Determinants of Preterm Labour in a Rural Medical College Hospital in Western Maharashtra

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Aims: This study was done to estimate the incidence of preterm labour and to study the causes of preterm labour in a teaching hospital.

Methods: A cross sectional study was conducted in a medical college hospital in rural area among all patients who delivered during study period. Data was collected by interview technique and analyzed by appropriate statistical methods.

Results: Total 2105 deliveries occurred during study period and the incidence of preterm delivery in the study was 15%. Incidence of preterm labour was comparatively more among multigravida (49.5%). Out of 315 preterm labour cases, 234 (74.25%) were from low socioeconomic status. Forty-one percent preterm labors were idiopathic, 17% cases had maternal- fetal complications and 15% cases had recurrent urinary tract infections. Significant association was observed between previous history of preterm labour and current preterm labour after applying Z test.

Conclusions: Incidence of preterm labour was 15% among the hospital deliveries in a teaching hospital in rural area. Preterm labour was more common among women of low socioeconomic status, among multigravida and among women having previous history of preterm labour.

Keywords: incidence of preterm labour, determinants of preterm labour, preterm labour.

INTRODUCTION

Preterm birth is a major determinant of neonatal mortality and morbidity and has long-term adverse consequences for health.[1] Of all early neonatal deaths that are not related to congenital malformations, 28% are due to preterm birth.[2] Children who are born prematurely have higher rates of cerebral palsy, sensory deficits, learning disabilities and respiratory illnesses compared with children born at term.[3,4] The estimated 12.9 million preterm births in a multicentre study represent a substantial problem for already overtaxed health, education and social service sectors worldwide. The burden of preterm birth is disproportionately concentrated in Africa and Asia, where about 85% of all preterm births occur (31% and 54%, respectively).[5] The incidence of preterm birth in India has been reported to be 14.5%.[6]

Causal factors linked to preterm birth include medical conditions of the mother or fetus, genetic influences, environmental exposure, infertility treatments, behavioral and socioeconomic factors and iatrogenic prematurity.[7]

Attempts to prevent preterm birth is one of the most challenging and frustrating problems in public health.[8] Proper understanding of the risk factors associated with these deliveries is essential for effective prevention. Therefore present study was conducted to estimate the incidence of preterm labour and to identify and quantify the factors associated with it.

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METHODS

This study was conducted in a medical college hospital in rural area in western Maharashtra. All of 2105 patients who had deliveries in study setting during the study period of six months from first July 2010 to 31 December 2010 were included in the study. The study purpose was explained and verbal consent was obtained from study participants. 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.[1]

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

RESULTS

Total 2105 deliveries occurred during study period; out of them majority of deliveries were full term 1692 (80%), 315 (15%) were preterm and 98 (5%) were post-term. Hence the incidence of preterm delivery in the present study was 15%.

Out of 315 cases of preterm labour, 198 (62.85%) cases were booked and 127 (37.15%) cases were unbooked cases. Incidence of preterm labour was more among multigravida (49.5%) as compared to primigravida (33.3%) and second gravida (17.2%). In our study out of 315 preterm labour cases 187 (59.3%) women underwent caesarean section while 128 (41.7%) women delivered normally. Majority of women (60%) were in the age group of 20-30 years. Out of 315 preterm labour cases, 234 (74.25%) were from low socioeconomic status (class III-V). Majority 116 (36.8%)of cases of preterm labour were idiopathic, 20.6% had maternal or fatal problems and 14.6% had history of recurrent urinary infections (Table 1).

Table 1. Etiology of preterm labours (n=315).

Etiology	Number of cases
Idiopathic	116 (36.8%)
Gestational problems (APH, PIH)	065 (20.6%)
Recurrent urinary infections	046 (14.6%)
Previous history of preterm labour	046 (14.6%)
Maternal malnutrition	042 (13.3%)

Fifteen percent of preterm labour cases had previous history of preterm labour and significant association was observed between previous history of preterm labour and current preterm labour after applying Z test ($z=2.36, p< 0.005$). Twenty-one percent cases of preterm labour had some maternal or fetal problems like hypertension, ante partum hemorrhage however no significant association was noted ($z= 1.2, p> 0.005$).

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%.[10] In our study the magnitude of preterm labour was 15%. However Begum et al[11] 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%.[12,13]

Preterm labour was more common among lower socioeconomic status in present study, majority of women belonging to class IV and V of economic status had preterm labour. Similar finding was observed in other studies conducted in India and in other countries also.[11,14,15] As mentioned in Bulletin of WHO,[5] approximately 45-50% preterm labors are idiopathic. In present study 36.8% preterm labors were idiopathic.

History of previous preterm birth or second trimester pregnancy loss is important risk factor associated with preterm birth. In this study also pre-term delivery was significantly associated with previous history of pre-term delivery. Other studies had also demonstrated this association.[12,14,15] This may be due to the persistence of unidentified factors in some women precipitating pre-term delivery. Maternal under-nutrition was commonly observed risk factor among women having preterm labour in present study. Similar finding was observed by Subapriya et al[16] and Malvankar et al[17] in their studies conducted in India.Ferraz et al[18] also mentioned that low maternal weight is an important determinant of preterm labour in their study conducted in Brazil.

Urinary tract infection was significantly associated with pre-term delivery. Urinary tract infection is favored by the morphological and functional changes that take place in pregnancy. In present study maternal or fetal problems and urinary tract infection were important determinants of preterm labour; similar finding was observed in studies conducted in Nigeria and Brazil.[12,18]

CONCLUSIONS

The incidence of preterm labour was 15% among the hospital deliveries in a medical college hospital in rural area. Preterm labour was common among multiparous women and among women from low socioeconomic status. Previous preterm labour, urinary tract infections, maternal problems and malnutrition were important determinants of preterm labour in the present study.

REFERENCES

1. International classification of diseases and related health problems. 10th revision. Geneva: World Health Organization; 1992.
2. Lawn JE, Wilczynska-Ketende K, Cousens SN. Estimating the causes of 4 million neonatal deaths in the year 2000. Int J Epidemiol. 2006;35:706-18.
3. Petrou S, Mehta Z, Hockley C, Cook-Mozaffari P, Henderson J, Goldacre M. The impact of preterm birth on hospital inpatient admissions and costs during the first 5 years of life. Pediatrics. 2003;112:1290-7.
4. Petrou S. The economic consequences of preterm birth during the first 10 years of life. BJOG. 2005;112:10-5.
5. Beck S, Wojdyla D, Say L, Betran AP, Merialdi M, Requejo JH, et al. The worldwide incidence of preterm birth: a systematic review of maternal mortality and morbidity. WHO Bull. 2010;88:31-8.
6. WHO collaborating centre for training and research in newborn care. Nationalneonatal perinatal database network. National neonatal perinatal-database report 2002–2003. India: National neonatology forum NNPD Network;2005.
7. Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. Lancet. 2008;371:75-84.
8. Kramer MS. Intrauterine growth and gestation determinants. Pediatrics. 1987;80(4):502–11.
9. Kumar P. Social classification need for constant updating. Indian J Comm Med. 1993;18(2):60-1.
10. Bang AT, Baitule SB, Reddy HM, Deshmukh MD, Bang RA. Low birth weight and preterm neonates: can they be managed at home by mother and a trained village health worker? J Perinatol. 2005;25:72–81.
11. Begum F, Buckshe K, Pande JN. Risk factors associated with preterm labour. Bangladesh Med Res Counc Bull. 2003;29(2):59-66.
12. Olugbenga A. Mokuolu BM, Suleiman OO, Adesiyun A, Adeniyi B. Prevalence and determinants of pre-term deliveries in the University of Ilorin Teaching Hospital, Ilorin, Nigeria. Pediatr Rep. 2010;2(1):3.
13. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F. Centers for disease control and prevention national center for health statistics national vital statistics system: births final data for 2005. Natl Vital Stat Rep. 2007;56:86.
14. Berkowitz G, Papiernik E. Epidemiology of preterm birth. Epidemiol Rev. 1993;15:414–43.
15. Kaminski M, Goujard J, Rumeau C. Prediction of low birth weight and prematurity by a multiple regression analysis with maternal characteristics known since the beginning of the pregnancy. Int J Epidemiol. 1973;2:195–204.
16. Subapriya K, Rao A. Association of risk factors with spontaneous preterm birth after 28 weeks and neonatal outcome; a case-control study in a tertiary care referral centre. J Indian Med Assoc. 2009;107(2):83-4,86-7.
17. Mavalankar DV, Gray RH, Trivedi CR. Risk factors for preterm and term low birth weight in Ahmedabad, India. Int J Epidemiol. 1992;21(2):263-72.
18. Ferraz E, Gray R, Cunha T. Determinants of preterm delivery and intrauterine growth retardation in north-east Brazil. Int J Epidemiol. 1990;19(1):101-8.