

Original Research Article

Maternal and Fetal Outcome in Referred Patients to Tertiary Care Center

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Abstract: The objective was to study the referred obstetric cases for appropriateness and timeliness of referral and to study the maternal and perinatal outcome. Design was Prospective Observational study. The study population in this study All referred cases >28 weeks of gestation from periphery to tertiary care institute in one year duration. The inclusion criteria were referred ANC cases to our tertiary care institute >28 weeks of gestation. The total numbers of referred cases in above study period were 1468. Selections of cases were done by systematic sampling technique. The proportion of referral cases to the tertiary care institute is 15.37%. In present study, there was unavailability of ambulance in 69.34% of cases for transport. Major causes of maternal deaths were hypertensive disorders mainly eclampsia. There were 40(2.68%) maternal mortalities in present study. 17.57% of all neonates had low birth weight in this study. In present study, 10.01% babies were still births and 14.9% were preterm. Total NICU admission rate was 16.55%. Neonatal mortality documented in present study was 4.08%. In conclusion the present study has shown that inadequate antenatal & intranatal care at the periphery level is responsible for increased maternal & perinatal morbidity and mortality. Even today, hypertensive disorder is the leading cause of maternal mortality. health education to the community, better antenatal care up to grass root level, emergency intranatal care, availability of services of skilled birth attendants at the time of child birth, well organized first referral centre with better transportation facility, availability of blood round the clock, anesthetic facilities & availability of specialist in the field of obstetrics at the referral unit will definitely reduce maternal & perinatal morbidity & mortality.

Keywords: Obstetrics Referrals, perinatal morbidity and mortality, maternal morbidity and mortality, Maternal and fetal outcome.

INTRODUCTION:

Over the centuries, anemia, eclampsia and hemorrhagic shock have killed millions of our pregnant women and still continue to do so. In spite of great advances in the medical field and improved quality of healthcare available in our country, the maternal mortality in India is very high. Every day in 2015, about 830 women died due to complications of pregnancy and child birth. In 2013, an estimated 289,000 women died due to complications in pregnancy and childbirth, down from 523,000 in 1990 [1].

Due to lack of awareness and absence of regular antenatal care, the critically ill patients are referred late and sometimes in moribund conditions with multiple organ damage. Timeliness and

appropriateness of referral is an important factor in the ultimate outcome of the patients. Linking the primary, secondary and tertiary levels of care are an essential element of primary health care. A referral system offers women some degree of health care at every level of health care system while linking the different levels through an established communication transport system. A referral should rather be conceptualized as an active process which begins at door step of the patient's household and which in theory would end at the same place after transitory journey to referral facility.

Although most obstetric complications (defined as acute conditions such as postpartum haemorrhage, sepsis, eclampsia, and obstructed labor that can cause maternal death [2] cannot be predicted, the majority can

be treated with timely provision of a package of evidence-based interventions known as emergency obstetric care (EmOC) [3, 4]. The availability of EmOC is considered to be an indicator of how well a health system is prepared to manage conditions leading to acute maternal morbidity and mortality [5, 6]. Emergency obstetric care EmOC refers to elements of obstetric care needed or management of complications during pregnancy, delivery and postpartum period, skilled personnel, equipment and support services. EmOC services are of paramount importance in reducing maternal mortality and morbidity.

The World Health Organization (WHO), in its 2010 Monitoring Indicators for Health Systems Handbook, defines availability as the “physical provision of health services” and readiness as “capacity to deliver health services” [4]. Studies on availability of emergency obstetric care have traditionally distinguished between comprehensive EmOC (surgical services of caesarean section and blood transfusion in addition to basic obstetric services) and basic EmOC (non-surgical obstetric interventions).

It is still recommended to electively refer pregnant woman with previous caesarean section, breech presentation, transverse lie, multiple gestation, hypertension and severe anaemia for delivery before any complication arise to a health care centre where all the facilities to deal with the complications are available. With this background present study was undertaken to evaluate the maternal and fetal outcome in referred patients and analysis of appropriateness and timeliness of referrals over a period of one year.

Objective of the study

- Analysis of appropriateness, reasons and timeliness of referral.
- To evaluate the maternal outcome in referred patients
- To evaluate the fetal outcome in referred patients

MATERIAL AND METHODS

Present study was a one year prospective study in the department of obstetrics and gynecology of a PG and UG teaching tertiary care centre.

Study population:

Patients referred to the hospital in third trimester of pregnancy during study period.

Study design

Prospective observational study

Exclusion criteria –

- Post-partum patients
- Early pregnancy complications (<28wks)
- Booked patients at tertiary care centre.

Data collection:

- Patient arrival time to admission room, detailed clinical history and place and time of referral, type of transport, causes of referral were studied. Thorough history was taken.
- Complete physical and obstetric examination was done.
- Basic investigations and Case specific investigations were carried out as mandated by clinical condition of the patient.

Maternal Outcome:

Management of the patient was documented in detail. Mode of delivery was noted i.e., whether vaginal or operative or conservative management. Any maternal morbidity or catastrophe was noted. All this was done to note maternal morbidity and mortality. To know Fetal outcome APGAR score was noted, if needed NICU admission cause for it was noted along with that follow-up was done. In cases of still birth and early neonatal deaths causes were noted. Proper consent of the study population was taken. Permission from ethical committee had been taken.

RESULTS:

After thorough analysis of data following observations are put forwarded: Total no of admissions were 9551 out of which 1468 were the referred cases. The proportion of referral cases to our tertiary care institute from periphery (outside the city) was 15.37%. (Fig no 1).

Maximum numbers of cases in present study were in the age group of 20-30 years comprising 86.98% of total cases. (Fig no 2).

Majority of referral cases were primigravida that was 766 in number (52.17%) (Fig no 3).

In the present study, 59.60% cases were from distance of 50-150km reflecting major population catered by more than 100 km to seek an emergency obstetric care which is an important contributing factor for maternal & perinatal outcome. (Table 1)

In present study, there was unavailability of ambulance in 69.34% of cases for transport. . (Table 2)

In present study majority of patients (76%) arrived to the hospital within 8 hours of reference. The patients who reported to hospital >12 hours of referral were 5.58% in present study. In the present study, caesarean section rate was 22.75% in the referred cases. 7.76% of the total referred cases were managed conservatively & were discharged. (Table 3)

Preeclampsia & related conditions were the major indication of referral to the tertiary care institute comprising 22.27% of the cases. This is followed by anaemia and in malpresentations commonest being breech. (Table 4).

Total maternal deaths were 40. Hypertensive disorders (35%) constitute the leading cause of maternal deaths followed by haemorrhage (20%) among the direct causes. Among the indirect causes anaemia has been the leading cause of maternal death. (Fig no 4)

Total no of still births in our study were 147(10.85%) and NICU admissions is 143(10.5%) and no of healthy babies were 1064 (78.58%). (Fig no 5).

19.05% of all neonates had low birth weight in this study. In present study, 10.85% babies were still births and 15.36% preterm. Birth asphyxia contributes 6.49% and sepsis 2.95%. Total NICU admission rate was 10.56%. Neonatal mortality documented in present study was 4.43%. (Fig no 6)

In our study, prematurity (30.96%) was the commonest cause for NICU admission followed by neonatal jaundice (19.5%) and low birth weight (18.8%).

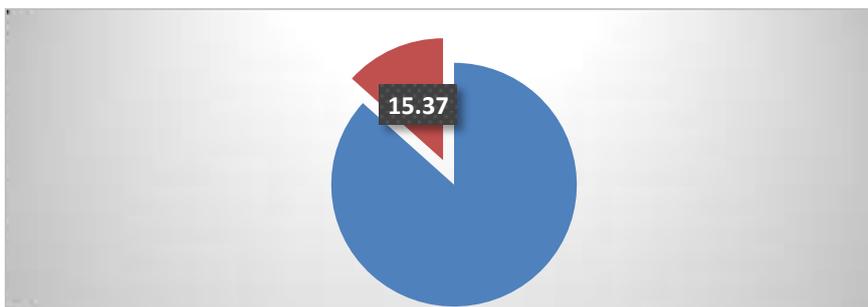


Fig 1: percentage of referred patients

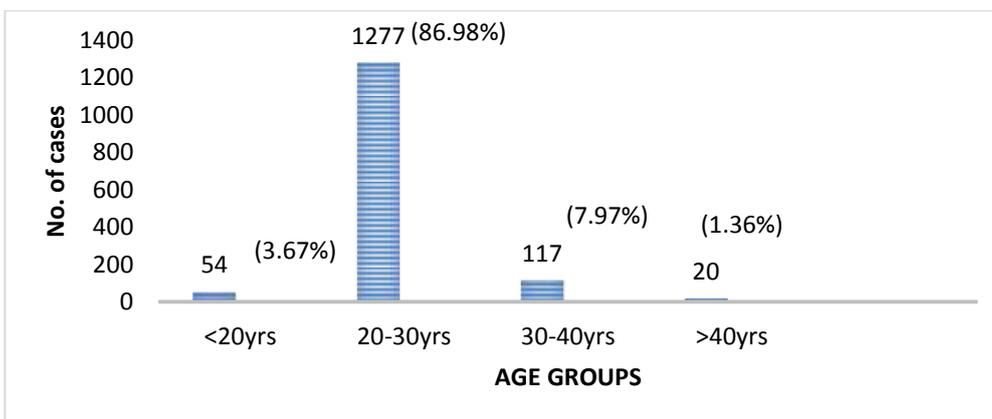


Fig 2: Age Wise Distribution

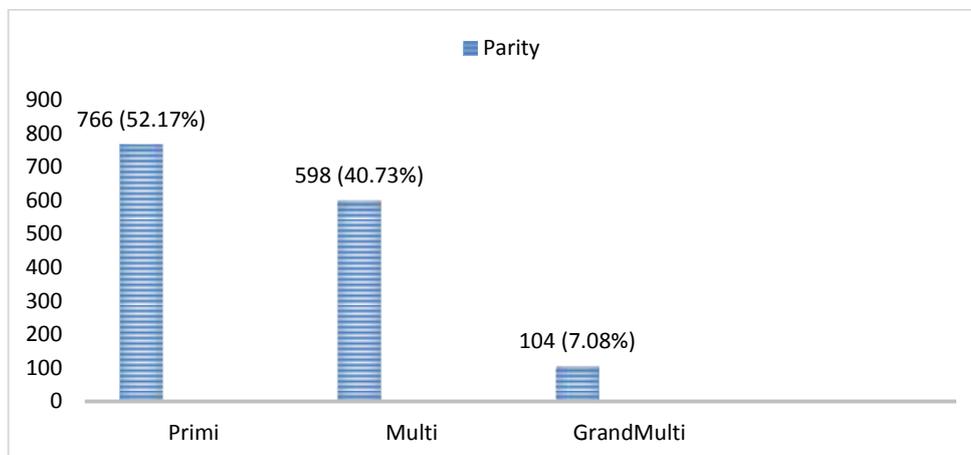


Fig. 3: parity wise distribution

Table 1: Distance to Referral Center

Distance kilometres(Km)	No. of patients in present study
<50	517 (35.2%)
50-150	875 (59.6%)
>150	76 (5.17%)

Table 2: Distribution of cases according to mode of transport

Mode of transport	No. of cases	%
Hospital Ambulance	450	30.65
Private vehicle	1018	69.34
TOTAL	1468	100

Table 3: Distribution of Cases According To Mode of Delivery

Mode of delivery	Present study	Percentage
Vaginal delivery	1020	69.48%
Spontaneous	156	10.62%
Induced	864	58.855%
Caesarean section	334	22.752%
Emergency	298	20.299%
Elective	36	2.45%
Undelivered (conservative management)	114	7.765%
TOTAL	1468	100%

Table 4: Distribution of Cases According To Causes of Referrals

Causes of referral	No of patients	Percentage
Preeclampsia	327	22.27%
Anaemia	265	18.05%
Malpresentations	223	15.19%
Prev LSCS	112	7.62%
PPROM	91	6.2%
APH	90	6.13%
Fetal distress	77	5.24%
Preterm labour	57	3.8%
CPD	54	3.7%
IUFD	29	1.9%
Postdatism	21	1.4%
Hepatitis	17	1.15%
Non progress of labour	17	1.15%
Rupture uterus	14	0.95%
Oligohydramnios	13	0.88%
Twin gestation	10	0.66%
Rh-negative	9	0.61%
Polyhydramnios	8	0.54%
BOH	7	0.47%
Pregnancy with gynaec disorders	7	0.47%
Malaria	6	0.40%
Congenital malformation	6	0.40%
Heart disease	4	0.27%
Arrest of after coming head of breech	2	0.13%
Retained 2 nd twin	2	0.13%

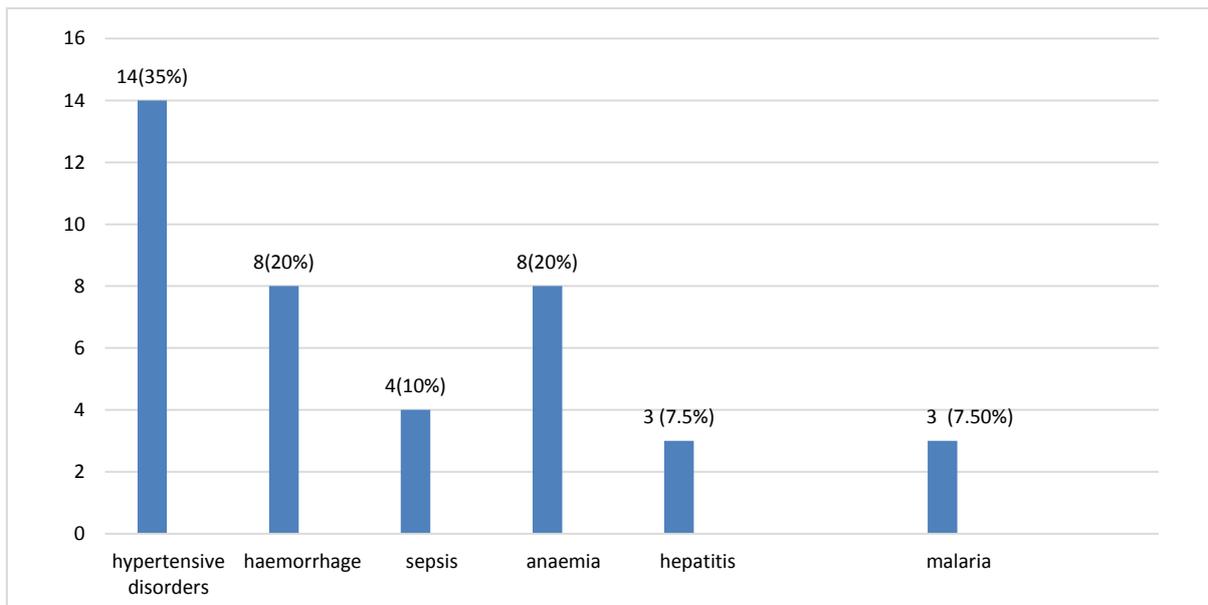


Fig 4: Causes of Maternal Deaths

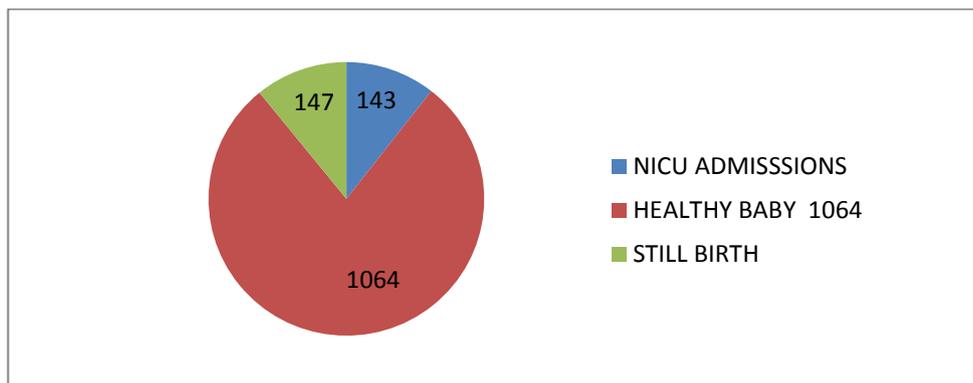


Fig 5: Distribution of Perinatal Outcome

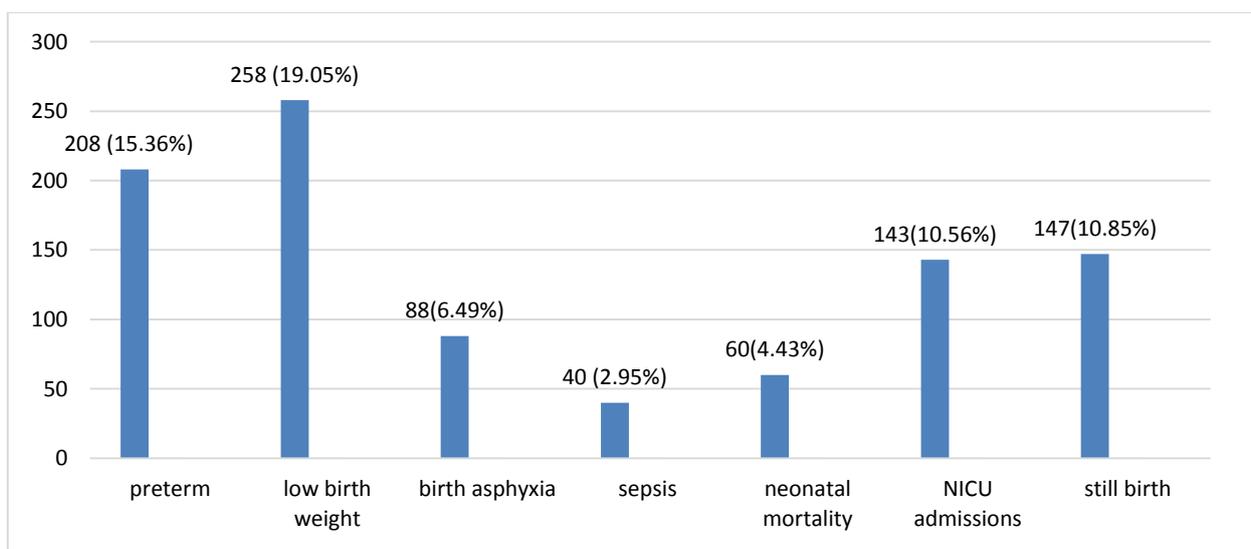


Fig 6: Causes of Neonatal Morbidity and Mortality

DISCUSSION

The death of woman in childbirth is a tragedy, an unnecessary and wasteful event that carries with it the huge burden of grief and pain. Pregnancy is not a disease and pregnancy related morbidity and mortality are almost preventable.

Timeliness and appropriateness of referral are a challenge to obstetricians, since the delay in referral affects the maternal and perinatal outcome adversely, hence identification of at risk patients and obstetric emergencies and timely referral is of immense importance. Puri Alka, Yadav Indra, Jain Nisha [7] in their study noted 24.16% of cases were referred. The proportion of referral cases to our tertiary care institute was 15.37%.

Morsheda Banu *et al.*; [8] in assessing the showed that overall age distribution in majority (74%) of the respondents were between 20-35 years. In the present study, maximum number of patient (86.98%) was in the 20-30years of age group. Morsheda Banu *et al.*; [8] had found that around 50% of the women were primigravida. In our study, majority of patients were primigravida (52.17%) which is comparable. Sakhare A.P, Thakare [9] observed that 65% cases travelled more than 50 kilometre distance before reaching to hospital & had increased incidence of intraoperative complications & haemorrhage. Majority of the patients in our study were referred from 50 to 100km (59.60%), followed by <50 km(35.21%), so most of the patients have to travel more than 100 km to seek emergency obstetric care which is important factor for delay in referral & poor maternal & perinatal outcome. Rathi *et al.*; [10] noted that majority of the cases were referred for hypertensive disorders of pregnancy (26%), preterm labour (26%), and medical disorders complicating pregnancy (21%). Major indication of referral to our tertiary care centre was preeclampsia & related conditions (22.27%).

The majority of patients 69.34% utilize private vehicle from referral facility. Arranging a private vehicle when faced with obstetric emergency necessitating referral takes time and cost money.

In present study majority of patients (59.74%) arrived to the hospital within 8 hours of reference while it was 49% in the study done by Rathi *et al.*; [10]. The patients who reported to hospital >12 hours of referral were 5.58% in present study while in the study done by Rathi *et al.*; [10] were 25%. They have to travel long distances and sometimes it becomes very difficult to save the life of the patient. 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 patients and her

relatives' attitude, awareness and socio-economic status and that affects directly fetomaternal outcome. Significant no of patients underwent vaginal delivery (69.48) and only few of the referred patients have been taken for LSCS (22.75%). Commonest indication of LSCS being the fetal distress followed by malpresentation.

7.76% of the total referred cases were managed conservatively & were discharged. Here arises a concept of Day care management of referral cases at tertiary care institute which might be helpful in reduction of burden of tertiary care institute. Sorbye *et al.*; [11] found that referral status contributed substantially to the increased caesarean section rate, which was 55% in formally-referred. In present study, 22.75% underwent caesarean section, we can conclude that rate of caesarean section is substantially high in referral cases.

In present study the highest no of cause of referral is due to preeclampsia (22.27%) anaemia (18.05%) while in the study done by Patel HC *et al.*; [12] causes of referral were preeclampsia(16%), MSL(5%) .This may be not only due to unavailability of blood transfusion facilities in case of severe anaemia at primary health care and community health care, but also cost factor in case of referral from private sectors. Maternal anaemia is not only affecting the maternal health in antenatal period but also reflected on intrapartum and postpartum period. So, referral in antenatal period improves maternal outcome. Poor nutritional status and inadequate spacing of pregnancy compounded by inability of poor patients to have adequate diet due to economic reasons leads to high rate of anaemia in pregnancy leading to many maternal morbidities.

It can be prevented if early and adequate antenatal visits are taken by the patients. For this improvement of awareness of early antenatal visit is required. Not only self-awareness but health education and awareness by mass media and non-government organizations can improve the health and social status of women in rural areas.

Followed by anaemia, malpresentations (15%) and previous caesarean section (7.62%) are the major causes of reference. This is comparable to 6% in study done by Patel HC *et al.*; [12] while in study done by Khatoon A *et al.*; [13] cause of reference for previous caesarean section is only 15% about 50% more than above both studies. The patients with previous caesarean section are referred to higher centres from PHC/CHC due to unavailability of operation theatre, gynaecologist, anaesthetics, trained staff or basic infrastructure deficit.

Abnormal Labour was responsible in 3.7% of patient for referral at tertiary care hospital. This is also a preventable morbidity by early diagnosis through proper monitoring of labour at CHC/PHC level. Partogram is very useful tool for monitoring. Partogram can be maintained by little training only. So paramedical staff at PHC/CHC can also monitor progress of labour and before mother goes in obstruction it can be prevented by timely referral. Referral to tertiary centre due to placenta praevia and abruptionis 6.13% %, and due to hepatitis B infection is 1.1%.

The leading causes of maternal mortality are hypertensive disorders (35%) and obstetrical haemorrhage (20%) in our study same as those done Begum S *et al.*; [14]. In our study among the direct causes of maternal deaths the leading causes were hypertensive disorders (35%) and obstetric haemorrhage (20%). In contrast Borchert M *et al.*; [15] found obstetric haemorrhage (32.2%) and infection (31.6%) were the leading causes of maternal death. Dilpreet *et al.*; [16] found in their study haemorrhage as the leading of maternal death.

Among the indirect causes malaria (17.5%) and anaemia (7.5%) are the leading causes of maternal death. Treatment of anaemia in antenatal care and primary management of haemorrhage ,including administration of fluids ,uterotonics ,suturing of tears at referring centre will help in reducing mortality due to haemorrhage.

Khatoon A *et al.*; [13] had in their study reported total number of live births 87% still births 13% and 26.5% preterm births. In present study, 89.14% of the babies were live born, 10.85% still births, 19.05% were low birth weight and 15.36% were preterm. Rathi *et al.*; [10] noted 56% of all neonates were low birth weight in their study. In present study, 6.49% had birth asphyxia, 10.56% had NICU admission. The neonatal mortality rate in our study was found to be 4.43%. which in contrast to 28.23 % in study done by Rathi *et al.*; [10]. The most common primary obstetric causes of neonatal death were preterm delivery in 34%, intrapartum asphyxia in 21% and antepartum haemorrhage in 9%. These results are consistent with WHO reports on the causes of neonatal death in developing countries. Commonest cause of NICU admissions in our study are prematurity (30.96%) followed by neonatal jaundice and low birth weight.

CONCLUSION

Child birth is a normal physiologic process, but emergencies can arise any time. The present study has shown that improper antenatal & intranatal care at the periphery level is responsible for poor maternal &

perinatal outcome .Provision of a dedicated ambulance meant solely for transport of referred patients in every area from which patients are referred is desirable.

Hypertensive disorders of pregnancy has been the commonest cause of referral among high risk obstetric patients which can be better dealt at tertiary care centre .Health care workers should be provided with the check list .Also administration of 1st dose of magnesium sulphate must be done in all cases of eclampsia and severe preeclampsia prior to referral .

The quality of information provided on referral leaves a lot to be desired .Many patients arrived without a referral card and were sent without examination and primary treatment. Even those arising with a referral card has incomplete information regarding duration of admission, treatment given and reason for referral .Hence a universal referral proforma has been devised. The traditional birth attendants should be trained properly. Health education and awareness by mass media and non-government organizations can improve the health and social status of women in rural areas. Thus health education to the community, better antenatal care up to grass root level, emergency intranatal care, availability of services of skilled birth attendants at the time of child birth, well organized first referral centre with better transportation facility, availability of blood round the clock, anaesthetic facilities & availability of specialist in the field of obstetrics at the referral unit will definitely reduce maternal & perinatal morbidity & mortality.

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