

## Comparison of Maternal and Fetal Complications in Booked and Unbooked Mothers Presenting in Third Trimester

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### ABSTRACT

**Objectives:** To see the difference of obstetrical complications along with fetomaternal outcomes in both booked and unbooked pregnant cases and to determine the correlation of maternal and fetal outcomes with ante natal care.

**Study Design:** Prospective observational study.

**Place and Duration of study:** Combined Military Hospital Hyderabad and Lahore, from Jan to Jun 2017.

**Methodology:** A total of 900 pregnant cases were included in this study. Out of which 450 were booked cases and 450 were unbooked cases according to WHO definition. Those who have had at least three ante natal care visits at our hospital were labeled as booked cases and those who have had less than three or no ante natal care visit or presented for the first time for delivery to our hospital were labeled as un-booked cases.

**Results:** The majority of pregnant women were found to be between 18–24 years. Maximum number of un-booked cases (72.6%) belongs to illiterate and poor family background. The frequency of anemia and spontaneous vaginal delivery in this study was 29.3% and 30.3%, 70/9% and 15.8% in booked and un-booked mothers respectively. Similarly, the frequency of 14.7%, 3.9%, 3.7%, 11.6% for low-birth-weight babies, gestational diabetes mellitus, IUGR, pregnancy induced hypertension was seen in un-booked cases as compared to booked mothers which have frequency of 12.8%, 8.3%, 2.9% and 11.9% respectively.

**Keywords:** Anemia, Adverse outcome, Booked cases, Pregnancy, Un-booked cases.

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### INTRODUCTION

Increased fetomaternal mortality and morbidity are the common problems in developing countries in general and Pakistan mainly due to poverty, lack of education, resources, lack of trained medical and paramedical staff, cultural values, accessibility and affordability of ante natal care services. To improve the maternal outcomes, the causes and factors responsible must be addressed appropriately.<sup>1</sup> By addressing these problems both policy makers and health care providers will be able to distribute/ distribute medical resources according to the need of the region. In our country maternal complications like anemia of pregnant women, increased incidences of cesarean sections and maternal mortality rate, babies born with low birth weight are among the major issues.<sup>2</sup> Maternal mortality rate of Pakistan is 260 deaths per 100,000 live births with an increasing upward trend over the last few years.<sup>3</sup> Similarly, perinatal mortality rate in our country is high, infant mortality rate is 52.1 deaths per 1000 live births (male 55.2 per 1000 live births and female 48.8 per 1000

live births).<sup>4</sup>

The non-availability of proper ante natal care and delivery care services are associated with increased adverse maternal and poor perinatal results both in mothers who availed ante natal care services and those who did not.<sup>4-6</sup> Different studies conducted have revealed the positive association of ante natal care and provision of delivery care services on fetomaternal outcomes apart from other mothers like age and parity.<sup>7</sup> A study conducted by Ezechi *et al*, revealed that there was a significant decrease in perinatal and a reduction of fetal loss due to still birth just because of proper ante natal care.<sup>8</sup> It shows the significance of ante natal care in order to improve the fetomaternal outcomes. By literature review it is also clear that patient's health seeking behavior may also have implication in improving fetomaternal outcomes.<sup>8</sup>

In current scenario of increased maternal mortality rate, it is the need of the hour to know the importance of provision of ante natal care and delivery care services and fetomaternal outcomes. The findings from such study helps decision makers and health care providers for planning, allocation and distribution of medical resources for reduction in complications

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associated with fetomaternal outcomes. The main objective of this study was to see the fetomaternal outcomes both in mothers who availed antenatal care services (booked cases) with those cases who did not (unbooked cases) admit and delivered at both CMH Hyderabad and Lahore. Fetal outcomes like premature delivery, babies with low birth weight, intrauterine growth retardation and maternal outcomes like anemia in pregnant mothers, requirement of blood transfusion for correction of anemia, pregnancy induced hypertension, Gestational diabetes mellitus, mode of delivery like spontaneous vaginal delivery or lower segment cesarean section, duration of hospital stay were compared in both groups i.e. booked mothers and unbooked mothers.

**METHODOLOGY**

This prospective observational study was carried out from January to June 2017. A total of 900 pregnant females were included in this study. 450 were those cases who had antenatal care and 450 were cases who did not have antenatal care according to definition of WHO. The mothers who have had at least of 3 antenatal care visits were labeled as booked cases and those who have had less than 3 or no antenatal care visit or presented for delivery to our hospital for the first time were labeled as unbooked cases. All mothers who availed antenatal care or delivered at obstetrics wards of Combined Military Hospital Hyderabad and Lahore were included and any complication both in mother and fetus were observed.

Before start of study written approval of hospital ethical committee was obtained. The purpose of this study was explained to all participants and then each written informed consent was taken from them. All admitted cases were managed and followed up until discharge for any complication as per standard operative procedures of the departments made in the light of RCOG and NICE guidelines. Data like age education of the patients were noted. Detailed obstetrical/medical history including parity and any significant events in previous pregnancies like fetal distress, prolonged labour, antepartum hemorrhage, postpartum hemorrhage, any illness like diabetes mellitus, hypertension that have implications on maternal outcomes were noted. Data about mode of delivery whether normal (SVD) delivery or lower segment cesarean section, antepartum hemorrhage, postpartum hemorrhage, anemia that require blood transfusions and duration of hospital stay was collected. Similarly, data about neo-

natal outcome like birth weight, preterm delivery was collected.

The collected data were analyzed by using the SPSS version 20.0. The frequencies of indicators representing perinatal outcome were determined. T test and chi square tests were applied to check the association between variables and pregnancy outcomes. With the help of odd ratio (OR) the strength of associations was determined with 95% confidence interval and it was considered significant if *p*-value <0.05.

**RESULTS**

Among total 900 cases included in this study, 450 (50%) were unbooked cases while 450 (50%) were booked cases. The results of this study are shown as: Table-I shows that among 900 mothers when booked cases were compared with unbooked ones, the unbooked cases tend to be younger with mean ages of both booked and unbooked mothers were 26.01 ± 5.81 and 24.3 ± 5.43. *p*-value being >0.05 therefore it is not significant. Table-II shows that anemia was present in 131 (29.3%) cases among booked and in 137 (30.3%) cases among unbooked mothers.

**Table-I: Comparison of mean age (years).**

Status	Mean	STD Deviation	<i>p</i> -value
Booked (n=450)	26.01	5.81	0.553
Unbooked (n=450)	24.3	5.43	

**Table-II-Comparison of anemia.**

Status	Anemia	Frequency	Percentage
Booked (n=450)	Yes	131	29.3%
	No	319	
Unbooked (n=450)	Yes	137	30.3%
	No	314	

Table-III proved that booked mothers when compared with unbooked mothers had higher incidence of normal delivery 29.9% and 15.8% in both booked and unbooked mothers respectively. The incidence of 17.2% in booked mothers and 19.2% in unbooked mothers was observed for delivery of preterm babies.

**Table-III: Comparison of mode of delivery in booked and unbooked cases.**

Status	Mode of Delivery	Frequency	Percentage
Booked (n=450)	NVD	134.5	29.9%
	C-Section	316	
	Preterm Babies	-	17.2%
Unbooked (n=450)	NVD	71	15.8%
	C-Section	379	
	Preterm Babies	-	19.2%

Table-IV shows that incidence of Gestational Diabetes Mellitus was higher among booked mothers

when compared to unbooked mothers (8.3% in booked and 3.9% unbooked cases) while the complication rate was low which was most probably due to regular antenatal care and follow up plans resulting in early diagnosis and management.

**Table-IV: Incidence of complications like pih, iugr, lbw, gdm & pph.**

Status	PIH	IUGR	LBW	GDM	PPH
Booked (n-450)	53.5 (11.9%)	13.0 (2.9%)	57.6 (12.8%)	37.3 (8.3%)	11.7 (2.6%)
Unbooked (n-450)	61.2 (13.6%)	16.6 (3.7%)	66.1 (14.7%)	17.5 (3.9%)	62.1 (13.8%)

This table also demonstrated that unbooked mothers as compared to booked mothers had higher rate of LBW (12.8% in booked and 14.7% in unbooked). IUGR was observed in 2.9% and 3.7% in booked and unbooked cases respectively. Similarly results also shows that incidence of PIH and PPH was higher in unbooked cases as compared to booked cases (13.6% vs 11.9% PIH in unbooked and booked mothers respectively. Similarly, PPH was seen in 13.8% and 2.6% of both unbooked and booked mothers respectively.

**Table-V: Comparison of stay in hospital.**

Status	Minimum	Maximum	Mean	SD
Booked (n-450)	1.00	15.00	4.03	2.07
Unbooked (n-450)	1.00	29.00	4.8	3.01

Table-V shows that when hospital stay in both booked and unbooked mothers was compared it was lower in booked ( $4.0 \pm 2.0$  days) and longer in unbooked mothers ( $4.8 \pm 3.0$  days).

There was a significant difference in incidence of breech presentation (14.7%) and oligohydramnios (4.2%) among unbooked mothers when compared with booked mothers which were having 4.2% and 1% respectively.

The requirement of blood transfusion in unbooked cases was more as compared to booked cases which was (18.4% require 2-4 units of blood to correct anemia) and booked cases 11.2% require.

Findings were subjected to logistical regression at a significant level of  $p < 0.05$ . perinatal and maternal morbidities were thus found to be higher in unbooked mothers.

## DISCUSSION

The antenatal care visits have a significant role for the health of mother and baby. The results of our study emphasize the importance of antenatal care and complications both in mothers as well as in fetus in our

environment. Obstetricians with the help of antenatal care and assisted delivery services are in a better position to diagnose any complication in early stages when complications can be controlled or minimized with the help of interventions with much better pregnancy outcome. The outcome of pregnancy in unbooked mothers as compared to booked mothers is considerably poor because of babies born with low birth weight, increased rate of premature delivery and lower segment caesarean section, incidence due to fetal distress and mis-handlings by "dai" (a woman who conducts deliveries in our villages or in low socio-economic populations even in our urban areas as well) or prolonged labour when immediate lower segment caesarean section is required.

The increased incidence of factors like anemia and hypertension due to pregnancy in unbooked as compared to booked cases are responsible for poor fetal maternal outcomes.<sup>9-10</sup> In our study 900 mothers were grouped into two, group A who had availed antenatal care visits and group B who did not avail this facility.

In present study unbooked cases when compared to booked cases tends to be younger and primigravida 23.4% vs 20.3% respectively and having positive association of anemia. In our study the frequency of anemia was higher in unbooked cases (30.3%) when compared with booked cases (29.3%). A study conducted by Sahoo the frequency of anemia is significantly higher among unbooked mothers (23%) when compared with booked mothers (11%).<sup>11</sup> Another study conducted by Aggarwal anemia was present in 7.6% cases in booked mothers and 29.8% in unbooked mothers.<sup>12</sup> A study conducted by Deeba in Pakistan showed anemia was observed in 11.15% and 4.5% in unbooked and booked cases respectively.<sup>13</sup> Various studies carried out revealed that frequency of anemia is considerably higher in group B than group A being 39%, 38.7% and 19.14% and 18.78% respectively.<sup>14</sup>

Pregnancy induced hypertension is a common medical disorder in pregnancy which is responsible for majority of fetal maternal morbidity and mortality. Due to increasing awareness and improvement in antenatal care and its management incidence of PIH has decreased in developed countries but still it is a major problem in underdeveloped countries. The present study proved that incidence of hypertension due to pregnancy was more in group A 11.9% as compared to group B 11.6%, but probably because of proper antenatal care complications risk was low due to early diagnosis and management. A study conducted by Vasavi reported

that the frequency of PIH was 7.9%.<sup>15</sup> Another study revealed the frequency of PIH in unbooked and booked mothers 43.18% and 20.69% respectively.<sup>11</sup> In Pakistan a study carried out in Peshawar revealed PIH frequency of 5.45% and 1.9% in unbooked and booked cases respectively.<sup>13</sup>

Our study revealed that the spontaneous vaginal delivery rate in unbooked mothers (15.8%) as compared to booked mothers (29.9%) was less than half thus emergency lower segment caesarean sections were carried out due to prolonged labour and fetal distress. A study conducted by Alpana revealed that the unbooked mothers were less likely to deliver normally (28%) when compared to booked mothers (39%) and needed emergency lower segment caesarean section.<sup>16</sup> Another study showed the frequency of spontaneous vaginal delivery 62.8% and 54.2% in unbooked and unbooked cases respectively while the frequency of caesarean section in booked and unbooked cases was 33.8% and 40.8% respectively.<sup>12</sup> A study carried out by Adhikary A revealed that frequency of spontaneous vaginal delivery and caesarean section was 38.5%, 61.5% and 28.0%, 72.0% in booked and unbooked mothers respectively.<sup>17,18</sup> Another study proved that lower segment caesarean section rate was more 76.5% in group B as compared to group A (23.5%).

In this study the frequency of Low birth weight in unbooked and booked mothers was 12.8% and 14.7% respectively while another study revealed low birth weight babies in 15.6% in booked and 43.4% in unbooked mothers.<sup>12</sup> A study conducted by Alpana showed that unbooked cases (2.65) were having low birth weight than booked mothers (3.02).<sup>16</sup> Whereas another study carried out in Pakistan showed the frequency of low-birth weight babies as 13.05% and 10.4% in unbooked and booked cases respectively.<sup>13</sup>

This study revealed the frequency of Gestational diabetes mellitus 8.3% and 3.9% in booked and unbooked cases respectively which is probably due to better ante natal care and screening in booked mothers. In another study the frequency of Gestational diabetes mellitus was 3.455 and 6.8% in booked and unbooked mothers respectively.<sup>11</sup>

Thus, our study clearly demonstrated that in the absence of proper ante natal care, pregnancy outcomes were significantly poor in unbooked cases when compared with booked cases because of anemia, pregnancy induced hypertension, babies with low birth weight, high preterm delivery and high caesarean section rates.

## LIMITATIONS OF THE STUDY

Our study was conducted for a period of six months and was conducted in secondary and tertiary care health centers. Therefore, these results cannot reflect the whole population of the country.

## CONCLUSION

In the absence of proper ante natal care in unbooked cases when compared to booked cases, a poor pregnancy outcome is shown in this study. In order to improve pregnancy outcome and to reduce the fetal/maternal complications, the accessibility and availability of proper ante natal care and provision of assisted delivery services has to be provided to the community. Women education has the pivotal role in their health as awareness and use of ante natal care significantly improves the maternal health outcomes.

**Conflict of Interest:** None.

## Authors' Contribution

VA: Direct contribution, SBM:, SS: Intellectual contribution.

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