

# Maternal and Perinatal Outcome in Emergency Obstetric Referrals in a Tertiary Care Centre.

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## **Abstract:**

**Aim & Objective:** to study Maternal and Perinatal Outcome in Emergency Obstetric Referrals in a Tertiary Care Centre.

**Material & Methods:** This Prospective observation study was conducted in Labour room , Department of Obstetrics and Gynaecology tertiary care hospital during 1st October 2019 to 30th September 2021.

**Inclusion criteria:** All cases referred from Government or Private hospitals, who are having referral letter and who deliver in our institute and are willing to participate in the study. In present study we have enrolled 1297 cases during two years.

**Observations & Results:** Out of 1297 pregnant women, maximum Pregnant women i.e. 557(43.0%) referred were from the 21 To 25 years of Age-group. The mean age of pregnant women was  $26.93 \pm 7.37$  years. Most Common reason of delay in decision taking-by relatives in 1060(81.7%) of pregnant women, 121(9.3%) of pregnant women were reported in delay in transportation. Majority of 420(32.4%) of pregnant women were having referral place was District Hospital. Majority of the Pregnant women i.e., 784(60.4%) were referred because there was lack of trained health professional in the referral unit followed by non-availability of ICU and ventilator i.e. 289(22.3%).60(4.7%) of pregnant women observed near miss and 14(1.1%) of pregnant women reported mortality. 324(24.9%) of babies had had Apgar Score of less 7. 303(23.5%) babies had NICU admission, 21(1.6%) were having early neonatal death and 57(4.3%) of babies were still birth.

**Conclusion:** Timely referral is crucial for a satisfactory maternal and fetal outcome. Health education and awareness by mass media and non-government organisations can improve the health and social status of women in rural areas. Health education and awareness by mass media and nongovernment organisations can improve the health and social status of women in rural areas.

**Keywords:** Referral, Pregnant women, Emergency Obstetric.

## **Introduction:**

A woman goes through various stages throughout her life. Among these stages the most critical stage is motherhood. It is assumed that whenever a woman delivers, it is a new life for her, after passing successfully through pregnancy, labour and puerperium. The death of a mother or a new born disrupts the whole family.

Maternal and Perinatal mortality are the yardstick and index to see the efficiency of antenatal and intranasal care in our country. The rural population in our country is suffering due to negligible availability of good quality health services. Obstetric care is mainly provided by

the peripheral health units<sup>[1]</sup>. At the realisation of any complication during pregnancy, labour and puerperium most of the peripheral health centres and private practitioners refer obstetric cases to higher health units. Even today many patients come to the hospital in critical condition. The Prevention of Maternal Mortality network study has proposed a three delays model for referrals in obstetrics and Gynaecology<sup>[2]</sup>. In majority of rural areas deliveries are attended by relatives or untrained birth attendants. After realising difficulty in labour, a midwife or doctor is called home and patient is shifted to the local hospital. At the local hospital she is further observed with the hope of vaginal delivery which results in further delay. When the attempts of delivery at local hospital fail, decision of referring to the higher health unit is made.

Inadequate transport facilities in rural areas results in additional delay to reach the institute. Late decision of referral of complicated cases to higher centre and inadequate transport facilities contribute to the high maternal and perinatal morbidity and mortality. Our chance of falling ill or of dying an untimely death largely depends on the country we live in, place of residence, economic status, educational background, social and cultural factors that influence maternal morbidity and mortality<sup>[3]</sup>.

The referral services are the backbone of any healthcare delivery system. Obstetric patients constitute the bulk of referred cases in any tertiary care hospital. In developing nations like India where the majority of people reside in rural areas and lack vital obstetric care, it's very important that such patients should be identified and timely referred to the advanced centres, so that early treatment leads to improved maternal and fetal outcome. An effective referral system is an essential prerequisite for a well functioning Emergency Obstetric Care service<sup>[4]</sup>. Ours is a tertiary care centre and we get many referrals from peripheral health units. These patients are sometimes referred in bad conditions and have poor maternal and fetal outcomes.

#### **Objectives:**

- To study sociodemographic profile in the emergency obstetric referrals.
- To study the severity of obstetric referrals by MFTI triaging system as per the referral letter.
- To study type of delay and reasons of referral.
- To study the maternal outcome in the emergency obstetric referrals.
- To study the perinatal outcome in the emergency obstetric referrals.

#### **Material & Methods:**

This Prospective observation study was conducted in Labour room, Department of Obstetrics and Gynecology tertiary care hospital during 1<sup>st</sup> October 2019 to 30<sup>th</sup> September 2021.

#### **Inclusion criteria:**

All cases referred from Government or Private hospitals, who are having referral letter and who deliver in our institute and are willing to participate in the study.

#### **Exclusion criteria:**

Patients who come to the institute on their own

Patients not having referral letter.

Patients who are not willing to participate in the study.

Postnatal patients who are referred.

**Sample size:** In present study we have enrolled 1297 cases during two years.

**Methodology:**

After obtaining permission from the institution ethics committee this study was conducted in the department of obstetrics and gynaecology during study period in which the intrapartum and antepartum cases referred from peripheral health units are studied.

On arrival in labour room, the patient is received and the women were selected for this study. Detailed history taking and examination was done. Data was documented in case pro-forma and data collection sheets were prepared.

Triaging was done according to MFTI triaging system. MFTI triaging system includes 5 parameters: Stat/ Priority 1, Urgent/ Priority 2, Prompt/ Priority 3, Non urgent/ Priority 4, Scheduled/ Priority 5.

Severity of the referral was decided according to this and colour tag was given to the patient. Condition of patient on arrival was noted as fair, moderate or poor according to the vital parameters of the patient upon arrival: Referral chit was studied: To know the place of referral. Outcome of pregnancy was studied using parameters.

**Statistical Analysis:** The data was compiled in master chart i.e. in MS-EXCEL Sheet and for analysis of this data; SPSS (Statistical package for social sciences) Version 20<sup>th</sup> was be used. Frequencies and percentages were calculated to show the distribution.

**Observations & Results:**

Out of 1297 pregnant women, maximum Pregnant women i.e. 557(43.0%) referred were from the 21 To 25 years of Age-group. The mean age of pregnant women was  $26.93 \pm 7.37$  years. Maximum i.e. 663(51.1%) Pregnant women were Primigravida. 859(66.2%) were uncooked which were comparatively more than booked Pregnant.

Most Common reason of delay in decision taking-by relatives in 1060(81.7%) of pregnant women, 121(9.3%) of pregnant women were reported in delay in transportation, 113(8.7%) of pregnant women reported delay due to arrangement for money and 03(0.2%) of pregnant women were not reported delay. Most of the Pregnant women i.e. 488(37.6%) had previously 2 Visits followed by 3 Visits i.e. 267(20.6%) and 104(8.0%) of case not visited previously.

**Table 1: Distribution according to Place of antenatal Care and Place of Referral**

Place of antenatal Care and Place of Referral		No. of Pregnant women	Percentage
Place of antenatal Care	Rural Health Centre	316	26.5
	District Hospital / Sub-District Hospital	529	44.3
	Public Health Centre	140	11.7
	Private Hospital	208	17.4
Place of Referral	Rural Health Centre	378	29.2
	Sub-District Hospital	420	32.4
	District Hospital	184	14.2
	Public Health Centre	172	13.2
	Other Medical Colleges	70	5.4
	Private Hospital	73	5.6

Out of 1193 pregnant women, majority of 529(44.3%) of pregnant women were taken antenatal Care at District Hospital / Sub-District Hospital, followed by rural health centre i.e. 316(26.5%).

Majority of 420(32.4%) of pregnant women were having referral place was District Hospital, 378(29.2%) of pregnant women were having referral place was Rural Health Centre and 70(5.4%) were having referral place was Other Medical Colleges.

**Table 2: Distribution according to information of reasons for referral and Transport**

reasons for referral and Mode of Transport		No. of pregnant women	Percentage
Primary Treatment	Given	224	15.7
	Not Given	1073	84.3
reasons for referral	Non-Availability of Infrastructure	224	17.3
	Non-Availability of Ventilator/ICU	289	22.3
	Non-Availability of Trained Health Professional	784	60.4
Mode of Transport	Ambulance from Referral Unit	124	09.6
	108 Ambulance	773	59.4
	Private Vehicle (Rickshaw, Taxi & Own Vehicle)	400	31.0
Time to reach the centre	< 6 Hours	1235	95.2
	6-12 Hours	51	3.9
	>12 Hours	11	0.9

Most of the Pregnant women i.e. 1073(84.3%) referred were not given any Primary treatment in the referral Unit and 224(15.7%) of pregnant women were given the treatment.

Majority of the Pregnant women i.e. 784(60.4%) were referred because there was lack of trained health professional in the referral unit followed by non-availability of ICU and ventilator i.e. 289(22.3%).

Majority i.e. 773(59.4%) pregnant women travelled to 108 Ambulance followed by Private Vehicle (Rickshaw, Taxi & Own Vehicle) 400 (31.0%).

Out of 1297, 1235(95.2%) of the pregnant women took less than 6 hours to reach the referral centre whereas 11(0.9%) of pregnant women were took more than12 hours to reach the referral centre

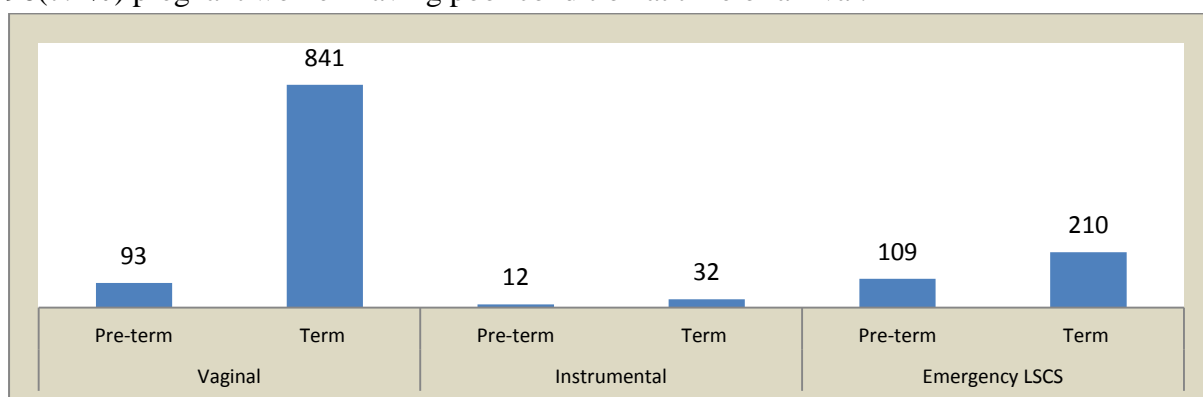
**Table 3: Distribution according to Triage, Obstetric Indication for referral & Condition**

Triage, Obstetric Indication for referral & Condition		No. of Pregnant women	Percentage
Triage	Stat	354	27.3
	Urgent	178	13.7

	Prompt	437	5.7
	Non Urgent	328	25.3
	Scheduled	0	0
Obstetric Indication for referral	APH	72	5.5
	Eclampsia	41	3.2
	Pre Eclampsia	25	17.9
	Anaemia	72	5.5
	Previous LSCS	89	6.8
	PV Leaking	171	13.2
	Oligohydramnios	68	5.2
	Post Datism	94	7.2
	IUFD	17	1.2
	Labour Pains/ Pain in Abdomen	283	21.8
	Preterm Labour	157	12.1
condition of the pregnant women at the time of referral	Fair	681	52.5
	Moderate	520	40.1
	Poor	96	7.4

Most pregnant women 437(5.7%) required prompt attention followed by stat attention i.e. 354(27.3%). Majority of the 283(21.8%) Pregnant women were referred for labour Pain/ Pain in abdomen followed by Pre-Eclampsia 25(17.9%) and 171(13.2%) referred due to PV leaking.

Majority 681(52.5%) of pregnant women were general condition Fair at the time of arrival, 520(40.1%) of pregnant women were having moderate condition at the time of arrival and 96(7.4%) pregnant women having poor condition at time of arrival.



**Figure 1: Mode of Delivery**

Out of 1297 pregnant women, majority of the Pregnant women i.e. 934(72.01%) delivered vaginally followed by emergency C Section i.e. 319(24.59%) and 44(3.92%) of pregnant women delivered by Instrumental delivery.

**Table 4: Distribution according to maternal complications**

		No. of Pregnant women	Percentage
maternal complications	Wound Gape	20	1.6
	Episiotomy Gape	25	1.9
	Required Blood Transfusion	348	26.8
	Acute Renal Injury	16	1.2
	ICU Care	38	2.9
Postpartum maternal complications	Near Miss	60	4.7
	Mortality	14	1.1
cause of Maternal Mortality [n=14]	Hypertensive disorders of pregnancy	6	42.9
	Antepartum Haemorrhage	4	28.6
	Septicaemia	4	28.6

Most common complication in pregnant women was the requirement of blood transfusions i.e. 348(26.8%) and 25(1.9%) of pregnant women episiotomy gape. 60(4.7%) of pregnant women observed near miss and 14(1.1%) of pregnant women reported mortality.

Most Common 06 (42.9%) having underlying cause of maternal death was hypertensive disorder of Pregnancy like Severe Pre-Eclampsia, Antepartum Eclampsia, 04(28.6%) of pregnant women were having Antepartum Haemorrhage and Septicaemia.

**Table 5 : Distribution according to Perinatal complications**

Perinatal complications		No. of Pregnant women	Percentage
Perinatal complications	APGAR Score (<7)	324	24.9
	Low birth weight	641	49.5
	NICU Admission	303	23.5
	Still Birth	57	4.3
	Early Neonatal Death	21	1.6
Cause of Early Neonatal Death [n=21]	RDS With Refractory Shock	8	38.1
	Severe Perinatal Asphyxia	7	5.3
	Sepsis	6	28.6%

324(24.9%) of babies had had Apgar Score of less 7. 303(23.5%) babies had NICU admission, 21(1.6%) were having early neonatal death and 57(4.3%) of babies were still birth. Most Common Cause of Neonatal Death was RDS with Refractory Shock in 8(38.1%), 7(5.3%) of babies were having Severe Perinatal Asphyxia, 06(28.6%) of babies were having sepsis.

**Discussion:**

In present study, Out of 1297 pregnant women, maximum Pregnant women i.e. (66.2%) referred were from the 21 to 30 years of Age-group. The mean age of pregnant women was  $9.93 \pm 7.37$  years. Similar to study Rekha Jakhar et al <sup>[5]</sup> most of the pregnant women were in the age groups of 21-30 years, Study by Patel et al <sup>[6]</sup> (reported that 64% referred pregnant

women belonged to age group of 21-30 years. Mahendra G et al<sup>[7]</sup> also reported age group of 13-30 years comprising 62.96% of total pregnant women.

In this present study, Maximum i.e. 663(51.1%) Pregnant women were Primigravida. Similar findings were reported by Mahendra G et al<sup>[7]</sup> majority of the referral pregnant women were primigravida 48.1%. Gupta PR et al<sup>[8]</sup> found 52.17%, Prakriti Goswami et al<sup>[9]</sup> found 47%, Morsheda Banu et al<sup>[10]</sup> 50% of women were primigravida.

Majority of the pregnant women i.e. 859(66.2%) were unbooked which were comparatively more than booked, where as Dutta et al<sup>[11]</sup> majority of the pregnant women about 72% are booked mostly at government hospitals. Arup Kumar Majhi et al<sup>[12]</sup> found that, 83.7% of pregnant women were booked.

Most Common reason of delay in decision taking-by relatives in 1060(81.7%) of pregnant women, 121(9.3%) of pregnant women were reported in delay in transportation, 113(8.7%) of pregnant women reported delay due to arrangement for money and 03(0.2%) of pregnant women were not reported delay. Rekha Jakhar et al<sup>[5]</sup> found reasons like delay in getting transport facility in 21.50% pregnant women, delay in decision by relatives in 9.86% pregnant women and in 8.88% pregnant women the economic constraints i.e. arrangement of money was the issue. The percentage of pregnant women with delayed referral in our study was quite high as compare to the study of Gupta et al<sup>[8]</sup>, who reported that 76% of pregnant women reached within 8 hours of reference and only 5.58% were delayed referrals (more than 12 hours). Time interval of reference and reporting depends not only on availability of transport system and distance between the referral and tertiary health care centre but also on pregnant women and her relative's attitude, awareness and socio-economic status and that affects directly fetomaternal outcome.

Majority of 60(7.4%) of pregnant women were having referral place was District Hospital, 378(29.2%) of pregnant women were having referral place was Rural Health Centre and 70(5.4%) were having referral place was Other Medical Colleges. Rekha Jakhar et al<sup>[5]</sup> reported that majority of pregnant women were referred from CHCs (51.7%), next from District hospitals (22.68%), PHCs (10.94%), Sub centres 2.66% and only 0.88% were referred from private hospitals and clinics. Study by Sable and Patankar<sup>[7]</sup> showed that 15.79% were referred from PHCs, 6.37% from DHs, 34.74% from referral hospitals. Patel et al<sup>[6]</sup> showed 61% referred from PHCs and CHCs, and 5% from private hospitals.

Majority i.e. 773(59.4%) pregnant women travelled to 108 Ambulance followed by Private Vehicle (Rickshaw, Taxi & Own Vehicle) 400 (31.0%). Whereas Indranil Dutta et al<sup>[11]</sup> study reported private vehicle is used by 66.7% of the pregnant women, hospital ambulance is used by only 16.6% of the pregnant women and 12.7% of pregnant women chose public transport as mode of transportation suggesting lack of Hospital based/ Ambulance based transport system in peripheries. Public transportation was used mainly by the pregnant women with lower educational status who don't have the knowledge of free transportation services.

In present study, 1235(95.2%) of the pregnant women took less than 6 hours to reach the referral centre whereas 11(0.9%) of pregnant women were took more than 12 hours to reach the referral centre. Indranil Dutta et al<sup>[11]</sup> found that, 88.5% of the pregnant women managed to reach the referral centre within 4 hours of referral. Khatoon et al<sup>[13]</sup>. most of the pregnant women referred from different sources reached hospital within 6 hrs of referral while 52% of the pregnant women reached hospital within 12-8 hrs of referred still 8% of pregnant women

had delayed arrival i.e., after 8 hrs of referral from the primary source. Rathi et al<sup>[14]</sup> reported only 36% of referral reaching within 6 hours of referral. The main reasons for this delay were referral to an intermediary centre, financial constraints, ignoring of warning signs of diseases by the pregnant women and family members and poor transport facilities.

Majority of the 283(21.8%) Pregnant women were referred for labour Pain/ Pain in abdomen followed by Pre Eclampsia 25(17.9%) and 171(13.2%) referred due to PV leaking. Indranil Dutta et al<sup>[11]</sup> found that 87.1% pregnant women has been made with obstetrics indication Preterm labor and PROM accounted for about 21% of the referral. Patel<sup>[12]</sup> reported that the common causes of referral were anaemia (15%) and hypertensive disorders of pregnancy (15%). Other causes were pregnancy with previous caesarean section (12%), APH (6%), mal-presentations(4%) and obstructed labour (4%). Gupta et al.<sup>[8]</sup> reported that majority of pregnant women were referred for anaemia (18.05%), hypertensive disorders of pregnancy (22.27%) and mal-presentations (15.14%). In the Khatoon et al<sup>[13]</sup>. series, reasons for referral in antepartum period was hypertensive disorders of pregnancy in 27%, preterm labour 29.3%, medical disorders complicating pregnancy 10%. Mahendra G et al<sup>[7]</sup> found that premature rupture of membranes was the most common cause of referral (15%) followed by pre-eclampsia and related conditions (14%), and meconium stained liquor (11%).

In present study, majority 681(52.5%) of pregnant women general condition was Fair at the time of arrival, 513(40.1%) of pregnant women were having moderate condition at the time of arrival and 96(7.4%) pregnant women having poor condition at time of arrival. Rathi et al<sup>[14]</sup>. reported 55.54 % pregnant women were stable, 36.36% were poor and 9.09% were critical. Whereas Dutta et al<sup>[11]</sup> 77.7% were stable and only 2.0% were critical.

In present study 14(1.1%) of pregnant women reported mortality. Gupta et al<sup>[8]</sup> reported 40 (2.72%) of mortalities in their study. Bhatt et al<sup>[15]</sup> reported maternal mortality rate of 1.94% for all referrals. Rekha Jakhar et al<sup>[5]</sup> observed i.e.0.88% maternal deaths, which were quite lower than other studies.

In present study, 303(23.5%) babies had NICU admission, and 57(4.3%) of babies were still birth. Khatoon A et al<sup>[13]</sup> had in their study reported 13% still births, Rathi Charu et al<sup>[14]</sup> Poornima M et al<sup>[16]</sup> in her study reported 9% still births. In present study 21(1.6%) were having early neonatal death whereas neonatal death rate was higher in study conducted Mahendra G et al<sup>[7]</sup> reported neonatal death rate was 4% , Poornima M et al<sup>[16]</sup> (8%), Gupta PR et al<sup>[8]</sup> (4.10%). In contrast to this, the study conducted by Rathi Charu et al<sup>[14]</sup> had a neonatal mortality rate of 28.23%. These high rates of perinatal mortality reflect the inadequate and insufficient obstetric services in the peripheral areas.

Most Common Cause of Neonatal Death was RDS with Refractory Shock in 8(11.1%), 7(5.3%) of babies were having Severe Perinatal Asphyxia, 06(28.6%) of babies were having sepsis. Also, similar findings Mahendra G et al<sup>[7]</sup> was seen that the cause of death in the early neonatal period was mainly due to birth asphyxia which could have been prevented with better antenatal care and early referral.

### **Conclusion:**

The present study has shown that the most common reason of referral cases was non availability of trained health professional followed by Non-Availability of Ventilator/ICU & Infrastructure. Majority cases travelled to the referral centre by ambulance provided by the



referral unit followed by public transport. Labour Pain/ Pain in abdomen followed by Pre-Eclampsia of pregnancy have been the commonest causes of referral among high risk obstetric patients. Most common complication in cases was the requirement of blood transfusions followed by observed near miss, episiotomy gape and reported mortality. The underlying cause of maternal death was hypertensive disorder of Pregnancy like Severe Pre-Eclampsia, Antepartum Eclampsia, Antepartum Haemorrhage and Septicaemia. In order to decrease the number of unnecessary referrals and to reduce burden on tertiary care hospitals, healthcare workers should be trained in essential and emergency obstetric care which will help in reducing morbidity and mortality. Timely referral is crucial for a satisfactory maternal and fetal outcome. Health education and awareness by mass media and non-government organisations can improve the health and social status of women in rural areas. Health education and awareness by mass media and nongovernment organisations can improve the health and social status of women in rural areas. Although better than the national data, there is indeed no doubt that rural health care infrastructure.

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