.48), multiple delivery (aOR 6.63; 5.16–8.52), severe anemia during pregnancy (aOR 3.27; 2.21–4.84), antenatal visit during second trimester (aOR 1.13; 1.05–1.22) and third trimester (aOR 1.24; 1.12–1.38), < 4 antenatal visits during pregnancy (aOR 1.49; 1.38–1.61) were found to be significant risk factors of preterm birth. Preterm has a risk for pre-discharge mortality (10.60; 9.28–12.10).[12-14]

Conclusion

In conclusion, preterm birth remains a significant challenge contributing to neonatal morbidity and mortality, emphasizing the need for comprehensive strategies to address this issue. The study analyzed the incidence of preterm birth among a known population, highlighting the impact on both high-risk pregnancies and the general population.

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The findings underscore the multifactorial nature of preterm birth, with factors such as maternal age, family history, and high-risk pregnancies contributing to its occurrence. The study aligns with global efforts to understand and address the determinants of preterm birth, emphasizing the importance of tailored interventions for different risk groups.

Limitations

The study has several limitations. Firstly, being a single-center study, the generalizability of the findings to broader populations may be limited due to regional variations in healthcare practices and sociodemographic factors.

Secondly, the retrospective nature of the study, relying on historical data, introduces potential recall bias and may not capture the dynamic nature of certain risk factors accurately. Prospective studies with real-time data collection could provide more precise and reliable insights.

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