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Original Research Article

Analytical study to assess maternal outcome in booked and unbooked obstetric cases

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Abstract

Background: The high maternal morbidity and 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 maternal 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: Unbooked mothers were relatively younger in age, with lower educational status, majority from rural area and belonged to lower socio-economic class, which prevent them to take benefit from available facilities, thus associated with more complications. Antenatal obstetric complications like rate of preterm labour pains, antepartum hemorrhage, PROM were higher among study group as compared to control group where rate of post term pregnancy was high. Intrapartum complications were higher in study group, with most common intrapartum complication being meconium stained liquor in both groups. Most common postpartum complication was hemorrhage in both groups with four maternal deaths in study group and one maternal death in control 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 maternal outcome.

Keywords: booked cases, unbooked cases, obstetric care, maternal mortality.

1. Introduction

Maternal health refers to the health of the mother during pregnancy, childbirth and the postpartum period.[1] 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.[2]

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

2. Material and 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. All patients were followed till discharge.

3. Results

Maximum number of women (58.50%) in study group and 59.25% of women in control group had their age less than 25 year. 72.75% of women in study group were from rural area and 52.75% of women in control group were from rural area. Maximum number of women (54.50%) in study group was illiterate. 85.75% of women belonged to low socioeconomic class, while in control group 67.25% of women belonged to lower class. **(Table 1)** The mean parity for women in study group was 1.12±1.28 while it was 0.8±1.03 for women in the control group. **(Table 2)** In study group 74.25% women had vaginal delivery while in control group 79.75% of women had vaginal delivery. **(Table 3)** In both group the most common obstetric complication was premature rupture of membrane seen in 16.25% of women among study group and 16.75% of women in control group. **(Table 4)** Meconium stained liquor was the most common intrapartum complication seen among the women in 10.75% in study group and 12.25% in control group. **(Table 5)** Most common postpartum complication in both groups was postpartum hemorrhage 6.25% of women in study group had PPH, while 2.25% of booked mothers had PPH. **(Table 6)**

Table 1: Distribution of cases according to socio-demographic profile

Demographic profile	Study Group		Control group		χ^2	p- value
	No.	%	No.	%		
Age (years)						
<25	233	58.25	237	59.25	2.10	0.835
25-30	142	35.50	147	36.75		
>30	25	6.25	16	4.0		
Total	400	100	400	100		
Mean age	23.88±4.001		23.95±3.63		t=0.259	0.795
Area						
Rural	291	72.75	211	52.75	33.37	0.001
Urban	109	27.25	189	47.25		
Total	400	100	400	100		
Level of Education						
Illiterate	218	54.50	120	30.0	61.36	0.0001
Primary	146	36.50	186	46.50		
Secondary	17	4.25	35	8.75		
Higher	19	4.75	59	14.75		
Total	400	100	400	100		
Socio-economic status						
Low	343	85.75	269	67.25	42.1	0.0001
Middle	56	14.0	116	29.00		
Upper	1	0.25	15	3.75		
Total	400	100	400	100		

Table 2: Distribution of Cases According to their Parity

Parity	Study group		Control group	
	No. of Cases	Percentage (%)	No. of cases	Percentage (%)
0	182	45.50	210	52.50
1-4	198	49.50	188	47.00
≥5	20	5.00	2	0.50
Total	400	100	400	100
Mean	1.12±1.28		0.80±1.03	
t	3.89			
p - Value	<0.001			

Table 3: Distribution of Cases According To Mode of Delivery in Present Pregnancy

Mode of Delivery	Study group		Control group		χ^2	P value
	No.	%	No.	%		
Normal	297	74.25	319	79.75	3.41	0.06
LSCS	76	19	68	17	0.54	0.05
Assisted Breech	17	4.25	4	2	3.33	0.06
Instrumental	7	1.75	5	1.25	0.33	0.56
Caesarean hysterectomy	3	0.75	0	0	3.01	0.05
Total	400	100	400	100		

Table 4: Distribution of Cases According to Antepartum Obstetrical Complications

Obstetrical complication	Study group		Control group		χ^2	P value
	No	%	No	%		
Nil	236	59	239	59.75		
PROM	65	16.25	67	16.75	0.09	0.13
Preterm labour	35	8.75	24	6	3.89	0.04
Post term pregnancy	17	4.25	49	12.25	16.05	0.001
Antepartum haemorrhage	16	4	4	1	1	0.004
Pre term PROM	12	3	6	1.50	2.20	0.13
Previous CS with ST	9	2.25	11	2.75	0.15	0.69
Not known	10	2.5	0	0		
Total	400	100	400	100		

Table 5: Distribution of cases According To Incidence of Intrapartum Complications

Intrapartum Complications	Study group		Control group		χ^2	P value
	No.	%	No.	%		
No Complications	263	66.75	295	73.75	6.07	<0.05
MSL	43	10.75	49	12.25	0.44	>0.05
Malprasentation	27	6.75	13	3.25	5.16	<0.05
FD	14	3.50	16	4	0.14	>0.05
Abruptio placentae	12	3	4	1	4.08	<0.05
Placenta previa bout	9	2.25	0	0	9.10	<0.01
Previous LSCS + ST	8	2	11	2.75	0.49	>0.05
NPOL with FD	4	1	6	1.50	0.41	>0.05
CPD	3	0.75	1	0.25	1.01	>0.05
DTA	3	0.75	0	1	1.01	>0.05
Obstructed labour	2	0.50	0	0	2.01	>0.05
Rupture uterus	1	0.25	0	0	1.01	>0.05
Failed induction	1	0.25	5	1.25	2.69	>0.05
Not Known	10	2.50	0	0	10.13	<0.01
Total	400	100	400	100		

Table 6: Distribution of Cases According to Incidence of Postpartum Complications

Postpartum Complications	Study group		Control group		χ^2	P value
	No.	%	No.	%		
Nil	346	86.50	377	94.25	7.74	0.005
PPH	26	6.50	9	2.25	8.63	0.004
Perineal haematoma	4	1	1	0.25	0.55	0.45
Eclampsia	2	0.50	0	0	2.00	0.157
Uterine inversion	2	0.50	0	0	2.00	0.157
Puerperal sepsis	2	0.50	1	0.25	0.003	0.95
Others	9	2.25	8	2	1.30	0.254
ICU Admissions	5	1.25	2	0.50	0.13	0.72
Maternal Death	4	1	1	0.25	0.52	0.47
Retained Placenta	0	0	1	0.25	1.88	0.17
Total	400	100	400	100		

4. Discussion

All pregnant women are at risk of obstetrical complications and most of these occur during labour. Majority (58.25%) cases in study group and 59.25% cases in control group were younger in age of less than 25 years. This issue was also documented by other studies[3][4][5][6] that showed women who were less than 25 year old and less educated were more likely to register late. However this study had recorded negative association between age and booking status. This was not comparable with the observation of study[4][7] carried out in Saudi Arabia which suggested that women's age was not a significant predictor of utilization of ANC.

This study recorded a statistically significant ($p<0.001$) association between area of residency and not utilization of ANC services by un-booked mothers. In our study majority (72.75%) of cases in study group were from rural area as while in control group majority (52.75%) of cases belonged to urban area. Majority of population living in rural area do not have accessibility to maternity center and may developed life threatening complications during labour. This is comparable to other studies.[8][9][4][7]

In our study majority (54.50%) of un-booked mothers were illiterate in comparison to booked mothers where 70% of women were educated. This study also found statistically significant relation between female illiteracy and unbooked category ($p<0.0001$). Our study findings were comparable to various studies[10][11] which showed that women's education was a strong determinant for utilization of ANC services and for maternal morbidity and mortality. This study found statistically significant relation between un-booked category and low socioeconomic status ($p<0.001$; 85.75%). Majority (85.75%) of cases were from low socioeconomic status in study group as compared to control group (67.25 %) belong to low socioeconomic status. Poor economic status of women and their families may make it difficult for them to make decisions regarding using health promotive and ANC services. Thus these unbooked women either approach for antenatal care in late pregnancy or during delivery with complicated stage of labour. The results are comparable to other studies.[4][12][13][14]

When we analyzed the parity distribution in present study, we found a significant relationship between parity and un-booked category ($p<0.002$). 5% of the un-booked women were grand multiparous while only 0.5% of the booked patients were grand-multiparous ($p<0.01$). A significant higher percentage of the grand multipara cases in our study were un-booked, most likely because these mothers had previous home deliveries and therefore refused to seek antenatal care and delivery in the hospital. This leads to an un-attendant increase in perinatal and maternal mortality in this group of mothers. Our study findings were comparable to findings of various other study[4][7][14][8] which showed that higher parity were generally a barrier to adequate use of ANC.

In our study when we analyzed in term of mode of delivery in current pregnancy we found that in comparison to booked women, unbooked women were less likely to had spontaneous vaginal delivery, with slightly higher rate of caesarean section among them, and were twice more likely as to be deliver by assisted breech vaginal delivery and had caesarean hysterectomy. The same has been concluded by the studies[4][7][14] also. It supported the high prevalence of mal-presentations and other feto-maternal complications among unbooked mothers that will exposed them to inevitable surgical intervention, rate of instrumental delivery was comparable in both groups.

It was found that occurrence of antenatal obstetric complications were comparable in both groups. Subgroup analysis of study revealed that premature rupture of membrane was most common complication among women in both groups. The rate of preterm labour pains (8.75% vs 6%), antepartum hemorrhage (16% vs 1%), pre term PROM (3% vs 1.5%), were higher among un-booked mothers as compared to booked mother. Rate of post term pregnancy was higher in booked women (12.25%) as compared to unbooked women (4.25%). These findings were support by other studies.[4][7][15][16]

Analysis of our study also revealed that occurrence of intrapartum complications were higher ($p<0.05$) among unbooked mothers (32.56%) as compared to booked mothers (26.5%). Its subgroup analysis showed that the most common intrapartum complication was meconium stained liquor (10.75% unbooked women vs 12.25% in booked women) among both groups. Next common complication among un-booked mothers was malpresentation (6.75%; $p<0.018$) as compare to booked mothers (3.25%). Most common malpresentatin[15] was breech (12 cases) followed by transverse lie with hand prolapsed 5 cases, brow presentation 3 cases, face presentation 2 cases, as compared to control group (13 cases of breech presentation).

During the present study period (6 months), there was total 6328 live birth with 8 cases of maternal death reported in our institution. In our study population, there were total 766 live birth with 5 maternal death recorded in our study. Out of these 5 maternal deaths, 4 maternal deaths occurred in study group while only one maternal death occurred in control group. The cause of maternal death were PPH associated with uterine inversion with shock (n=1), PPH with puerperal sepsis leading to ARF and multi organ failure (n=2), pulmonary embolism (n=1), while in control group, cause of death was recurrent intrapartum eclampsia with pulmonary embolism with ARDS.

5. Conclusion

This study showed that unbooked mothers were relatively younger in age, with lower educational status,

majority from rural area and belonged to lower socio-economic class, which prevent them to take benefit from available facilities, thus associated with more complications. Antenatal obstetric complications like rate of preterm labour pains, antepartum hemorrhage, PROM were higher among study group as compared to control group where rate of post term pregnancy was high. Intrapartum complications were higher in study group as compared to control group, with most common intrapartum complication being meconium stained liquor in both groups. Most common postpartum complication was hemorrhage in both group with four maternal death in study group and one maternal death in control group.

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