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## Original Research Article

# Analytical study to assess fetal and perinatal outcome in booked and unbooked obstetric cases

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### ABSTRACT

**Background:** The high perinatal mortality rates are indicators of the poor state of health services and it is pertinent to determine the relationship between the booking status of mother and fetal outcomes.

**Methods:** In the present randomized prospective study of 400 unbooked (study group) obstetric cases were evaluated and compared with 400 booked (control group) obstetric cases over a period of one year.

**Results:** Perinatal outcomes of women in study group were significantly poorer than women in control group due to high preterm delivery, LBW, with low Apgar score at five minutes, with more NICU admission due to RDS, with high perinatal mortality in term of IUD, early neonatal deaths in study group.

**Conclusions:** Findings of the study will help the programmers and service providers in identifying areas where emphasis has to be given in the development of strategies that will promote the utilization of antenatal services, to reduce adverse perinatal and fetal outcome.

**Keywords:** Booked cases, Fetal outcome, Maternal mortality, Obstetric care, Unbooked cases

### INTRODUCTION

Maternal health refers to the health of the mother during pregnancy, childbirth and the postpartum period.<sup>1</sup> Following the diagnosis of pregnancy, the first prenatal visit (booking visit) should occur during the first trimester. Consequently, a pregnant women is said to have “booked” if, excluding the booking visit, she attended at least three antenatal clinic visits and received at least one dose of tetanus immunization. She is also consider “booked” if, beside the booking visit, she makes a minimum of two more visits lasting not more than two weeks before delivery.<sup>2</sup>

The high perinatal mortality rates in India continue to be issues of concern as they are indicators of the poor state of health services with the implication that relevant health-related millennium development goals may not be achieved in the country. In light of current maternal and

perinatal mortality situation in India, it is pertinent to determine the relationship between the booking status of mother and fetal outcomes. Hence this study was aimed to determine perinatal and fetal outcomes in booked and unbooked mothers.

### METHODS

The present study was a randomized prospective study conducted from July 2012 to July 2013 at Department of Obstetrics and Gynaecology, S.P. Medical College and A.G. of Hospitals, Bikaner Rajasthan, a tertiary care hospital. Eight Hundred patients were included in the study and were divided into two groups. Study group consist of unbooked women (n=400) and control group consist of booked women (n=400). All pregnant women with singleton pregnancy having gestational age more than 28 weeks both, unbooked and booked, attending obstetric emergency for delivery and women who

delivered at home or at periphery and brought to the hospital for emergency obstetric care in our center were included in our study. Booked women were defined as those who had at-least three antenatal visits at our center, while un-booked women were those who have no prenatal care at all throughout the pregnancy, those who registered at our unit but had less than two antenatal clinic visits, and patients referred as emergency from other facilities. Structured questionnaire was administered to cases, and a detailed history was obtained which included age, socioeconomic status, and residence,

education status and booking status. Obstetric history regarding gravida, parity, LMP, period of gestation, chief complaints for which she was admitted and pregnancy related complications, significant clinical events in previous pregnancy and history of any medical and surgical illness was obtained. Neonatal outcome such as gestational age, Apgar scores, birth weight, and perinatal mortality etc. were documented. All patients were followed till discharge.

**RESULTS**

**Table 1: Distribution of cases according to their pregnancy outcomes.**

Pregnancy outcomes	Study group		Control group		$\chi^2$	p- value
	No.	%	No.	%		
<b>Gestational age (weeks)</b>						
Preterm <37 week	97	24.25	62	15.50	10.21	0.001
Term >37 week	293	73.25	338	84.50		
Not known	10	2.50	0	0		
Total	390	100	400	100		
<b>Birth weight (kg)</b>						
<2.5	176	44.00	97	24.25	42.45	0.0001
2.5-3.5	182	45.50	276	69.00		
>3.5	32	8.00	27	6.75		
Not known	10	2.5	0	0		
Total	400	100	400	100		
Mean $\pm$ SD	2.616 $\pm$ 0.56		2.71 $\pm$ 0.47		t=2.57	0.01

**Table 2: Distribution of cases according to Apgar score at 1 minute.**

Apgar score	Study group		Control group		$\chi^2$	P Value
	No	%	No.	%		
<7	122	30.50	78	19.50	13.88	0.0002
>7	268	67.00	322	80.50		
Not known	10	2.50	0	0		
Total	400	100	400	100		
Mean $\pm$ SD	6.91 $\pm$ 2.57		7.71 $\pm$ 1.95		t=4.95	<0.001

Eight Hundred patients were studied which comprised of study group of unbooked women (n=400) and control group of booked women (n=400). 24.25% of women in study group gave birth to preterm babies. 44% of women in study group had babies with birth weight less than 2.5 kg.(Table 1) The Apgar score at one minute was less than 7 in 30.50% of babies born to women in study group while this was seen in 19.50% of babies born to women in control group. (Table 2) The Apgar score at five minute was less than 7 in 12 % of babies born to women in study group, while this was seen in 5.50 % of babies

born to women in control group. (Table 3) 22 % babies of women in study group had admission in neonatal ICU, while 16.25% babies of women in control group had admission in neonatal ICU (Table 4).

**Table 3: Distribution of cases according to Apgar score at 5 minutes.**

Apgar score	Study group		Control group		$\chi^2$	P Value
	No	%	No.	%		
<7	48	12	22	5.50	10.50	0.0012
>7	342	85.50	378	94.50		
Not known	10	2.50	0	0		
Total	400	100	400			
Mean $\pm$ SD	7.99 $\pm$ 2.27		8.55 $\pm$ 1.41		t=4.19	<0.001

Neonatal morbidity was 17.18% among babies born to women in study group, while 15.50 % among babies born to women in control group. Respiratory distress syndrome (5.38%), birth asphyxia (4.62%) and convulsions were higher in babies of study group, while IUGR (5.48%), meconium aspiration syndrome (3.81%),

jaundice (3.13%) were higher in babies of control group. (Table 5) Among the babies of un-booked mothers 5.75% of babies had intrauterine deaths, 0.75% of babies had still birth and 5% of babies had early neonatal deaths, while among the babies of booked mothers 1.75% babies had IUD, 0.25% babies had still birth, and 2.75% babies had early neonatal deaths respectively (Table 6).

## DISCUSSION

This study shows that perinatal outcomes in unbooked mothers were significantly poorer than in booked mothers. It is observed that labour complications have very strong effects on perinatal mortality complications, such as increased risk of perinatal death and rate of perinatal death is higher in home delivery.<sup>3,4</sup> It is a tragic

situation that most of fetomaternal morbidity and mortality are not caused by disease but occur during or after labour which is a natural process.

**Table 4: Distributions of cases according to neonatal ICU admissions.**

NICU Admission	Study group		Control group		$\chi^2$	p-value
	No.	%	No.	%		
Nil	302	75.50	335	83.75	4.64	0.03
Yes	88	22.00	65	16.25		
Not known	10	2.50	0	0		
Total	400	100	400	100		

**Table 5: Distributions of cases according to fetal morbidity.**

Fetal morbidity	Study group		Control group		$\chi^2$	p-Value
	No.	%	No.	%		
Nil	323	82.82	338	84.50		
RDS	21	5.38	8	2	6.28	0.01
Birth asphyxia	18	4.62	11	2.75	1.53	0.21
Congenital malformation	7	1.78	5	1.25	0.21	0.64
IUGR	6	1.50	15	3.75	5.48	0.01
MAS	6	1.50	14	3.50	5.32	0.02
Neonatal sepsis	4	1.00	4	1	0	0
Convulsion	4	1.00	0	0	3.81	0.05
Jaundice	1	0.26	5	1.25	3.13	0.07
Not known	10	2.50	0	0		
Total	400	100	400	100		

**Table 6: Distribution of cases according to perinatal mortality.**

Perinatal mortality	Study group		Control group		$\chi^2$	p-value
	No.	%	No.	%		
No mortality	344	86.00	386	96.50		
IUD	23	5.75	7	1.75	9.29	0.002
Still birth	3	0.75	1	0.25	0.006	0.30
Early neonatal death	20	5.00	6	2.75	0.0016	0.004
Not known	10	2.5	0	0		
Total	400	100	400	100		

As compared to booked mothers, unbooked mothers were 1.5 times more likely to deliver preterm babies (24.25% vs 15.5%;  $p < 0.001$ ) and low birth weight babies (44% vs 24.25%;  $p < 0.01$ ). This shows that unbooked status contributes to maternal undernourishment and inadequate care during pregnancy which resulted in obstetric complication thus compromising both mother and baby. Various maternal complications such as anemia, antepartum hemorrhage (APH), PPRM, and preeclampsia and eclampsia, preterm labour during

pregnancy significantly increased the risk of LBW outcomes. These findings were consistent with findings of other studies.<sup>5-9</sup>

This study shows that 30.50% babies of unbooked mothers and 19.50% babies of booked mother had Apgar score  $< 7$  at one minute ( $p < 0.002$ ) while 12% babies of unbooked mothers and 5.50% babies of booked mothers had Apgar score of  $< 7$  at five minutes. It indicates that as compared to booked mothers, babies of unbooked

mothers were 1.5 times more likely to have birth asphyxia ( $p < 0.002$ ). This was comparable with other studies.<sup>8,9</sup>

In present study 22% neonates from study group and 16.25% neonates from control group were admitted in NICU ( $p < 0.03$ ). This was comparable to other studies.<sup>7,8,10</sup>

In present study neonatal morbidity were encountered in 16.75% neonates of study group and 15.5% of neonates in control group. In study group, most common cause being RDS (5.38%) followed by birth asphyxia (4.62%), gross congenital malformation (1.78%), IUGR (1.5%), MAS (1.5%), neonatal sepsis (1%) while in control group, most common cause of neonatal morbidity was IUGR (3.75%) and MAS (3.50%) (Because high proportion of cases with hypertension), Birth asphyxia (2.75%). This shows positive correlation between lack of proper antenatal care and adverse pregnancy outcomes in unbooked than booked women. This was comparable with other studies.<sup>5,7-10</sup>

In present study perinatal mortality was encountered in 11.80% of cases in study group and 3.50% in control groups. There was statistically significant difference between babies of unbooked and booked women in term of neonatal ICU admissions (22%; vs 15.25%  $p < 0.01$ ) intrauterine death (IUD) (5.75% vs 1.75%;  $p < 0.01$ ), and early neonatal deaths (5% vs 2.75%;  $p < 0.01$ ).

## CONCLUSION

Perinatal outcomes of women in study group were significantly poorer than women in control group due to high preterm delivery, LBW, with low Apgar score at five minutes, with more NICU admission due to RDS, with high perinatal mortality in term of IUD, early neonatal deaths in study group. This study is relevant, because the findings of the study will help the programmers and service providers in identifying areas where emphasis has to be given in the development of strategies that will promote the utilization of antenatal services, in particular, so as to reduce the occurrence of perinatal mortality, morbidity and their consequences.

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