Maternal Complications and Perinatal Outcomes in Booked and Unbooked Mothers

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Abstract: The study aimed to compare the socio-demographic characteristics, obstetrical complications and fetal outcomes in delivered booked mothers with those unbooked and to determine the relationships with maternal and perinatal outcomes. In a prospective study over 1 year period outcomes of pregnancies of women booked for antenatal care were compared with those of unbooked women, who delivered in Zagazig University Hospital. A sample of 218 women (booked mothers) and 80 unbooked mothers was selected from labor unit in Zagazig University Hospital. The study tools included a questionnaire sheet, maternal assessment sheet until delivery, post-delivery, and neonatal assessment using newborn weight and gestational age. The data were collected from November 2010 to October 2011. The results revealed that pregnancy complications anemia had a higher prevalence in unbooked mothers and the preeclampsia, unbooked mothers were less likely to deliver by spontaneous vaginal delivery. Unbooked mothers were twice as likely as booked mothers to deliver preterm babies. Babies of unbooked mothers were twice as likely as booked mothers to have asphyxia as indicated by an Apgar score of <7 at one minute and five minutes. Conclusion: The study showed a positive correlation between unbooked mothers and an increased risk of maternal and fetal adverse outcomes.

1. Introduction

The risk to the mother and child is relatively high in first pregnancy and then this risk declines during second, third and then slowly rises with increasing parity by the sixth pregnancy risks exceeds these of 1st pregnancy and after that rises steeply with each pregnancy[1].

Maternal complications and poor perinatal outcome are highly associated with non-utilization of antenatal and delivery care services and poor socioeconomic conditions of the patient, with poorer outcomes in unbooked than booked patients[2-5]. Various studies have confirmed the positive influence of antenatal care on maternal and perinatal outcomes irrespective of other maternal characteristics, such as age and parity[6]. A study on the influence of antenatal care on pregnancy found that antenatal care was associated with a threefold reduction in perinatal loss and virtual elimination of fetal loss from still birth[3].

This study is very important because many studies indicate that maternal complications and poor perinatal outcome are highly associated with non-utilization of antenatal and delivery care services for this reason this study is done in this thesis and our knowledge it is has never been done before in Zagazig city.

Aim of the study:

The study aimed to compare the socio-demographic characteristics, obstetrical complications and fetal outcome in booked and unbooked delivered mothers and to determine the relationships with maternal and perinatal outcomes.

Research Hypothesis:

Obstetrical complications are more in unbooked mothers than booked mothers.

2. Subjects and Methods:
Setting:

This study was carried out at the labor ward in Zagazig University Hospital starting from November 2010 to the end of October 2011.

Sample:

All pregnant women who delivered during the study period and who freely consented to participation were interviewed on admission into the labor ward.

Tools of data collection:

Data collection was carried out using the following tools developed by the researcher to collect the data:
1. A structured questionnaire was developed in order to obtain data about personal characteristics including age, education, occupation and income, past and present obstetric history gravidity, parity, pregnancy losses and previous labor. Complications occurring during pregnancy were collected also from mothers or maternal records.

2. Maternal assessment sheet included:

Assessment of the general condition of the woman on admission to the delivery unit was done. Vital signs (temperature, pulse, blood pressure) were recorded by the researcher while obstetrical examination (fundal level, auscultation of fetal sound) was carried out by the physician and researcher.

Sonar to estimate fetal movement, FHs and gestational age was done by the physician. Any complication occurring during labor and mode of delivery were also recorded as well as of antenatal and intra-partum complications such as anemia, antepartum hemorrhage and obstructed labor were statistically derived.

3. Neonatal assessment sheet and immediate baby care:

The researcher performed baby care for each baby, this started with cleaning air way and maintaining it patent, cutting umbilical cord, cleaning eyes. Neonatal outcome measures, such as gestational age, birth weight. Apgar score, neonatal intensive care admission and perinatal mortality were also documented. Prematurity and incidence of intra uterine growth retardation, occurrence of macrosomic babies were also noted.

Data Collection Methods:

Women, who had prenatal care and delivery (booked mothers –Comparison group), at the university hospital in Zagazig city between November 2010 to October 2011, were prospectively studied. Their data was compared with that of women who never had antenatal care but delivered, in the same health facility during the same period of time (unbooked mothers –Study group). The approval of the hospital was obtained prior to the commencement of the study. Informed consent was obtained from each woman recruited into the study. All patients were managed according to the departmental protocol. All singleton births during the study period were included in the study. All the mothers who delivered during the study and who freely consented to participate were interviewed on admission into the labor ward using a standardized questionnaire. They were thereafter followed – up clinically until they were discharged.

Technically booked mothers were defined as those who had at least two antenatal care visits to the M.C.H center while the unbooked mothers encompassed those who had no prenatal care at all throughout the index pregnancy or those who had less than two antenatal clinic visits as well as patients referred as emergencies from other facilities.

Assessment of the maternal condition was done by the physician and the researcher, these included:

a. History taking i.e. personal, obstetrical and medical data in addition to the present pregnancy complications.
b. Physical examination including general, local and abdominal examination was performed by the researcher on admission to the delivery unit, and measuring of the gestational age was performed.
c. Sonar to estimate fetal movement, fetal presentation, fetal heart sound (FHs) and gestational age by on duty physician was carried out on admission to the hospital, and women were followed up until delivery.
d. Outcome maternal measures of interest included the mode of delivery occurrence of obstructed labor, retained placenta rupture uterus or post-partum hemorrhage.
e. Immediate baby care:

The researcher performed baby care for each baby, this started with cleaning the airway and maintaining it patent, cutting the umbilical cord, cleaning the eyes, and measuring body weight. Neonates were followed for neonatal complications which included low birth weight, macrosomia, perinatal death. Birth weight of <2.5 kg was taken as considered low birth weight and >4 kg as macrosomic babies. Admission to NICU perinatal deaths (PND) included all intrauterine death (IUD) and early neonatal deaths (ENNDS).

Statistical analysis:

After data were collected, they were coded and transferred into specially designed formats so as to be suitable for computer feeding. Following data entry checking and verification processes were carried out to avoid any error during data entry, the following statistical measures were used:

a. Descriptive statistics included: count percentage, arithmetic mean, standard deviation, minimum and maximum.
b. Statistical tests induced chi-square, Pearson correlation was sued to study the relation between quantitative variables.

The level of significance selected for this study was p equal to or less than 0.05,

3. Results:

During the study period, a total of 298 singleton pregnancies were recruited into the study. There were 80 unbooked mothers who served as the study cases and 218 booked mothers served as controls. The demographical parameters of the study and control groups are shown in table I. Maternal characteristics of unbooked mothers were significantly different from that of the booked mothers; unbooked mothers were younger in age and had a lower educational status (p=0.000) unbooked mothers were of

inadequate income and had a parity from one to three children.

The majority of unbooked mothers were housewives (70%).

Occurrence of maternal complications and perinatal outcomes among booked and unbooked mothers are shown in table II. Unbooked mothers had a higher incidence of anemia compared to booked mothers (38.7%, 18.8%, respectively) and preeclampsia/eclampsia (12.5%, 2.2%). In terms of mode of delivery, unbooked mothers were less likely to deliver by spontaneous vaginal delivery compared with booked mothers (37.5%, 57.3%, respectively). On the other hand, unbooked mothers were twice as likely as booked mothers to deliver preterm babies (22.5%, 11.0%, respectively). Babies of unbooked mothers were twice as likely as booked mothers to have asphyxia as indicated by an Apgar score of <7 at one minute (35%, 16.5%, respectively) and at five minutes (18.7%, 8.2%, respectively). The relationship between Apgar score and booking status was statistically significant (p < 0.001). Regarding

intra uterine fetal death the unbooked mothers had a higher incidence than booked mothers (3.7%, 1.8%). Also the unbooked mothers had a higher neonatal attendance to I.C.U than booked mothers (13.8% compared to 3.2%).

As shown in table III, booking status remained a significant factor for the occurrence of maternal complications. Unbooked mothers were twice as likely as booked mothers to have obstructed labor (5% compared to 2.8%). Also unbooked mothers were more likely to have retained placenta (2.5%) compared to booked mothers (0.5%), unbooked mothers were more likely to have post partum hemorrhage than booked mothers (0.5%, 0.9% respectively).

Table IV shows the barriers of attendance and utilization of antenatal care. Regarding barriers of attendance, quarter of sample (25%) the reason is poverty and environmental prejudices while (19.75%) had long waiting time as a barrier of attendance, also (18.75) the reason is religious beliefs.

Table I: Distribution of women according to their characteristics.

Maternal variables	Unbooked mothers (n = 80)		Booked mothers (n = 218)		Test χ^2	p
	No.	%	No.	%		
Age group (years)						
• < 24	4	5.0	4	1.8	3.561	0.169
• 24 – 30	52	65.0	161	73.9		
• > 30	24	30.0	53	24.3		
Mean±SD	28.5±3.23		28.3±2.76			
Educational level						
• None and primary	30	37.5	36	16.5	42.192	0.000**
• Secondary	49	61.2	100	45.9		
• Post secondary	1	1.3	82	37.6		
Family income						
• Inadequate	30	37.5	30	13.8	21.178	0.000**
• Adequate	45	56.2	160	73.4		
• More than adequate	5	6.3	28	12.8		
Parity						
• 0	15	18.7	46	21.1	4.198	.122
• 1 – 3	65	81.3	162	74.3		
• ≥ 4	0	0.0	10	4.6		
Mean±SD	1.63±0.79		1.72±1.09			
Employment						
• Housewife	56	70	140	64.2	7.030	0.030*
• Employment	24	30	60	27.5		
• Professional	0	0.0	18	8.3		

Table II: Maternal and perinatal complications and outcomes in booked and unbooked mothers.

Maternal variables	Unbooked mothers (n = 80)		Booked mothers (n = 218)		Test χ^2	P
	No.	%	No.	%		
Pregnancy complications						
• Anemia	31	38.7	41	18.8	12.703	0.00**
• Prececlampsia /Eclampsia	5	12.5	5	2.2	2.825	.093
• Malpresentation	12	15.0	8	3.7	11.999	0.001**
Mode of delivery						
• Normal vaginal delivery	55	68.7	190	87.1	13.559	0.000**
Pregnancy outcomes						
• Pre term labor (<37 weeks)	18	22.5	24	11.0	6.382	0.011*
Birth weight						
• < 2499	18	22.5	24	11.0	18.719	0.000**
• 2500 – 3499	52	65.0	150	68.8		
• > 3500	10	12.5	44	20.2		
Mean±SD	2868.8±530.666		3041.±472.167			
Apgar score (< 7)						
• 1 min	28	35.0	36	16.5	11.859	0.001**
• 5 min	15	18.7	18	8.2	6.544	0.011*
Perinatal mortality						
• Fetal death	3	3.7	4	1.8	0.936	0.333
• I.C.U	11	13.8	7	3.2	17.381	0.000**

Table III: **Comparison of intra-partum and postpartum complications   between booked and unbooked mothers**

Complications	Unbooked mothers (n = 80)		Booked mothers (n = 218)		Test χ^2	P
	No.	%	No.	%		
• Obstructed labor	4	5.0	6	2.8	0.912	0.340
• Rupture uterus	1	1.3	0	0.0	2.734	0.098
• Retained placenta	2	2.5	1	0.5	2.447	0.118
• Post- partum hemorrhage	4	5.0	2	0.9	4.944	0.026

Table IV: **Distribution of women according to factors affecting the utilization of antenatal care.**

Factors affecting the utilization of prenatal care (n=80)	No.	%
Barrier for attendance illiteracy		
• Illiteracy	20	25.00
• Religious beliefs	15	18.75
• Poverty and environmental prejudices	20	25.00
• Transportation	10	12.50
• Long waiting time	15	18.75

4. Discussion:

Adequate antenatal care and hospital deliveries enable obstetricians to diagnose complications at an early stage when intervention will bring about better results [7]. Several studies have documented the positive influence of proper antenatal care and hospital deliveries [2-5,9].

Poor economic status may make it difficult for women to make informed decisions about using health preventive and promotive services such as antenatal care, particularly in an environment where the national poverty level is high. Women may also choose, under those unfavorable economic conditions, to seek care in substandard facilities because of the perceived cost of treatment in centers with higher standards of care several studies have actually shown a trend of decline in antenatal attendance and hospital delivery rates as hospital costs have been rising due to macroeconomic policies, which also had not significantly improved the economic situation of the population [5, 9, 10]. Also, in agreement with findings in other studies [2-6,8,11], a significantly higher percentage of the grand multiparous women were among the unbooked in this study, most likely because those mothers had had previous successful deliveries in other places and

therefore felt overconfident and refused to seek antenatal care and delivery in the hospital.

In agreement with findings in other studies, the results clearly showed positive correlations with maternal and fetal adverse outcomes[11].

The results indicated that unbooked mothers were significantly younger in age than booked mothers and a higher proportion belonging to a lower income and these agreed with research findings reported by **Owolabi et al.,**[11].

Pregnancy outcomes in the unbooked mothers were significantly poorer than in the booked mothers due to high preterm delivery rates, low birth weight babies, and a high incidence of caesarean section rates (Must be shown in the results). Unbooked women present late with complications making surgical intervention inevitable because of fetal distress and prolonged obstructed labor. The higher incidence of antenatal complications such as anemia and pregnancy induced hypertension, in this study among the unbooked women are factor that lead to poor outcomes in the infant and the mother[12].

Also in agreement with findings in other studies [15-17], various factors, such as aversion for caesarean sections, religious beliefs illiteracy, poverty and environmental and cultural prejudices, as barriers hindering women from utilizing prenatal care and hospital delivery.

Conclusion:

In conclusion, the study showed a positive correlation between unbooked mothers and increased risks of maternal and fetal adverse outcomes.

Recommendations:

From the results of the present study the following could be recommended:

1. There is an urgent need to promote antenatal care utilization.
2. Ensure supervised delivery by trained attendants and eliminate deliveries under substandard conditions.
3. Improvement in the socioeconomic conditions of the populace and the removal of fee for service in maternal care services will go a long way to improve the availability and accessibility of good quality antenatal care and delivery service that are urgently needed.
4. Behavior change communication, partnership with local community and religious leaders, greater involvement in household and health decision making and male involvement in

maternal health care are all important in this regard.

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