

# Postpartum Cases Referred to a Tertiary Care Hospital

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## ABSTRACT

### BACKGROUND

Maternal morbidity refers to complications that have arisen during pregnancy, delivery or during postpartum period. Monitoring the progress of various interventions depends upon measuring the maternal mortality and morbidity. Referral to a tertiary hospital has been described as one of the criteria for measuring maternal morbidity in low income countries. This paper describes the application of a practical approach to the assessment of the burden of postpartum morbidity by means of postpartum referrals to tertiary centre.

### METHODS

This is a retrospective study conducted in the Department of Obstetrics and Gynaecology, Guru Teg Bahadur Hospital (GTBH), Delhi and included women who required admission and treatment for obstetric complaints during postpartum period.

### RESULTS

The common morbidities among postpartum women for which they sought medical services were postpartum haemorrhage (49%), puerperal pyrexia/sepsis (24.2%), followed by pre-eclampsia /eclampsia (11%). Haemorrhage accounted for 33%, puerperal sepsis for 24.2% and eclampsia/pre-eclampsia for 18.1% of total maternal deaths.

### CONCLUSIONS

This study highlights the need to focus on the quality of postpartum care. The importance of post-partum care should be emphasized. Efforts to decrease maternal mortality and morbidity should focus on high-risk mothers not only during pregnancy and delivery but also during the postpartum period. Maternal mortality audits should be held, attended by the whole staff involved in the care of pregnant women, particularly in preventable cases and accountability should be discussed to avoid future mishaps.

### KEY WORDS

Postpartum Maternal Morbidity, Maternal Mortality, Tertiary Hospital Admission, Severe Acute Maternal Morbidity, Developing Countries, Postpartum Referrals

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## BACKGROUND

The World Health Organization (WHO) defines the postpartum period, or puerperium, as beginning one hour after the delivery of the placenta and continuing until 6 weeks (42 days) after the birth of the infant. Every year about 287,000 women die of causes related to childbirth of which a staggering 99 percent belong to the developing countries.<sup>1</sup>

Maternal morbidity refers to complications that have arisen during the pregnancy, delivery or postpartum period. Severe acute maternal morbidity (SAMM) has been defined by the WHO as "a woman who nearly died but survived a complication during pregnancy, childbirth, or within 42 days of pregnancy termination through care in health facilities."<sup>2</sup> Of the 136 million women who give birth every year, it has been estimated that about 1.4 million have some form of life-threatening medical emergencies, 9.5 million undergo other complications, and 20 million have long-term disabilities.<sup>1,3,4,5,6</sup> The risk of maternal mortality is 200 times higher in developing countries than the developed ones.<sup>7</sup> Thus, the goal to achieve a 75% reduction in maternal mortality in all countries by the end of 2015 has been set as a part of Millennium Development Goal.<sup>8</sup> However, it has been well established now maternal mortality represents only the tip of the iceberg of the much larger issue of maternal morbidity which remains hidden.<sup>9</sup> Therefore, interest on postpartum maternal morbidity has both developed and developing countries has been seen as an increasing trend. Age, multiparity, associated medical diseases, chronic infections like malaria and nutritional deficiencies such as anaemia are among the major risk factors for postpartum maternal morbidity, others being social factors such as lack of intrapartum or postpartum care, illiteracy, lack of access to medical care, improper use of haematinics, poverty and ignorance. Anaemia in turn, predisposes these women to complications such as postpartum haemorrhage, sepsis, preterm labour and low birth weight and neonatal infections.<sup>10</sup> The postpartum morbidities include infection, injuries, anaemia, urinary complaints, fistula, genital prolapse, hypertension, haemorrhoids and depression. It has been observed that approximately 15% of all pregnancies are complicated by preventable conditions.<sup>7</sup> Despite various interventions on maternal mortality and morbidity at the population level in poor and remote areas, statistics show a negligible improvement. Monitoring the progress of these interventions depends upon measuring the maternal mortality and morbidity. Measuring maternal morbidity is even more difficult due to the absence of standard criteria and lack of population-based data. Further, in many developing countries, health services data on postpartum morbidity is limited and a very small proportion of women have access to supervised deliveries and medical care. Also, underreporting is very common with most deaths and morbidities occurring outside of the health system. Still, referral to tertiary hospital has been described as one of the criteria for measuring maternal morbidity in low income countries.<sup>11</sup>

With this view, this paper describes the application of an inexpensive and practical approach to the assessment of the burden of postpartum morbidity, with a larger aim to monitor trends of such referred cases and identify

preventable risk factors and thus, decrease the morbidity in postpartum period.

The objective of the study is to determine the frequency and cause for postpartum admission and to assess the maternal outcome in postpartum period so as to strengthen the postpartum care.

## METHODS

### Duration

The present study was done 1<sup>st</sup> August 2016 to 31<sup>st</sup> July 2017, by retrospective collection of records of postpartum women who had been referred and admitted in the Department of Obstetrics and Gynaecology, Guru Teg Bahadur Hospital (GTBH) Delhi.

### Study Type and Site

The present study was a retrospective study, conducted in the department of Obstetrics and Gynaecology, Guru Teg Bahadur Hospital (GTBH), Delhi. GTBH is 1000 bedded tertiary referral Government medical college and hospital; situated in the easternmost part of Delhi. It gets a large number of referrals from maternity homes, primary health centers from rural parts of east Delhi, and also from adjoining states such as Uttar Pradesh. Data regarding maternal mortality was collected from maternal mortality register.

### Study Population

The study comprised of all those women who required admission and treatment in the Department of Obstetrics and Gynaecology for obstetric complaints during post-partum period. For the purpose of this study, the WHO definition of the postpartum period (From delivery until 6 weeks after delivery) was used as the time period for inclusion criteria<sup>1</sup>. We included the postpartum women admitted with postpartum problem, who had delivered at home or at other hospitals after reaching 28 weeks of period of gestation. Women admitted for various non-obstetrical problems were carefully excluded and so were those admitted due to neonatal problems.

### Statistical Analysis

A total of 210 subjects were studied and analyzed during this one-year period. A structured proforma was used to gather the information. Descriptive data were tabulated as absolute figures and percentages.

## RESULTS

Table 1 shows the demographic and obstetrical risk factors in our 210 subjects. Among them, 2.8% were teenagers, 75.7% were between 20 -29 years of age, 20.5% were between 30-39 years and 1% women were more than 39 years old. Majority of them were from outside the Delhi i.e. 55.2% and 44.8% were from Delhi. 34.8% women were primipara, 28.1% belonged to parity two, 32.3% belonged to between parity three to four and 4.8% had more than five children. Majority (97.6%) of them were unbooked.

58.6% women had home delivery whereas 26.7% delivered at private health facility, 13.7% women had delivered at public health facility and 1% women delivered on the way to the hospital. 59.1% deliveries were conducted by untrained birth attendants whereas 40.9% women were delivered by trained attendants or doctors. Most of the women came to the hospital by self (43%), 37.6% were referred by private health facility and 19.5% were referred by public health facility. Majority of women had vaginal delivery (89.4%) and only 10.6% had a Caesarean section. Indications of Caesarean section have been enlisted in table 1.

Table 2 outlines the cause for which these postpartum patients required hospital admission. The common morbidities among the postpartum women for which they sought medical services were postpartum haemorrhage (49%), puerperal pyrexia/sepsis (25.6%), followed by preeclampsia/eclampsia (11%). Commonest type of postpartum haemorrhage was atonic, seen in 57.2% followed by traumatic type which accounted for 36.8% of total PPH cases (Fig. 1). Complications amongst these postpartum women have been enumerated in table 3. Multiple complications such as DIC with anaemia, anaemia with septicaemia and pleural effusion, DIC with shock, ARF with pulmonary oedema, DIC with ARF, HELLP syndrome with pulmonary oedema, septic encephalopathy with anaemia and septic encephalopathy with pulmonary Koch's were also seen and thus enlisted in the table.

Variable	Frequency	Percentage
<b>Age</b>		
<19	6	2.8
20-29	159	75.7
30-39	43	20.5
>40	2	1
<b>Residence</b>		
Delhi	94	44.8
Outside Delhi	116	55.2
<b>Parity</b>		
1	73	34.8
2	59	28.1
3-4	68	32.3
>=5	10	4.8
<b>Booked</b>	05	2.4
<b>Unbooked</b>	205	97.6
<b>Place of delivery</b>		
Home	122	58.6
On the way	3	1
Private health facility	56	26.1
Public health facility	30	13.9
<b>Mode of delivery</b>		
Vaginal Birth	188	89.4
Caesarean section	22	10.6
<b>Delivery conducted by</b>		
Untrained birth attendant	124	59.1
Trained birth attendant/Doctor	86	40.9
<b>Referral by</b>		
Self	90	43
Private health facility	79	37.6
Public health facility	41	19.5
<b>Indications of Caesarean section</b>		
Fetal distress	5	2.3
Obstructed labour	3	1.4
Failed induction/Arrest of cervical dilatation	3	1.4
Antepartum haemorrhage	2	1
Others	6	2.9
Not known	3	1.4
<b>Anaemia*</b>	174	82.9
Mild	14	6.7
Moderate	63	30
Severe	97	46.2

**Table 1. Demographic and Obstetrical Risk Factors (n=210)**

\*Anaemia: WHO Guideline (2003) Severe anaemia—Haemoglobin level 5-7 g/dL; Moderate anaemia—Haemoglobin level <7 g/dL; Mild anaemia—Haemoglobin level 9-11 g/dL

Variable	Frequency	Percentage
<b>Postpartum haemorrhage</b>	103	49.0
Atonic	40	38.8
Traumatic	38	36.8
Retained placenta	19	18.4
Others	06	5.8
<b>Pre-eclampsia</b>	02	1
<b>Eclampsia</b>	21	10
<b>Puerperal pyrexia/sepsis</b>	51	24.2
<b>Anaemia</b>	13	6.2
Others		
Respiratory tract Infection	10	4.8
UTI	3	1.4
ARF	2	1
Gaped episiotomy wound	2	1
DVT	1	0.5
Jaundice	1	0.5
Breast abscess	1	0.5

**Table 2. Causes of Postpartum Morbidity Requiring Admission (n=210)**

Maternal Complications	Frequency	Percentage
Gaped wound	3	1.4
Pulmonary oedema	2	1
Shock	13	6.2
ARF + Anaemia	6	3.1
DIC + Anaemia	7	3.3
Pleural effusion+ Anaemia+ Septicaemia	2	1
DIC + Shock	1	0.5
ARF + Shock	1	0.5
ARF + Pulmonary oedema	1	0.5
DIC + ARF	1	0.5
HELLP + Pulmonary oedema	1	0.5
Septic encephalopathy + anaemia	1	0.5
Septic encephalopathy+ Pulmonary Koch's	1	0.5
<b>Maternal mortality</b>	<b>33</b>	<b>15.7</b>
Postpartum haemorrhage	11	33.3
Sepsis	8	24.2
Eclampsia/Pre-eclampsia	6	18.2
Anaemia	4	12.1
DIC	4	12.1
Jaundice	1	3.03
<b>Fetal outcome</b>		
IUD	15	7.1
Early neonatal death	03	1.4

**Table 3. Maternal and Fetal Outcomes in Patients (n=210)**

Variable	Frequency	Percentage
<b>Non-surgical Management</b>	131	62.3
<b>Surgical management</b>	79	37.7
Tear repair	33	15.7
Evacuation of retained products	19	9
MRP	12	5.7
Resuturing of gaped wound	02	1
Hydrostatic reduction	01	0.5
Manual repositioning of uterus	01	0.5
Hematoma drainage	02	1
Balloon tamponade	01	0.5
Exploratory laparotomy + drainage of pus	02	1
Exploratory laparotomy + hysterectomy	04	2
Breast abscess drainage	01	0.5
<b>Blood transfusion</b>	113	53.6
Whole blood/Red cell concentrate		
1-3 units	94	44.7
4-6 units	15	7.1
>6 units	4	2
Fresh Frozen Plasma	24	11.4
Platelet concentrate	13	6.1
<b>ICU admission</b>	25	12

**Table 4. Management in Referred Postpartum Patients (n=210)**

Of these 210 patients with postpartum morbidity, 33 women (15.7%) expired. During the same period (August 2016-July 2017), total maternal deaths were 70. This data denotes that these postpartum women had contributed to 47.1% of total maternal mortality. Amongst these 210 women, perinatal mortality was 8.5% (Table 3). Table 4 describes the management in our patients. 79 patients (37.6%) were managed surgically and 62.3% underwent non-surgical management. Genital tract injuries were repaired in 15.7%, evacuation of retained products in 9%, manual

removal of placenta in 5.7%, exploratory laparotomy and hysterectomy done in 4 patients (1.9%), laparotomy and drainage of pyoperitoneum was done in 2 patients (1%). Procedures such as hydrostatic reduction of uterus, manual reposition of uterus, drainage of vulval haematoma, pyometra drainage, breast abscess drainage and balloon tamponade each contributed to 0.5%. A total of 113 women (53.6%) received blood transfusion, 1-3 units of blood was given in 44.7% of cases, 4-6 units blood was given in 7.1% of cases and more than 6 units of blood was given in 2% of cases. 25 (12%) women required ICU admission for various complications enumerated in table 3.

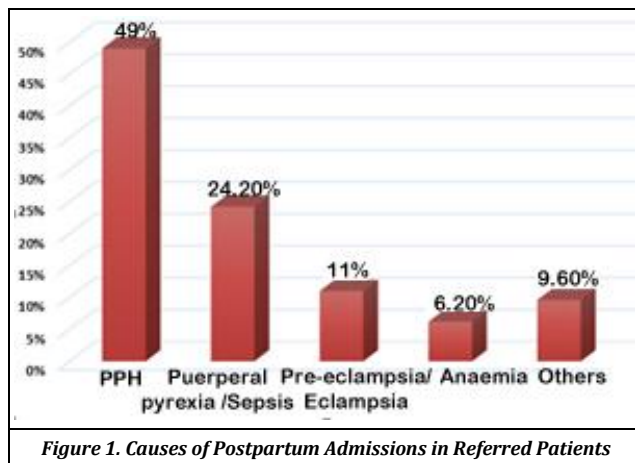


Figure 1. Causes of Postpartum Admissions in Referred Patients

## DISCUSSION

It has been repeatedly observed that in developing countries, a large population of pregnant females do not receive any form of antenatal care; this holds true for postpartum care, as less than one-third females receive any form of postnatal care.<sup>12</sup> In our study, majority of women (97.6%) were unbooked. Despite various programs and schemes started by the Government, we still have a large proportion of women who deliver at home in the hands of untrained attendants. In the present study, more than half women (58.6%) suffered this fate. Being a tertiary referral center, most of the women coming to our hospital have associated risk factors such as anaemia. In the present study, though 82.8% women were anaemic, only 6.2% were admitted due to its being direct cause. More than half of these patients i.e. 53.6% women received blood transfusion. Anaemia also accounted for four maternal deaths in our review. Bibi S et al found anaemia associated in 100% of patients requiring postpartum admission.<sup>13</sup> Naz et al also found anaemia in 90% of cases of postpartum admissions.<sup>14</sup> A tertiary hospital review on blood transfusion for primary PPH reported that transfusion within 24 hours of delivery was required in 0.31% of their patients.<sup>15</sup> Twenty percent of their patients developed coagulopathy, and 24% required admission to the intensive care unit.

Causes of hospital admission in postpartum women in our study are in concordance with other studies in the developing countries. Bibi S et al<sup>13</sup> reported the frequency of obstetric morbidities in a tertiary hospital in Pakistan to be 4 per 100 deliveries comparable with the frequency of 3.3 per 100 deliveries reported from a tertiary hospital of Delhi.<sup>16</sup> The

common obstetric morbidities for which women seek tertiary hospital admission and treatment were postpartum haemorrhage (PPH), pre-eclampsia and sepsis in these studies as well as ours.

Most common direct causes of postpartum admission in our study were PPH (49%) followed by puerperal sepsis/pyrexia (25.7%), pre-eclampsia/eclampsia (10.9%) and severe anaemia (6.2%). However, non-obstetrical causes contributed to 8.2% and included respiratory tract infection, jaundice, deep vein thrombosis, breast abscess, etc. (Table 2). PPH was most commonly attributable to maternal morbidity, majority of them being atonic, in accordance to other studies,<sup>17,18</sup> however, traumatic PPH was also a major factor, contributing in 36.8% of cases, thus making it too an equally important reason for referral.

Bibi S et al<sup>13</sup> reported that the most common conditions responsible for life threatening complications were PPH (50%), preeclampsia and eclampsia (30%) and puerperal pyrexia 14%. Anaemia was associated problem in 100% of cases and maternal mortality rate was 4.8%. These three conditions have been found to be responsible for maternal morbidity and mortality not only in our study but various other studies worldwide.<sup>13,16,19</sup> Similar data has been reported from University Hospital of Damascus, Syria in which the common obstetric morbidities for which women seek tertiary hospital admission and treatment were postpartum haemorrhage (PPH), pre-eclampsia and sepsis.<sup>20</sup> Data from a study in Zambia differs from that of our region, probably owing to pre-existing conditions and chronic diseases.<sup>21</sup> In their study, puerperal sepsis was the most frequent diagnosis, accounting for one-third (34.8%) of all postpartum hospital admissions over the 6-month period. Malaria was the second most common diagnosis accounting for 14.5% of all cases. Hypertensive disorders accounted for 10.9%. Only three referrals were for postpartum haemorrhage.

It has been reported that sixty percent of maternal mortality occurs in the postpartum period.<sup>22</sup> Currently, in the developed countries, embolism is the leading cause of the maternal mortality.<sup>23</sup> However, in the developing countries, PPH continues to be a leading cause, accounting for 25-43% of the maternal deaths.<sup>24, 25</sup> In this study, maternal mortality occurred in 33 women (15.7%) which was almost half (47.1%) of total maternal mortality of the same year of the hospital. Of these 33 women, direct causes were implicated in three-fourths of cases (75.8%) while indirect causes were responsible for 24.2% of maternal deaths. haemorrhage accounted for 33.3%, puerperal sepsis for 24.2% and eclampsia/pre-eclampsia for 18.1% of total maternal deaths. Anaemia contributed in 4 (12.1%) deaths, so did DIC (12.1%) and 1 patient succumbed to jaundice (3.03%) (Fig.2). This data is quite similar to others reported. In another tertiary care hospital review of maternal mortality, direct causes accounted for 72.5% of maternal deaths whereas 27.5% of maternal deaths were due to indirect causes.<sup>26</sup> Haemorrhage (26.66%), eclampsia (26.66%), and sepsis (18.33%) were the major direct causes of maternal deaths. In another study conducted at Madhya Pradesh, obstructed labour was the commonest indication for referral, Haemorrhage and eclampsia were the leading causes of deaths among referred mothers.<sup>27</sup> Kaur et al reported similar trends in maternal mortality ratio in a tertiary referral hospital.<sup>28</sup> They found

that haemorrhage (24.12%) and sepsis (18.96%) were the two most common direct cause of deaths followed closely by pregnancy induced hypertension including eclampsia (15.5%). DIC was the cause of death in 8.6% of cases and amniotic fluid embolism and pulmonary embolism were the suspected causes in 1.72% and 5.17% of cases respectively. Anaemia (12.06%) contributed to the most common indirect cause of death. Maharlouei et al observed PPH in 35.6% of recorded causes of death, followed by postpartum sepsis (14.9%), eclampsia (10.9%) and pulmonary emboli (6.9%).<sup>29</sup>

### CONCLUSIONS

This study highlights the need to focus on the quality of postpartum care, which if not more, is equally important as prenatal care. The importance of post-partum care should be emphasized. Efforts to decrease maternal mortality and morbidity should focus on high-risk mothers not only during pregnancy and delivery but also during the postpartum period. Maternal mortality audits should be held, attended by the whole staff involved in the care of pregnant women, particularly in preventable cases and accountability should be discussed to avoid future mishaps. Since postpartum haemorrhage was the most frequent cause of admission in our study and many others, prevention and detection of this condition is of utmost importance. Another extremely important factor, particularly in the developing countries, is an action on the modifiable variables, such as illiteracy and malnutrition, as they contribute indirectly but majorly to the postpartum maternal complications. Reduction in maternal morbidity will, in turn, cause a reduction in maternal mortality. In improving postpartum care, effective programs for health education and iron supplementation are also very important. However, ensuring that all deliveries are conducted by skilled birth attendants is most important so that timely and appropriate identification and management of obstetric complications or referral to centers which can manage the complications can be done.

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