Original Article

Maternal and Fetal Outcomes of Un-booked Cases Presenting in Obstetrical Emergency of Public Sector Tertiary Care Hospitals of Rawalpindi

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Abstract

Background: Obstetric emergencies significantly affect both the mother and the fetus, leading to considerable maternal and perinatal morbidity and mortality. Reducing the maternal newborn Mortality and morbidity is a top priority of global healthcare system. The objective of this study is to assess the maternal and fetal outcomes of un-booked patients presenting in the emergency of tertiary care hospital.

Methodology: The self-administered questionnaire was used to obtain data and was cleaned and analyzed using excel and SPSS version 27. Descriptive statistics were found for demographic variables and maternal and fetal outcomes.

Results: Out of 200 participants, maternal outcomes were un-eventful in 144(72%), anemia 25(12.5%), fever 14(7.0%) and post-partum hemorrhage in 15 (7.5%) being the most pathological outcome. Only a few had cerebrovascular accidents 4 (2%), wound sepsis 3 (1.5%), maternal genital injuries 2 (1%) and acute renal failure 1 (0.5%). No incidence of coma or death were found. Fetal outcomes were: 152(76%) of the fetus were live at birth and 35 (17.5%) were NICU admissions.

Conclusion: The study's findings emphasizes the outcomes linked to un-booked patients in obstetric emergencies. These insights can influence health policies aimed at enhancing maternal and fetal outcomes. BY identifying gaps, targeted interventions, improved emergency preparedness, and awareness campaigns can be initiated to reduce morbidity and mortality rates, ultimately promoting better health for mothers and newborns in tertiary care settings.

Keywords: Obstetric Emergencies, Un-Booked patients, Maternal Outcomes, Fetal Outcome

Introduction

Pregnancy and delivery are generally cherished events. Antenatal care is one of the most important measures for ensuring safe parenting. Antenatal care is primarily concerned with preventing deviation from the expected sequence of events during pregnancy and is based on a solid understanding of physiological changes that occur throughout pregnancy.[1] The World Health Organization estimates that more than 500,000 women die each year because of pregnancy and associated problems in 2020.[2]

An emergency is a significant and frequently hazardous situation that arises unexpectedly and requires rapid care in order to save lives. The obstetric emergency has a significant impact on both mother and fetus, resulting in substantial maternal and perinatal morbidity and mortality. Peripartum hemorrhage and hypertensive crises are the primary causes of maternal death and morbidity globally.[3]

Pregnancy-related deaths in the United States affect 700 women annually, according to data from the Pregnancy Mortality Surveillance System (PMSS) of the Centers for Disease Control and Prevalence (CDC).[4]

The findings of a study conducted in 2019 in India clearly indicated that un-booked mothers had a higher frequency of PPH (5.6%), DIC (0.6%), infections (7.2%), and maternal mortality (0.6%) as compared to booked mothers, as well as a higher chance of delivering premature babies (11.5%) and stillborn babies (4.7%) as compared to booked mothers (6.7%, 0.98%), respectively.[1] Reducing maternal and newborn mortality and morbidity is one of the global health care system's top concerns. According to study of India in 2023; obstructed labor, fetal distress, postpartum hemorrhage, and hypertensive condition of pregnancy were the most prevalent obstetrical crises.[5]

A study that was published in the European Journal of Cardiovascular Medicine in 2023 states that the most often performed obstetric emergency procedure is a cesarean section. Fetal distress (22.6%) was the primary indicator of emergency caesarean section in the un-booked group, whereas prior caesarean section (29.26%) was the main indicator in booked cases.[6] In Ethiopia, the percentage of unfavorable perinatal and mother outcomes during obstetric emergencies was 37.1% and 15.9%, respectively.[7] Research conducted in Pakistan showed that preeclampsia/eclampsia, antepartum hemorrhage, postpartum hemorrhage, and mortality rates were significantly higher among un-booked patients compared to booked patients (p-value 0.001), as were fetal outcomes IUD, stillbirth, early neonatal death, and poor Apgar score.[8] In every 60 minutes, three women in Pakistan die from pregnancy and delivery problems. A research done in Sukkur, Pakistan, found postpartum hemorrhage (27.6%) and placental abruption to be the most common complication among majority of women (16.9%) with hypertensive disorders.[9] In a local study conducted at Fatima Memorial Hospital in Lahore, patients who came after a trial of labor experienced a high rate of maternal and fetal complications. The study's findings showed that 40% of these cases involved postpartum hemorrhage (PPH), 22% involved antepartum hemorrhage (APH), 69% involved fever, 51% involved shock, and 5% involved uterine rupture.[10]

According to a research conducted in Multan, sepsis (22.3%) was the most common maternal complication seen in obstructed labor followed by postpartum hemorrhage (19.42%).[11] The

purpose of this study is to assess the frequency of various maternal and fetal outcomes of un-booked patients presenting in obstetrical emergency of Tertiary care hospital. The data will help in identifying preventable adverse outcomes e.g. anemia. Such adverse effects can be corrected by raising community awareness and health education.

Materials and Methods

The current study is cross-sectional and was carried out among patients attending Holy Family Hospital, Benazir Bhutto Hospital, and DHQ Hospital Rawalpindi. The study population consisted of un-booked pregnant females (15-45 yrs) who were presented in obstetrical emergency after 26 weeks of gestation and had less than 3 ante-natal visits. Patients who were already booked in primary or private sector care and those who had miscarriages and ectopic pregnancy formed the exclusion criteria. The self- administered questionnaire was used to obtain data and was cleaned and analyzed using excel and SPSS version 27. Descriptive statistics were found for demographic variables and maternal and fetal outcomes.

Results

Data from 200 participants was collected. All were women (100%). Demographic details are given in Table I. Mean age was 28.65 years (SD = 5.36 years). All were married except one (99.5%) who was divorced. 165 (82.5%) of the participants were unemployed and were housewives. 35 (17.5%) were employed. Occupations of the head of the family were majorly skilled workers (47.0%) and a quarter each was above and below this level as shown in Table I.

Table-I Demographic Characteristics

Demographics	**N = 200**[1]
Avg. age of patient	28.65
Occupation of Patient	
Unemployed	165 (82.50%)
Employed	35 (17.50%)
Occupational Status of Head of Family	
Unemployed	7 (3.50%)
Unskilled	27 (13.50%)
Semi-skilled	25 (12.50%)
Skilled Worker	94 (47.00%)
Clerical/Farm Owner/Farmer	33 (16.50%)
Semi Professional	12 (6.00%)

Demographics	**N = 200**[1]
Professional (White Collar)	2 (1.00%)
Location of Residence	
Urban	124 (62.00%)
Rural	76 (38.00%)
Level of education of patient	
Nil	30 (15.00%)
Primary	33 (16.50%)
Secondary	66 (33.00%)
Intermediate	37 (18.50%)
Graduate	34 (17.00%)
Level of education of Head of Family	
Illiterate	33 (16.50%)
Middle School	32 (16.00%)
Primary School	18 (9.00%)
High School	69 (34.50%)
Intermediate/Diploma/Post high School	32 (16.00%)
Graduate/PG	15 (7.50%)
Professional Degree	1 (0.50%)
Socioeconomic Status	
Lower class	1 (0.50%)
Lower middle class	37 (18.50%)
Middle class	67 (33.50%)
Upper middle class	95 (47.50%)
Upper class	1 (0.50%)

[1]Mean (SD); n (%)

Table-II Complications and Mode of Delivery of Previous Pregnancy

Complications	**Frequency**	**Percentage**
Anemia (Hb<10g/dl)	47	34.3%
None	28	20.4%
Hypertensive disorders (e.g. PIH, Pre-eclampsia)	23	16.8%
Preterm labor/PROM (Premature rupture of membranes)	8	5.8%
Infections/Sepsis	7	5.1%
Gestational Diabetes Mellitus	7	5.1%
Hemorrhage (e.g. APH/PPH)	5	3.6%
Fetal Distress/ Malpresentation	5	3.6%
Obstructed/ prolonged labor	4	2.9%
Hypertension+ Anemia (Hb <10g/dl)	2	1.5%
Mode of Delivery		
Cesarean	58	42.3%
Spontaneous vaginal	56	40.9%
Assisted vaginal	16	11.7%
Caesarean+ Spontaneous vaginal	7	5.1%

Table-III Complications in previous deliveries of 137 women with past obstetric history

Complications in previous deliveries	**Frequency**	**Percentage**
None	107	78.1%
Prolonged labor	12	8.8%
Malpresentation	4	2.9%
Obstructed labor	3	2.2%
Ruptured uterus	3	2.2%
Cord prolapse	2	1.5%
Fetal distress	2	1.5%
Ruptured water bag	2	1.5%
Delayed second stage	1	0.7%
Oligohydramnios and IUGR	1	0.7%

***IUGR =** Intra-uterine Growth Restriction.

Table-IV Complications and Mode of delivery in current pregnancy

Complications	**Frequency**	**Percentage**
Anemia	56	28%
None	48	24%
Diabetes Mellitus	18	9%
Premature rupture of membranes	17	8%
Urinary tract infection	16	7%
Hypertension	13	6%
Bleeding after 28 weeks of pregnancy	11	3%
Anemia+ UTI+ DM	6	2%
Threatened miscarriage	4	2%
Cardiac diseases	3	2%
Anemia+ UTI	3	2%
Benign tumor	2	1%
Placenta previa	1	1%
Fetal distress	1	1%
DM+HTN	1	1%
LFTs Raised	1	1%
Mode of Delivery		
Cesarean section	167	84%
Spontaneous vaginal	19	10%
Assisted vaginal delivery	13	7%
Vaginal breech	1	1%

UTI = Urinary tract infections
DM = Diabetes Mellitus
HTN = Hypertension
LFT = Liver Function Test

Table-V Maternal outcomes frequency and percentages

Maternal Outcomes	**Frequency**	**Percentage**
Maternal Outcome Uneventful	144	72%
Anemia	25	13%
Post Partum Hemorrhage	15	8%
Fever	14	7%
CVS Accidents	4	2%
Sepsis	3	2%
Genital Injuries	2	1%
Acute renal failure	1	1%
Coma	0	0%
Death	0	0%

Table-VI Fetal outcomes frequency and percentages

Fetal Outcomes	Frequency	Percentage
Live Birth	152	76%
NICU admission	35	18%
Stillbirth/IUD	7	4%
Ventilator Support	6	3%

Most of the participants belong to urban setting (62.0%). One third of the participants had education level of Secondary education. With one third above and one third below this level including 15% with no education. Level of education of head of family as shown in table 1 which shows majority had high school level of education. Most of the participants where in the second highest level of socioeconomic status calculated according to Kuppuswamy scale (47.0%% in Upper Middle Class).

63 (31%) of the participants were primigravida. 75 (37.5%) of the females had 1 to 2 pregnancies and 62 (31.5%) of the females had more than 2 pregnancies. Excluding 63 participants who were primigravida, out of other 137, 101 (73.7%) of the participants reported they had live births in the last pregnancy. Other are as follows: 23 (16.8%) of the participants had miscarriage, 8 (5.8%) had Still births and 4 others with multiple parities in the past had a combination of miscarriage and live birth. Only 1 (0.7%) had induced abortions. Post-partum complication of the previous pregnancies was 18 (13.1%) had post-partum hemorrhage, 1 (0.7%) had puerperal sepsis and 1 (0.7%) had fever. 117 (85.4%) had no complications.

The mean gestational age at current pregnancy was 36.6 weeks (SD = 3.1 weeks). 99% of the participants attended the antenatal clinic for the current pregnancy. Majority of the participants (34.5%) said they went to private clinic to a gynae specialist for a check-up followed by THQ (28.5%), DHQ (17.5), Private clinic to a medical officer (6.5%), tertiary care hospital (5.5%), and other primary health care RHC (3.5%) and BHU (3.5). Only 1% of the women when nowhere for antenatal check-up. One average of 3.2 months (SD 1.9 months) of gestational-age patient had first antenatal check-up. During the current pregnancy they had an average of 5.1 (SD = 4.1) of antenatal visits. Most frequent complication of the current pregnancy was anemia (28.0%).

Maternal outcomes were uneventful in 72% of the patients with anemia (12.5%), fever (7.0%) post-partum hemorrhage (7.5%) being the most common pathological outcomes. Only a few had cerebrovascular accidents (2%), wound sepsis (1.5%), maternal genital injuries (1%) and acute renal failure (0.5%). No incidence of coma or death was found.

As far as the fetal outcomes are concerned. 76% of the fetus were alive at birth. 17.5% were NICU admission.

The status of newborn if live birth occurs was: well 163(82%), asphyxia 14 (7%), prematurity 10(5%), any birth defect/trauma 5(3%), stillbirth 4(2%), neonatal sepsis 3(2%) and low birth weight 1(0.5%).

Discussion

This study provides valuable insights into the maternal and fetal outcomes of un-booked patients presenting in obstetrical emergencies at a tertiary care hospital. According to the findings, un-booked patients have a higher risk of bad outcomes than those who receive regular prenatal care. These problems include increased rates of preterm labor, hypertensive disorders, and cesarean deliveries,

highlighting the critical need for enhanced healthcare methods. Similar results were reported by Chourasia S and Yadav K, they reported higher rates of obstetric complications and poor maternal outcomes in un-booked patients.[12]

99% of participants of our study received at least one antenatal check-up, the results are similar to the study conducted by Prathiba et al. The results may be comparable because the socio-demographics of our population like average age, educational status, and employment status of participants are very similar to their study.[16] The total percentage of participants receiving antenatal checkups is higher as compared to a study conducted by Sarker BK et al. which reported 82% of participants receiving antenatal checkups. This increase in percentage is due to media awareness campaigns, and the difference in sociodemographic of our population i.e. living in urban areas.[17]

Most patients had C-sections (84%) and spontaneous vaginal delivery (10%) in their last pregnancy, this rise in C-sections is in accordance with previous studies showing a global rise in c sections both elective and in an emergency. A study conducted in Nepal suggested that booked cases had a greater rate of Elective C-sections as compared to un-booked cases(38.6% vs. 42%) but the percentage of emergency C-sections was higher in un-booked cases than in booked cases(85.2% vs. 78%).[24] The rise in Caesarean section prevalence is linked to a number of factors, including increased medicalization of childbirth, financial incentives for healthcare practitioners, fear of labor problems, and patient desire for planned deliveries. Furthermore, increased maternal age, obesity, and an increase in private healthcare facilities all contribute to the trend, with C-sections being viewed as a safer or more convenient alternative for both doctors and patients.[13]

The most common complication in a previous pregnancy was PPH, according to a study conducted by Thams AB previous PPH is associated with an increase in the risk of emergency delivery and PPH in successive pregnancies. It can be inferred that PPH in previous pregnancy leads to emergency delivery in successive pregnancies and PPH is the third most common adverse maternal outcome.[14]

Most deliveries were uneventful with anemia as the primary maternal outcome followed by fever and postpartum hemorrhage. This result, i.e. anemia as the most common adverse outcome, is comparable with the WHO report, indicating a high prevalence of anemia in South Asia.[18] The exact percentage of anemic individuals is less than WHO reports.

The average gestational age in the study showed late preterm birth status according to WHO criteria. This finding is in accordance with the WHO fact sheet 2023, which reported that most preterm births happen in South Asia and Sub- Saharan Africa.[15]

Most of the patients received in an emergency were in the first stage of labor similar results were reported by Prathiba P et al. in their study on obstetrical emergency.[16] The rate of total postpartum complications is comparatively higher in our study as compared to a meta-analysis conducted by Minkauskienė et al. This may be due to differences in the inclusion criteria of our study that solely included ER cases. However, the rate of severe postpartum complications such as postpartum hemorrhage is like that study [19].

Duration of labor is within the normal range according to WHO guidelines, i.e. initial labor, birth is usually finished within 3 hours but in subsequent labors, birth is usually completed within 2 hours. No significant variation in the duration of labor has been observed in the

study.[20] The rate of emergency C-section is 83.5%, and the most common antenatal fetal complication is fetal distress and abnormal fetal heart sounds, the results are comparable to the results reported by a study conducted in Nepal and a study of Diallo N.[21,22]

Most of the neonates are delivered well. Fetal asphyxia was the most common adverse fetal outcome, the results are comparable to previous literature showing fetal asphyxia as the most prevalent adverse fetal outcome in emergency obstetrics cases.[21] The length of hospital stay in the majority of cases was more than 3 days (72 hrs). Similar results were reported in a study conducted by Htwe O et al (2011), showing the mean length of hospital stay in emergency obstetrics was 3-4 days.[23]

Conclusion

The main outcome of the study is that un-booked obstetric patients have a higher risk of adverse maternal and fetal outcomes, including preterm labor, hypertensive disorders, and increased cesarean delivery rates, compared to patients who receive regular prenatal care. The data can help in identifying preventable adverse maternal and fetal outcomes in the population, the critical need for improved prenatal care access, and influencing health policies to enhance maternal and fetal outcomes. By identifying gaps, targeted interventions, improve emergency preparedness, and awareness campaign can be started to reduce morbidity and mortality rates, ultimately promoting better health for mothers and newborns in tertiary care settings.

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