Original Research Article

Obstetrics referrals: Maternal and perinatal outcome in medical college hospital in eastern India

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ABSTRACT

Introduction: Referral is essential part of maternal and child services. Major causes of referral to a tertiary center includes preterm labor, preeclampsia, eclampsia, previous CS, Rh negative blood group, antepartum hemorrhage, postpartum hemorrhage and sometimes due to lack of manual resources.

Objectives: To identify the primary reasons and pattern of obstetric case referral to our hospital and to study the maternal and perinatal outcome in those cases.

Materials and Methods: Two Hundred obstetric referred cases of more than 28 weeks gestation admitted to IQ City Medical College, Durgapur were analyzed for the maternal and perinatal outcome.

Results: In this study of the total studied patients majority were in the group 21-25 yrs constituting about 72.09%. Of the total studied patients majority of them around 66.1 % are of Socioeconomic class III. Primigravidas constitute the majority of about 62% of the referral. Majority of the cases about 72% are booked mostly at government hospitals and only 28% of the cases are unbooked. 38.7% of the referral was from the areas like Raniganj, Bolpur, Panagarh. About 87.1% of the referral has been made with an obstetric indication. 12.6% of the referral had medical indication for referral. Only 1.3% of the cases had lack of manual resource as an indication for referral. Analyzing at the quality of referral according to the predefined criteria only 55% of the cases had adequate referral whereas about 25% of the cases had poor referral most of which were from the PHCs. 37.7% of the patients delivered vaginally, with about 62.3% of the patient delivered by caesarean section. In the present study there were a total of 131 live births, 5 still births and 7 early neonatal deaths making the perinatal mortality rate (PNMR) of 95.23 per 1000 live births, which shows a much better outcome than the other similar studies. Perinatal outcome was best for patients with age group 21-25 years and was worst for age group more than 30 years.

Interpretation and Conclusion: Although better than the national data, there is indeed no doubt that rural health care infrastructure is falling short of the existing requirement. However, educating the population about the existing health care delivery system and sensitizing the public toward improving maternal and child health would go a long way in optimally utilizing the existing infrastructure and improving the maternal and perinatal outcome.

1. Introduction

India is one of the leading countries with high maternal mortalities and morbidities, Maternal Near miss situations are particularly, under reported in our country. Mostly marriage is early and hence leading to teenage pregnancy and more chances of morbidity and mortality. Antenatal care is a concept that extends from pre-pregnancy to post-partum, leading to effective emergency care for predictable and unpredictable complications during pregnancy and child birth.[1]

Major causes of referral to a tertiary centre includes Preterm labor, Pre-eclampsia, Eclampsia, Previous CS, Rh negative blood group, Antepartum hemorrhage, postpartum hemorrhage and sometimes due to lack of manual resources.

Referral system has been introduced to 1) To improve service delivery at tertiary center level 2) To reduce

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the workload 3) To strengthen the infrastructure in the peripheries and 4) The effective utilization by the patients.

The various levels of health care system includes:

1. Primary health care-

- Primary Health Centre
- Sub Centre

2. Secondary healthcare –

- Community Health Centre
- Taluk Health Quarters Hospital
- District Hospital

3. Tertiary care levels-

- Medical colleges
- Regional centres.

Major causes of referral to a tertiary centre includes Preterm labor, Preeclampsia, Eclampsia, Previous CS, Rh negative blood group, Antepartum Hemorrhage, postpartum hemorrhage and sometimes due to lack of manual resources. Liking the different levels of care was an essential element of primary health care from the very beginning.

The referral system was meant to complement the PHC principle of treating patients as close to their homes as possible at the lowest level of care with the needed expertise.

There is a close relationship between the maternal and child health to the health of the family and of family's health to the general health of community[2]

Most life-threatening complications occur during labor and delivery, and many of these cannot be predicted. These require skilled medical interventions such as cesarean delivery, blood transfusion, drug therapy, etc.[3]

The first referral level is defined as district or sub-district hospital, to which a woman at high risk is referred prenatally or sent for emergency obstetric care, and where the following essential services should be available: Surgical obstetrics, Anaesthesia, Medical treatment, Blood replacement, Manual procedures and monitoring labor, Management of women at high risk, Family planning support and Neonatal special care

2. Materials and Methods

IQ City Medical College is a tertiary care center and it serves to population in and around Durgapur in West Ben gal. The majority of cases that we get here are referred cases. The patient population is mainly from low socio-economic status, rural areas and also from private hospitals. The patients who are admitted here come from the surrounding areas, with minimal or no medical facilities, with a radius of about 100 kilometers and the time taken to reach our institution would vary from 30 minutes to about 6 hours. This study includes all referred obstetric cases of more than 28 weeks of gestation.

1. The cases are initially handled elsewhere by qualified and unqualified personnel.
2. All the antenatal patients with inclusion criteria were followed up regarding the reasons for referral and are followed for the outcome.
3. A thorough history was taken from all referred antenatal cases.Clinical Examination done followed by Obstetric Examination including Height of uterus, contractions present or not, fetal position, FHS etc were recorded, P/S Examination to check for leak/bleed PV, Bishops score was assessed by PV.
4. Caput and moulding was also noted if present. The pelvis was evaluated for disproportion. All outcomes and booking visits were defined on the basis of previously established standardized criteria.

2.1. Criteria to define the quality of referral

Quality of been defined adequate, inadequate and poor according to whether the patient was Investigated, Examined, Diagnosis arrived, Defined reasons for referral, Timely referral, Treatment given or not Proper information to the client given or not before referring her. Referral from adhering to all the above defined criteria is taken as adequate referral. The form satisfying only four of the above is taken as inadequate referral. Whereas one with only two of the above criteria is considered as poor quality referral.

2.2. Type of the referral

Referral is divided into two types according to the circumstances under which the patient is referred: Emergency referral was made in emergency cases which could not be totally managed at the health centre. Elective referral was usually made to: A. Seek expert opinion regarding a patient, B. Seek admiss ion and management of a patient, C. Seek facilities for investigations.

Criteria to define condition of the patient Condition of the patient was defined stable, poor and critical according to the following criteria – General condition, Vitals, Presence of end organ damage

3. Results and analysis

3.1. Study design

A prospective clinical study consisting of 200 patients is undertaken to study the maternal and fetal outcome. First 200 consecutive referred cases that presented during the study period Jan 2019 to September 2019 were included. The various parameters that were recorded were analyzed for correlation with a poor maternal or fetal outcome. The demographic pattern was also studied.

In this study of the total studied patients majority were in the group 21-25 yrs constituting about 72.09%. Of the total studied patients majority of them around 66.1

% are of Socioeconomic class III. Only 2 % of patients are from socioeconomic class I, which is equivalent to upper class.   About 22 % of the patients are illiterate and this is the reason for less utilization of antenatal care. Majority of the referred cases belonged to the gestational age more than 36 weeks constituting about 78.5% of the referrals. Primigravidas constitute the majority of about 62% of the referral. Majority of the cases about 72% are booked mostly at government hospitals and only 28% of the cases are unbooked. 38.7% of the referral was from the areas like Raniganj, Bolpur, Panagarh. 45.8% were from ESI, Durgapur, 11% were from CHC, 6.7% from District Hospital and 14% of the referral were from Private Hospital / Private Doctors. About 64% of the referrals have been made secondary to emergency indications (Table 1).

Table 1: Causes for Referral

Causes for Referral	No. of mothers (n=200)	%
1.PIH	30	15
2.Preterm Labour	20	10.0
3.PROM	22	11.0
4.Obstructed labour	11	5.5
5.Foetal Distress	20	10
6.Previous LSCS	25	12.5
7.Post dated pregnancy	8	4
8.Prolonged Labour	7	3.5
9.Malpresentation	6	3.0
10.Anemia	6	3.0
11.APH	6	3.0
12.GDM	5	3.3
13.IUD	5	2.5
14.Cardiac disease	4	2.0
15.Eclampsia	6	3
16.Failed Induction	3	1.5
17.Hypertension	2	1.0
18.Jaundice	2	1.0
19.Multiple pregnancy	3	1.5
20.MISC	9	4.5

About 87.1% of the referral has been made with an obstetric indication. 12.6% of the referral had medical indication for referral. Only 1.3% of the cases had lack of manual resource as an indication for referral. Preterm labour and PROM accounted for about 21 % of the referral. Hypertensive disorder is the next commonest cause of referral of about 1 6 % of the cases.

Analyzing at the quality of referral according to the predefined criteria only 55% of the cases had adequate referral whereas about 25% of the cases had poor referral most of which were from the PHCs. Majority of the referrals about 66% in my study used private vehicle as the mode of transportation to reach the Hospital. Hospital vehicle is used by 16.7% of the patients, Private Ambulance is used by only 4.6% of the patients and 12.7% of patients chose public transport like auto as mode of transportation. Among them Private vehicle was used mainly by educated people

Table 2: Causes for Referral: Miscellaneous

Causes for Referral: Misc	No. of mothers (n=9)	%
1. Cord Prolapse	1	11.1
2. CPD	1	11.1
3. Oligohydramios	1	11.1
4. Polyhydromnios	1	11.1
5. Precious pregnancy	1	11.1
6. Anomalous baby	1	11.1
7. HBSAg +v e	1	11.1
8. Rh- ve	2	22.2

and auto by illiterate and lower socioeconomic class people.

Table 3: Time interval

Time Interval	Good Outcome	Poor Outcome
<2 hours	85	24
2-4 hours	54	14
>4 hours	13	10

Out of all the referrals 54.5% of the patients reached the centre within 2 hours, 34% of the patients reached the centre in 2-4 hours (Table 3). 11.5 % of patients took more than 4 hours in reaching the centre, A very high percentage of patients about 8 5 % arrived at centre in stable condition. 12 % of the patients arrived at centre in critical condition, this could be attributed to bad transport system or more time taken in decision making.

Table 4: Treatment given before Delivery

Treatment Given	No. of Mothers (n=55)	%
Anti Hypertensive	22	40
Tocolytics and Steroid	18	32.72
MgSo$_4$	7	12.72
Insulin	4	7.27
Blood Transfusion	4	7.27
Total	55	100.0

Of the total 200 cases about 55 (28.66%) cases required treatment before delivery and majority of them were treated by antihypertensives only.

37.7% of the patients delivered vaginally, with about 62.3% of the patient delivered by caesarean section. In the vaginally delivered cases 11.7% was instrumental delivery, 3.4 % was breech delivery and 22.6% patient delivered after induction.

In the present study major indication of cesarean section include dystocia 29.1%, fetal distress with or without meconium aspiration 20.9%, Hypertensive disorders of pregnancy 17.7%, repeat section 11.3%, malpresentation 8.1% and others 12.9 %. No maternal death was noted in our series. About 8.7% of the cases needed blood transfusion. 15(9.33%) of the patients needed intensive monitoring either in the labour room or in intensive care

unit.

In the present study there were a total of 131 live births, 5 still births and 7 early neonatal deaths making the perinatal mortality rate (PNMR) of 95.23 per 1000 live births, which shows a much better outcome than the other similar studies. More than $1/3^{rd}$ of the neonate required an NICU admission. This is expected in high risk pregnancies with complications. The main reason for NI CU admission was birth Asphyxia.The other reasons were Low Birth Weight, Transient Tachypnoea of newborn and Septicaemia.

Maternal outcome was relatively poor in multiparous patients when compared to primigravidas, but it was statistically not significant. No difference in outcome was seen with relation to gestational age. Maternal outcome was poor when time interval to reach the tertiary centre was more than 4 hours and we got statistically significant regarding this.

Perinatal outcome was best for patients with age group 21-25 years and was worst for age group more than 30 years. Better outcome was seen in booked cases but it was not statistically significant. There were increased number of intrauterine deaths when travel time was more than 4 hours, which says these deaths could have been prevented with better access to tertiary health care centre.

4. Discussion

This study is conducted in IQ City Medical College, Durgapur reflects the results obtained from a tertiary care centre. There were certain limitations in the study as pregnancies less than 28 weeks of gestation were not included and so were the postnatal patients.

4.1. Maternal Characteristics and its Influence on Outcome

4.2. Age

In the present study, 86.8 % of all referrals were in the Age group 21-25, usually considered to be a low risk group. The present study clearly demonstrates that the majority of the patients that require a referral belong to this age group. Hence, the " At risk " approach for better utilization of scarce resources is not rational and pregnancies in this age group are equally liable to complicate if not monitored and also these complications cannot be predicted with reasonable accuracy. Limaye et al. (1982)[4] has age group between 15-30 years as 89.20% and more than 35 years as 3.20%.

In the present study, teenage pregnancies made up 24.7 % of all referrals, which is higher compared to the national average. This could be due to less socioeconomic status. Data of the National Family Health Survey (NFHS)-3 revealed that 16% of women, aged 15-19 years, have already started childbearing. This proportion is the highest in the state of Jharkhand (28%), followed by West Bengal (25%) and Bihar (25%), all located in eastern India.[5] Teenage Pregnancy was higher in this study compared to south Indian study by same author.

4.3. Socio economic status and educational status

The National family health survey data was taken into account for looking into the educational status. The level of education was higher in our study as compared to national levels. At our institution, almost 61.7% of the patient had at least a primary education compared to 30% in the NFHS study. Limaye et al., similarly showed that factors like illiteracy, low socioeconomic status played a role in utilizing the available health services.[4] Similar incidence of uneducated patients in East & South India.

4.4. Gestational age

78.5% referral was in the gestational age of more than 36 weeks, where as about 9.5% of the referral was in the group 28-34 weeks of gestation. While analyzing these cases it was found that some of these cases could have been referred earlier in gestation, so that adequate intervention could have been done at a more appropriate time. However, lack of an adequate risk assessment tool to precisely predict these complication may lead to over-burdening of the tertiary health care centre.

4.5. Parity

Primigravidas constituted 62% of the cases and multi-gravida constituted 38% of the cases in the present study. Percentages of complications were higher in multigravida group. In our present series, no. of primi cases are approximately double of the previous Arup Kumar Majhi series, no. of multigravidas was less. We did not have any grand multigravidas as seen in the previous Arup Kumar Majhi series. In Khatoon et. al. series, Primigravida had higher referral rates 65%, while multi gravidas had 35% referral rate.[7] In Delhi the proportion of birth order 3 and above has declined from 38.20% in 1988 to 24.81% in 1997.[8]

4.6. Antenatal care

In the present study out of 200 cases the booked cases constituted 72%, the remaining 28% were unbooked.

Table 12 : Region wise distribution of antenatal care

Bhaskar Rao has recorded in his study (2000 AD)[8] that even now almost 50% of women get no antenatal care. The current level of antenatal care in our country is 51% (NFHS − 3). Based on this antenatal care in our area is much higher than the nationwide level.

On comparing the percentage of booked cases in our study with the previous study it was seen that we had a much higher percentage of booked cases. This could be

Table 5: Correlation of clinical variables with maternal outcome

Variables	Maternal Outcome Good outcome (n=152)	Poor Outcome (n=48)	P value
Age in years			
19-20	37(24.34%)	10(20.83%)	
21-25	72(47.36%)	19(39.58%)	0.634
26-30	25(16.44%)	15(31.25%)	
>30	18(11.8%)	4(8.3%)	
SES			
I	2(1.3)	2(4.1%)	
II	40(26.31%)	16(33.3%)	0.754
III	66(43.42%)	20(41.66%)	
IV	44(28.9%	10(20.83)	
Gestational age (weeks)			
28-34	13(8.55%)	6(12.5%)	
34-36	16(10.52%)	8(16.6%)	0.998
>36 weeks	123(80.92%)	34(70.83%)	
Parity			
Primi	98(64.4%)	26(54.16%)	0.912
Multi	54(35.5%)	22(45.83%)	
Booked/Unbooked			
Booked	116(76.3%)	28(58.3%)	0.416
Unbooked	36(23.6%)	20(41.66%)	
Time Interval			
<2 hours	85(55.9%)	24(50%)	
2-4 hours	54(35.5%)	14(29.16%)	0.039*
>4 hours	13(8.5%)	10(20.83%)	

Table 6: Maternal characteristics and incidence of perinatal complications

Maternal variables	Live birth (n=131)	Low apgar (n=41)	IUD (n=12)	Neonatal death (n=7)	Still Birth (n=5)	DA (n=4)	P value
Age in years							
19-20	34(25.96%)	14(34.1%)	3(25%)	2(28.6%)	1(20%)	1(25%)	
21-25	69(52.6%)	13(31.7%)	6(50%)	4(57.1%)	3(60%)	1(25%)	0.541
26-30	15(11.4%)	9(21.95%)	2(16.7%)	1(14.3%)	0(0%)	2(50%)	
>30	13(9.9%)	5(12.19)	1(8.3%)	0(0%)	1(20%)	0(0%)	
SES							
I	2(1.5%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
II	33(25.1%)	6(14.6%)	2(16.7%)	1(14.3%)	2(40%)	0(0%)	0.357
III	56(42.74%)	25(60.9%)	2(16.7%)	3(42.9%)	3(60%)	3(75%)	
IV	40(30.53%)	10(24.3%)	8(66.7%)	3(42.9%)	0(0%)	1(25%)	
Gestational age (weeks)							
28-34	10(7.6%)	5(12.19%)	2(16.7%)	1(14.3%)	2(40%)	0(0%)	
34-36	14(10.68%)	10(24.3%)	5(41.7%)	6(85.7%)	1(20%)	0(0%)	<0.001**
>36 weeks	106(80.91%)	26(63.41%)	5(41.7%)	0(0%)	2(40%)	4(100%)	
Parity							
Primi	90(68.7%)	23(56%)	6(50%)	5(71.4%)	2(40%)	2(50%)	0.502
Multi	41(31.29%)	18(43.9%)	6(50%)	2(28.6%)	3(60%)	2(50%)	
Booked/Unbooked							
• Booked	98(74.8%)	26(63.4%)	7(58.3%)	5(71.4%)	4(80%)	4(100%)	0.305
• Unbooked	33(25.19%)	15(36.58%)	5(41.7%)	2(28.6%)	1(20%)	0(0%)	
Time Interval							
• <2 hours	64(48.8%)	18(43.9%)	7(58.3%)	5(71.4%)	3(60%)	4(100%)	
• 2-4 hours	53(40.45%)	15(36.58%)	4(33.3%)	2(28.6%)	2(40%)	0(0%)	0.861
• >4 hours	14(10.68%)	8(19.51%)	1(8.3%)	0(0%)	0(0%)	0(0%)	

Table 7: Comparative study of age group

Age Group (Years)	Limaye et al., series	Present Study	Dutta et al (South India)
15-30	89.20%	86.8%	97.30%
31-35	7.60%	4.0%	2.0%
> 35	3.20%	1.8%	0.7%

As evident from the table above the percentage of patients in the individual age group were comparable.

Table 8: Teenage Pregnancy

	NFHS-2	Present Study	Dutta et al (South India)
Teenage pregnancies	16.00%	24.7%	6.7%

Table 9: Comparative study of educational status

Educational Levels	NFHS-3	Present Study	Dutta et al (South India)
Uneducated	41%	5.7%	6.0%
Primary Level	30%	61.7%	50.7%
Higher Secondary	22%	18.7%	20.7%
College	7%	13.9%	17.3%

Table 10: Comparative Study of Parity

Parity	Arup Kumar Majhi Series[6]	Present Study	Dutta et al (South India)
Primi	33.22%	62%	65.3%
Multi	55.76%	38%	34.7%
Grand Multi	11.02%	-	

Table 11:

	Developing Countries (MDG report)	India (NFHS-3)	Karnataka	Present Study	Dutta et al (South India)
Antenatal Care	74.0%	51%	80.0%	72.0%	80%

Table 12: Antenatal Care (Comparative Study)

Anetnatal Care	Arup Kumar Majhi Series[6]	Present Study	Dutta et al (South India)
Booked	16.26%	74.0%	80%
Unbooked	83.70%	26.0%	20%

a result of better educational levels and socio economic status in the region. Considering such high levels of usage of Antenatal care (74%) facilities prevalent in the region one would expect fewer complication in this population, however complications do occur, and so brings into question the efficiency and utility of the current ANC regimen.

4.7. Pattern of referral

Referral from the government sector constituted the major part of about 45.8%, 14% of the referral was from private sector. Of the public sector referral most of them were from ESI Hospital. Majority of the referral were from within the district, followed by Bolpur. In a study conducted in a tertiary hospital in West Java referred obstetric cases constitutes 28% of admission. According to a study conducted in Choitram Hospital 25% of the referral have been made secondary to obstetric causes.[9]

4.8. Causes of referral

Out of 200 cases 87.1% has been made with obstetrics indication. Preterm labor and PROM accounted for about 21% of the referral. Hypertensive disorders was the next commonest cause of referral of about 15 % of the cases.In the Khatoon et al.[7] series, reasons for referral in ante-partum period was hypertensive disorders of pregnancy in 27%, preterm labour 29.3%, medical disorders complicating pregnancy 10% and severe anaemia requiring blood transfusion. Regarding reasons for referral 78% due to meconium stained liquor, while in multi gravida patients reason of previous tender scars in 12.5% of referrals. Jahn A & De Brouwere V.et al has reported 23% of the referral for preterm labour and 18% for Hypertensive disorder in this study on Referral in pregnancy and childbirth.[10]Rathi et. al. reported that majority of referrals were for Hypertensive disorders (26%) and preterm labour(26%).[9]

4.9. Quality of referral

Analyzing at the quality of referral according to the predefined criteria only 55% of the cases had adequate referral whereas about 24% of the cases had inadequate referral and 25% of the cases had poor referral most of which were from the PHCs. This also could also be due to uncertainty of the diagnosis of the condition.

4.10. Mode of Transportation and Time taken to reach the Hospital

88.5% of the patients managed to reach the referral centre within 4 hours of referral. Such high rates of early referral (within 4 hrs) are remarkable. In my study private vehicle is used by 6 6.7% of the patients, hospital ambulance is used by only 16.6% of the patients and 12.7% of patients chose publictran sport as mode of transportation suggesting lack of Hospital based/ Ambulance based transport system in peripheries. Public transportation was used mainly by the patients with lower educational status who don't have the knowledge of free transportation services. In study by Khatoon et al. most of the patients referred from different sources reached hospital within 6 hrs of referral while 52% of the patients reached hospital within 12-24 hrs of referred still 8% of patients had delayed arrival i.e., after 24hrs of referral from the primary source. Rathi et al. 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 patients and family members and poor transport facilities.[9]

4.11. Condition of mother on admission

From the table it is evident that a very high percentage of patients arrived at centre in stable condition when compared to the Rathi et al series. Only 2% of the patients arrived at centre in critical condition which is relatively lower when compared to other studies.

4.12. Condition of fetus on admission

Inhe present series on admission fetal heart sounds was present in 93.3% of cases and absent in 6.7%. One serious issue to be considered is whether these IUD's could be prevented. In study by Bhatt et al. out of all the referrals 10.56% case, foetus was no more alive on admission. Fetal distress was found in 14.63% of referrals on admission.[11]

4.13. Management

Of the total 200 cases about 55(27.5 %) cases required treatment before delivery. 40% patients were treated by anti-hypertensives, 32.72% with tocolytics & steroids, 7.27% with insulin. 7.27% patients required blood transfusion before delivery. In study by Kambo et al. major

indications for cesarean section included dystocia (37.5%), fetal distress with or without meconium aspiration (33.4%), repeat section (29.0%), malpresentation (14.5%) and PIH (12.5%).[12] Modern obstetric practice for medical, social, economic, and legal reasons has witnessed an increase in the primary cesarean section rate everywhere.[13] The rate of cesarean section in the urban educated population in Chennai is 45%.[14] In medical colleges and teaching hospitals in India, the overall rate for CD is 24.4%[15] whereas the incidence rates of CD in public, charitable, and private sector hospitals are 20, 38, and 47%, respectively[16] indicating progressive increase in CD in different facility care centers.

4.14. Maternal Outcome

Out of 200 cases there was no Maternal Mortality in our study in the span of two years.Bhatt et. al. reported maternal mortality rate of 19.41 per1000 live births for all referrals.[11]

Globally, direct causes account for 80 percent of all maternal deaths, and indirect causes account for the remainder. Of direct causes, hemorrhage is the most common. Indirect causes include diseases such as HIV/AIDS and malaria.[17] Reported direct causes of maternal deaths are abortions (18.0%), sepsis (17.3%), haemorrhage (12.8%), ruptured uterus (8.3%) and other causes (8.3%). Indirect causes include hepatitis (15.8%), anemia (7.5%), heart disease (6.0%) and others (12.0%), in comparison to haemorrhage (23.7%), anaemia (19.4%), toxaemia (15.2%, abortions (12%) and sepsis (8%) for India as a whole.[18]

4.15. Maternal morbidity

Maternal morbidity was in the form of wound sepsis in 8% of the cases, most of these cases being cases of obstructed labour. Wound gaping was seen in 2% and these patients went for secondary suturing. PPH was seen in 6 vaginal deliveries and 2 cesarean sections. 1 patient was detected to have Couvelaire uterus during laparotomy for APH. The morbidity also increased the number of days of hospital stay. Percentage of maternal complications were greater in multigravidas, lower socioeconomic status patients and when time taken to travel to reach the tertiary care centre was more.

4.16. Perinatal Outcome

Perinatal mortality includes both late fetal deaths (still births and IUD) and early neonatal deaths. In our study there were 131 live births, 5 still births and 7 early neonatal death. Thus there were 12 perinatal deaths giving the perinatal mortality as 95.23/1000 live births.

It 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.

Table 13: Comparative study of condition of patients on Admission

Condition	Rathi et al	Present Study	Dutta et al (South India)
Stable	54.54	77.3	87.3
Poor	36.36	20.7	10.7
Critical	9.09	2.0	2.0

Table 14: Comparative study of maternal mortality rate

	Developed Region	Developing regions	India	Karnataka	Present Study
Maternal Mortality rate / 100000 live births	9	450	301	228	0

As far as obstetric events are concerned birth asphyxia was mainly due to obstructed labor, eclampsia, and APH. Perinatal morbidity was in the form of NICU admissions. 34.61% babies were admitted to NICU ranging from 4-28 days. Bellad et al reported the perinatal mortality rate (PNMR) of 49.4 per 1000 births and the stillbirth rate of 43 per 1000 births.[19] Bhatt et al. reported PNMR of 194.17/1000 live births. About 2/3rd of all perinatal deaths had occurred amongst fetuses with less than 1500gm birth weight.[11] Gadhi ali at el, reported a perinatal mortality of 28.20% in their study.[20] These high rates of perinatal mortality reflect the inadequate and insufficient obstetric services in the peripheral areas.

5. Conclusion

With the implementation of referral system an increasing proportion of patients are being referred to our hospital. This has compelled us to study pattern of referral and the maternal and perinatal outcome of these patients. However the self referrals from rural areas were totally unaware of the existing antenatal services in the rural areas. Health education and awareness by mass media and nongovernment organizations 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 is falling short of the existing requirement. However, educating the population about the existing health care delivery system and sensitizing the public towards improving maternal and child health would go a long way in optimally utilizing the existing infrastructure and improving the maternal and neonatal outcome. Qualities of the referral have been inadequate in many of the cases. This could be secondary to the fact that many of the referrals have been secondary to emergency indications.

The maintenance of proper antenatal records was not satisfactory in many of the subjects studied. More number of educational and research programs have to be conducted involving the health care professionals at the peripheral health centres to keep them updating their clinical knowledge and skills.

6. Source of funding

None.

7. Conflict of Interest

None.

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