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Community Medicine

A CROSS-SECTIONAL STUDY ON PREVALENCE OF PRETERM BIRTH IN MEDICAL COLLEGE JHANSI (U.P.)

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ABSTRACT Preterm birth (PTB) is a leading cause of perinatal mortality and long term morbidity. Various maternal demographic, behavioral, and clinical characteristics have been associated with PTB. The present study was conducted to study the prevalence of preterm births and its association with socio-demographic variables. The study was conducted on pregnant female, belonging to reproductive age group (15-44 years) admitted in department of Gynaecology and Obstetrics. Study was carried out from January 2016 to April 2016, participants were selected randomly using the simple random technique. Data was entered in M.S Excel and analysed in Epi info 7.1.3.0 version. Chi-square test was used for comparison and statistical significance was taken at P value <0.05. In our study the prevalence of preterm birth was 22.5%. Preterm birth was more common in extreme of age, lower socioeconomic status, women residing in rural area and females with primary or illiterate education status.

KEYWORDS : Preterm birth, socio-demographic, reproductive age

INTRODUCTION

The World Health Organization defines preterm birth as birth before 37 completed weeks. Each year 15 million babies are born preterm worldwide. (1) South Asia and sub-Saharan Africa account for almost two thirds of the world's preterm babies. India is the biggest contributor to the world's prematurity burden. According to the WHO fact sheet 2013, India has 35,19,100 preterm birth. It is around 23.6% of the total 15 million world preterm birth. (2)

Preterm infant is further classified into three main categories: late preterm infant (infant born between 34-36 weeks), moderately preterm infant (infant born between 32-34 completed weeks) and very preterm infant (infant born before 32 completed weeks of gestation). Preterm birth is a major determinant of neonatal mortality, morbidity and childhood disability. Preterm birth (PTB) remains one of the most serious obstetric problems. PTB is recognized as a worldwide problem responsible for most of the neonatal deaths and a vast majority of neonatal morbidity in the surviving infants. (3,4)

Various maternal demographic, behavioral, and clinical characteristics have been associated with PTB including maternal race/ethnicity, maternal age at either extreme, cigarette smoking, low pre-pregnancy weight, psychosocial stress, previous preterm births, and maternal intrauterine infections. (5) In developing countries, the main causes of preterm births include infectious diseases and poor availability and accessibility of health care resources. In high-income countries, the increase in the number of preterm births is linked to conception among older women and increased number of multiple pregnancies as a result of usage of fertility drugs. In some developed countries, medically unnecessary inductions and caesarean section deliveries before full term also increase preterm birth rates. (6,1) The rationale for conducting the present study is to assess the prevalence preterm births and its association with socio-demographic determinants.

MATERIAL AND METHODS

This was a cross sectional study. The study was conducted under the department of Community medicine, Medical College, Jhansi, a tertiary care hospital. The study was conducted on the pregnant female, belonging to reproductive age group (15-44 years) admitted in department of Gynecology and Obstetrics. Study was carried out from January 2016 to April 2016. Preterm babies were defined as those babies whose delivery occurred between gestational age 28 weeks and 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. Gestational age was estimated by using the first day of the LMP or the first trimester ultrasonography.

The study was conducted to find out the prevalence of preterm births among pregnant females depending upon their age group, education strata, rural or urban background, occupation, socio-economic status. Socioeconomic Status was assessed using the Modified B. G. Prasad classification. The study was conducted on 200 pregnant females admitted under department of obstetrics. The females were selected using simple random sampling technique. Data was collected from the mothers on pre designed and pretested semi-structured questionnaire. Consent was taken from the mothers prior to study.

INCLUSION CRITERIA: Females in reproductive age group 15-44 years of age, those who gave informed consent were included in the study. Singleton pregnancy were included.

EXCLUSION CRITERIA: Females who have taken treatment for infertility were excluded from the study. Females who did not know their LMP or who did not had ultrasound in Ist trimester.

Sample size in the present study was calculated statistically on the basis of prevalence of preterm birth in India. The prevalence of preterm birth was found to be 13% (7) in India.

The sample size was calculated using the formula:

$n = 4pq/L^2$ (8), where

n= sample size,

p= proportion in the population processing the characteristic of interest.

L=absolute error

q = (1-p)

Considering 95% confidence interval, prevalence and taking "L", absolute error in the Estimate of "p" as 5%, the sample size was calculated to be 181. A total of 200 pregnant females were selected for the study.

***STATISTICAL ANALYSIS*:** The collected data was entered in M.S Excel and analysed in Epi info 7.1.3.0 version. Chi-square test was used for comparison and statistical significance was taken at *P* value <0.05.

RESULTS

In our study, majority of the mothers are in the age group of 20-24 years (45.50%) and 25- 29 years (32.50%). Most of study participant are Hindu (87%) in religion, belonging to general caste (58.50%), followed by OBC (26.50%). 55.50% of the study participants are residing in urban area. Majority of our study participants have completed their schooling till middle and high school 34.50% & 28.50% respectively. 66.50% of females are living in nuclear family and 93% of our study participants are housewife. Most of our study participants belong to IV and III socio-economic status 49.00% & 30.00% respectively. Of the total 45 (22.5%) of our study participants have delivered preterm baby.

Table 2 is showing the association of preterm births with

sociodemographic determinants.

Preterm births are more common in females belonging to the extremes of age, <19 and more than 30 years of age and it is found to be statistically significant with p-value 0.038. Preterm birth is more prevalent in Muslims, but it is not significantly associated. Women of SC/ST and OBC caste have more preterm births compared to women of General caste. Women residing in rural area have more preterm birth and it is significantly associated with p-value 0.006. Preterm births are more common in women who are illiterate and who had primary education. Preterm is not significantly associated with type of family and working status of mother. Preterm births are more common in women belonging to class IV and V socioeconomic status and it is significantly associated with p-value 0.024.

DISCUSSION

More than 1 in 10 of the world's babies born in 2010 were born prematurely, making an estimated 15 million preterm births (defined as before 37 weeks of gestation), of which more than 1 million died as a result of their prematurity. (2) Prematurity is now the second-leading cause of death in children under 5 years and the single most important cause of death in the critical first month of life.(9) The implications of being born too soon extend beyond the neonatal period and throughout the life cycle. Babies who are born before they are physically ready to face the world often require special care and face greater risks of serious health problems, including cerebral palsy, intellectual impairment, chronic lung disease, and vision and hearing loss. This added dimension of lifelong disability exacts a high toll on individuals born preterm, their families and the communities in which they live. (10)

PTB is a prevalent obstetric complication associated with significant neonatal mortality and morbidity worldwide. Addressing the burden of PTB in developing countries is of public health importance due to its high (9 to 16%) prevalence. Though the exact etiopathogenesis of PTB is still unclear, in developing nations, prediction and/or diagnosis of this multifactorial process is made mainly based on the evidence reported in the western literature on the risk factors and probable pathological mechanisms. (5,11,12) In our study the prevalence of preterm birth was 22.5% is higher as compared to the estimates (15%) reported by the World Health Organization among Indian women. (13) Similar study done in tertiary care centre eastern Nepal showed the preterm admission rate of 23.8. (14). In a study conducted in Rural medical college hospital Tamil Nadu preterm admissions constituted 609 (28.25%) among the total 2156 admissions for 1-year period. (15)

In our study women at extreme of age have higher prevalence of preterm delivery and it was significantly associated. In the study conducted in PIMS Jalandhar, elderly mothers (maternal age more than 34 years) were at a significantly higher risk of a preterm delivery (P-value<0.01). (16) Many maternal factors have been associated with an increased risk of spontaneous preterm birth including young or advanced maternal age. (4,17)

The hospital where this study was conducted largely caters to the low socio-economic group of women. In this study, low socio-economic status was found to be a significant risk factor in pre-term births. Studies evaluating the role of socio- economic status in preterm deliveries have found similar association. (8,19) Preterm labour was more common among lower Socioeconomic status in a study conducted in Rural medical college hospital western Maharashtra, majority of women belonging to class IV and V of economic status had preterm labour. (20)

CONCLUSIONS

Preterm births require early and prolonged hospitalization posing great financial and psychological burden on family. The prevalence of preterm baby was 22.55% among the hospital deliveries in our medical college hospital. Preterm was common among women of extremes of age, among women residing in rural area and among women from low socioeconomic status. Most etiological factors are modifiable, and preconception counseling should emphasize family planning, good nutrition, safe sex, good hygiene, treatment of sexually transmitted diseases, and avoidance of tobacco, alcohol, abusive drugs and harmful work conditions. All efforts should be made to prolong the pregnancy beyond 34 weeks for better neonatal outcome.

Recommendations

Educate women and couples of reproductive age to have a reproductive plan that includes age at first pregnancy, method to prevent unintended pregnancy, and number of children they wish to have. Screen for and treat infectious diseases, particularly sexually transmitted infections. Preconception care services for the prevention of preterm birth for all women. Promote cessation of tobacco use and restrict exposure to second hand smoke. Screen for, diagnose and manage chronic diseases, including diabetes and hypertension.

Table 1: Socio-demographic characteristics of study participants.

Demographic factor	Number	Percentage
Age distribution(age in years)		
≤ 19	9	4.50%
20-24	91	45.50%
25-29	65	32.50%
30-34	28	14.00%
≥35	7	3.50%
Religion		
Hindu	174	87.00%
Muslim	26	13.00%
Caste		
General	117	58.50%
OBC	53	26.50%
SC/ST	30	15.00%
Residence		
Urban	111	55.50%
Rural	89	44.50%
Type of family		
Joint	67	33.50%
Nuclear	133	66.50%
Literacy status		
Illiterate	9	4.50%
Primary	44	22.00%
Middle	69	34.50%
High school	57	28.50%
Intermediate	14	7.00%
Graduate & above	7	3.50%
Working status of women		
Housewife	186	93.00%
Working	17	7.00%
Socio-economic status		
I	5	2.50%
II	10	5.00%
III	60	30.00%
IV	98	49.00%
V	27	13.50%

Table 2: Association between preterm birth and socio-demographic characteristics

Demographic factor	Preterm baby present	Preterm baby absent	Chi-square	P-value	df
Age distribution(age in years)					
≤ 19	4(44.45)	5(55.55)	10.12	0.038	4
20-24	16(17.58)	75(82.42)			
25-29	10(15.38)	55(84.62)			
30-34	12(42.86)	16(57.14)			
≥35	3(42.86)	4(57.14)			
Religion					
Hindu	36(20.69)	138(79.31)	2.52	0.11	1
Muslim	9(34.62)	17(65.38)			
Caste					
General	22(18.80)	95(81.20)	2.35	0.32	2
OBC	14(26.42)	39(73.58)			
SC/ST	9(30.00)	21(70.00)			
Residence					
Urban	17(15.32)	94(84.68)	7.38	0.006	1
Rural	28(31.46)	61(68.54)			
Type of family					
Joint	20(29.85)	47(70.15)	3.12	0.07	1
Nuclear	25(18.80)	108(81.20)			
Literacy status					
Illiterate	4(44.44)	5(55.55)	3.52	0.62	5
Primary	13(29.54)	31(70.45)			
Middle	14(20.29)	55(79.71)			
High school	9(15.79)	48(84.21)			

Intermediate	3(21.43)	11(78.57)			
Graduate & above	2(28.57)	5(71.43)			
Working status of women					
Housewife	40(21.51)	146(78.49)	0.19	0.66	1
Working	5(29.41)	12(70.59)			
Socio-economic status					
I	1(20)	4(80)	11.26	0.024	4
II	2(20)	8(80)			
III	6(10)	54(90)			
IV	24(24.49)	74((75.51)			
V	12(44.44)	15(55.55)			

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