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Original Research Article

Epidemiology and Causes of Preterm Birth- A Retrospective Hospital Based Study

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Abstract:

Introduction: Prematurity or preterm birth is currently a major public health concern and is the leading cause of neonatal mortality. With advances in perinatal care over the last 20–30 years, more than 90% of preterm infants survive and enter adulthood. Still the risk factors for preterm births are numerous and understanding its epidemiology becomes imperative to prevent.

Materials and Methods: The study was retrospective in nature and the data were collected from Clinical records of Department of obstetrics and gynaecology of Virudhunagar Medical College and Hospital. All reported births prior to 37 weeks of gestation were included. Statistical analysis was done using SPSS software.

Results: Out of 4116 live births 243 were pre term births. Most common causes of preterm birth include anaemia, Preterm Premature Rupture of Membranes, genitourinary infections, hypertensive disorders of pregnancy.

Conclusion: In the current study the most common causes of preterm birth includes anaemia, PPROM, genitourinary infections, hypertensive disorders of pregnancy. Risk factors which are controllable need to be focused on for prevention.

Keywords: Epidemiology, Risk factors, Preterm birth, Virudhunagar.

Introduction

Preterm is defined as any birth before 37 completed weeks of gestation. [1] India is one of the countries with the highest frequency of preterm births. Asia and Sub-Saharan Africa account for more than 60% of the world's preterm babies. Premature neonates are more prone than term infants to suffer from long-term neurological and developmental issues. Thus, the medical and economic consequences of preterm birth are recognised not only during the perinatal and/or neonatal periods, but also throughout adulthood. [2]

Furthermore, research in this sector is limited in the developing countries, which bears the maximum burden. Consistent reporting of all pregnancy outcomes associated with this condition in varied clinical settings is crucial to the advance of understanding and monitoring of trends. [3] Globally, about 15 million preterm deliveries occur annually with a significant disproportionate burden on the developing countries. [4]

The identification of risk variables can provide insights into the causes of preterm birth and the implementation of risk-specific treatment. More precise data on epidemiology, maternal risk factors, and associated neonatal morbidity and death for a specific location or context may allow government health programmes to better target measures to minimise preterm birth and enhance perinatal outcomes. [2] The risk factors for preterm births are diverse, and understanding the epidemiology and risk factors is essential for prevention. The etiology of preterm birth is multifactorial and in majority, an idiopathic cause is still attributed. Hence the aim of the study is to identify various causes associated with preterm birth and its epidemiology.

Materials and Methods

The study was retrospective in nature and the data were collected from Clinical records of Department of obstetrics and gynaecology of Virudhunagar Medical College and Hospital from October 2021 to September 2022 after obtaining required permission. As the data were secondary in nature, Ethical Committee approval was waived off. After initial screening of data, all reported births prior to 37 weeks of gestation either by Last Menstrual period (LMP) or first trimester scan in case the dates were not known were included. A predesigned proforma was used to record information such as labor onset, delivery mode, baby weight, and complications. Data pertaining to Known congenital anomaly in the fetus and intra

uterine fetal demise, patients with incomplete records were excluded. Gestational age were classified into Very preterm (28-31weeks 6 days), Medium preterm (32-34 weeks 6 days) and Late Preterm (34-36 weeks 6 days). Person is considered anaemic as per the CDC guidelines [5], Blood pressure of more than 140/90mmHg was considered hypertensive. Spontaneous labor was defined as cervical dilatation of >3 centimetres and effacement of >80%. Statistical analysis was done using SPSS software version 20 (IBM, Chicago, IL). Descriptive statistics was used to find frequency and percentage of preterm births. Chi square test was used to find significant difference between the outcomes. P value <0.05 was set to be significant.

Results:

Total Deliveries during the study period were 4116. Out of the 4116 live births 243 preterm births were identified. The incidence rate of preterm birth was 5.9%. The risk factors of the preterm birth are given in Table 1.

Table 1: Risk factors of preterm birth given in frequency and percentage.

Risk factors	Categorical possible outcomes	No. of Preterm Births (%)	Chi square value	P value
Age in years at the time of delivery	< 20	19(7.8)	254.18	<0.001
	20-25	140(57.6)		
	26-30	63(25.9)		
	31-35	13(5.3)		
	>35	8(3.2)		
Level of education	Primary or Higher Secondary	197(81.6)	79.51	<0.001
	Graduation or more	46(18.93)		
Birth order	First	136(55.96)	264.14	<0.001
	Second	74(30.04)		
	Third	25(10.28)		
	Fourth	7(2.88)		
	Fifth	1(0.411)		
Period of gestation	28-31 weeks 6days	37(12.34)	100.07	<0.001
	32-33 weeks 6 days	52(21.39)		
	34-36 weeks 6 days	154(63.37)		
History of Ante Natal Care (ANC) visits	No visit	3(1.23)	122.54	<0.001
	Once	140(57.6)		
	>2 visits	100(41.15)		
History of Iron supplementation	No iron taken	144(59.2)	88.32	<0.001
	Taken for <60 days	74(30.45)		
	Taken for 60 – 100 days	25(10.28)		
Medical History	Hypertension	36 (14.8)	40.08	<0.001
	Fetal Growth Restriction (FGR)	14(5.76)		
	Anaemia	60(23.8)		
	Others	19(7.8)		
Obstetric Complications	PPROM (Preterm Premature Rupture Of Membranes)	48(19.7)	60.29	<0.001
	Malpresentation	11(4.52)		
	Antepartum Haemorrhage (APH)	6(2.46)		
	History of Previous preterm	12(4.93)		
	Others	37(15.22)		
Mode of Labor	Spontaneous	174(71.6)	161.21	<0.001
	Caesarean section	41(16.8)		
	Indicated Induction	28(11.52)		
Urogenital Infection	High vaginal swab	102(41.9)	26.84	<0.001
	Urinary Tract Infection (UTI)	98(40.3)		
	Sterile	43(17.69)		

Mode of Delivery	Vaginal	193(79.4)	398.69	<0.001
	Caesarean section	411(6.87)		
	Assisted	7(2.88)		
	Vaginal Birth after Caesarean section (VBAC)	2(0.82)		
Birth Weight	<1.5 Kg	52(21.3)	15.72	<0.001
	1.5 – 2 Kg	70(28.80)		
	>2Kg	121(49.79)		

Discussion:

The study was retrospective in nature and the data were collected from Clinical records of Department of obstetrics and gynaecology of Virudhunagar Medical College and Hospital. In the current study 49.7% of preterm births were more than 2 kg and was statistically significant.

Similar results were obtained from study done by Ke Manga Reddy et al. [6] Level of education plays a major role in preterm births. Higher the level of education lesser is the occurrence of preterm births probably because of awareness.

The current study results lies in agreement with it. Study done by Sabiri N et al [7] supports the finding. Most of the preterm births (57.6%) significantly had occurred in the mothers whose age lied in between 20-25 years. Similar results were seen in a study done by Ke Manga Reddy et al. [6] In contrary, a study done by Cavazos PA et al [8] showed that prevalence of preterm birth was more common in teenagers and >35 years of age.

Most of the preterm births of this study had occurred in late preterm (63.37%) similar to a study done by Brown et al [9] One of the obstetric complications, PPROM (Preterm Premature Rupture of Membranes) is major risk factor for preterm birth significantly (19.7%). Study of Goldenberg et al [10] shows the same. Mothers with high vaginal swab had increased frequency of preterm births significantly. Majority of the culture done predominantly were E.Coli, Candida albicans, Enterococcus feacalis, Klebsiella. Anaemia is a major risk factor for preterm births. Many literatures lie in agreement with this finding [11,12]. In the current study, significantly 23.8% of preterm babies' mothers were anaemic. The incidence rate of preterm birth was close to 6%. Incidence of 6 preterm births for every 100 births is alarmistic and is in the need of the hour to prevent. Most of the risk factors identified were controllable. Limitations of the study are that the data were collected from single place of interest. Future studies shall involve data collection from multicentric regions.

Conclusion:

In the current study the most common causes of preterm birth includes anaemia, PPROM, genitourinary infec-tions, hypertensive disorders of pregnancy. Many of the risk factors are identifiable and can be addressed with a specialized antenatal care, adolescent health education. Correction of anaemia, screening & prevention of genital infection and counselling are the need of the hour. Understanding the causes of preterm birth and their interrelationships might be valuable in the development of preventive and therapeutic methods to lessen the occurrence. To reduce the burden of prematurity, it is crucial to identify at-risk women, implement interventions, and manage obstetric complications effectively.

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