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A study on referred obstetric cases in a tertiary care hospital in central India

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Abstract
Introduction: To identify the pattern of obstetric referrals to our tertiary care hospital. To identify the primary reasons for referral, clinical course, mode of management and outcome.
Methods: It was a retrospective observational study. All the referred obstetric cases were analyzed for the cause of referral, their condition and outcome for a period of 6 months from Jan 2020 to June 2020.
Results: The proportion of referred cases was 32.5%. Maximum number of patients were in 20-30yrs age group comprising 82.9% of cases. Majority of patients were primigravida (55.2%). Hypertensive disorders (26%) and previous caesarean (9.2%) were major causes of referral. 34.4% of patients were from within Indore District and 65.6% from outside Indore District. 43.5% patients had vaginal delivery, 33.6% underwent LSCS, conservative management was done in 14% cases. Maternal deaths were in 2.6% out of total referred cases. Hypertensive disorders and obstetric hemorrhage 26% were major direct causes of mortality. Anemia (12%) being common indirect cause.
Conclusion: Health education to the community, better antenatal care up to the 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 and availability of specialist in the field of obstetrics at the referral unit will definitely reduce maternal and perinatal morbidity and mortality.

Keywords: Referred obstetric patients, outcome, tertiary care hospital, mortality, morbidity

Introduction

The referral system is an essential component of any health care system, for providing essential obstetric care to women during pregnancy and childbirth [1]. Pregnancy and child birth, though physiological processes, are not free of risks. Despite continuous efforts by government and NGOs, maternal mortality remains high is our country. According to the latest sample Registration system (SRS) 2015-2017 MMR was 122 per 1 Lakh live births in 2015-2017. This is much higher than countries like Finland, Greece, Iceland and Poland where it is 3 per lakh live births. Anemia, eclampsia and hemorrhagic shock are major cause of maternal mortality in our country.

The key factors contributing to the adverse maternal outcomes are lack of trained birth attendants, lack of education, low status of women in society, poverty, financial dependency of women and delay in seeking medical treatment [2]

Due to lack of awareness and absence of regular antenatal care, the critically ill patients are referred late and sometimes in moribund condition 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 is an essential element of primary health care. A referral system offers women some degree of health care at every levels of health care system while linking the different levels through an established communication transport system [3]. 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 the referral facility. Although most obstetric complications (defined as acute conditions such as postpartum hemorrhage, sepsis, eclampsia and obstructed labor) can be treated with timely provision of a package of evidence based interventions known as emergency obstetric care (Em OC) [4, 5].

It is still recommended to electively refer pregnant women with previous caesarean section, breech presentation, transverse lie, multiple gestation, hypertension and severe anemia for

delivery before any complication arise to a health care centre where all the facilities to deal with the complications are available [6]. With this background present study was undertaken to examine the current nature of referrals, to evaluate the maternal outcome in referred patients and analysis of appropriateness and timeliness of referrals.

Methods

The present study was a retrospective study conducted in department of obstetrics and gynecology, MYH and MGMMC Indore, study population was 1863 obstetric cases referred from various centers from January to June 2020.

Referred patients were from within & outside Indore District. Demographic data of the patients and reasons for referral from referral slip was noted. Booking status of patients was noted, whether they have taken antenatal checkups or not.

Maternal outcome was noted in terms of obstetric ICU admission, mode of delivery, mortality and cause of mortality. All data was collected and compiled. The data was also compared with similar studies in India and abroad.

Results

After thorough analysis of data following observations were put forwarded. Total admissions were 5724 out of which 1863 were referred cases (32.5%).

Table 1: Distribution of cases according to age group

Age	Patients	Percentage
<20 yrs	54	2.8%
20-30 yrs	1542	82.9%
30-40 yrs	236	12.7%
>40 yrs	31	1.6%
Total	1863	100

Table No. 1 shows that maximum number of cases were in the age group of 20-30 yrs comprising 82.9% of cases.

Table 2: Distributions of patients according to parity status

Parity Status	Patients	Percentage
Primigravida	1026	55.2%
Multigravida	688	36.9%
Grand multi	149	7.9%
Total	1863	100

Table 2 shows that majority of patients were primigravida i.e. 1026 (55.2%)

Table 3: Distribution of cases according to reason for referral

1	Hypertensive disorders	491 (26%)
2	Previous caesarean	172 (9.2%)
3	Anemia	151 (8.1%)
4	PROM	128 (6.8%)
4	Ante partum hemorrhage	108 (5.7%)
5	Intra uterine fetal disease	82 (4.4%)
7	Mal presentation	102 (5.4%)
8	MSL	94 (5.0%)
9	CPD	81 (4.3%)
10	Oligo & IUGR	42 (2.2%)
11	Twins	42 (2.2%)
12	Thrombocytopenia	37 (1.9%)
13	PPH	21 (1.1%)
14	Obstructed Labor	40 (2.1%)
15	Incomplete Abortion	30 (1.6%)
16	Congenital Anomaly in fetus	22 (1.1%)
17	Ruptured Ectopic	15 (0.8%)
18	Hand/cord prolapse	18 (0.96%)
19	Single loop of cord around neck	16 (0.8%)
20	Puerperal sepsis	15 (0.8%)
21	Heart disease	11 (0.5%)
22	HbsAg reactive	13 (0.6%)
23	HIV reactive	3 (0.16%)
24	Others	129 (6.9%)

Table 3 shows that in our study, hypertensive disorders (26%), previous caesarean (9.2%) and anemia (8.1%) were major causes for referral.

Table 4: Distribution of cases according to place of referral

S. No.	District of Referral	Patients	Percentage
1	Indore	645	34.4%
2	Khargone	243	13.4%
3	Shajapur	188	10.4%
4	Dewas	198	10.6%
5	Ujjain	160	8.5%
6	Badwani	178	9.5%
7	Ratlam	34	1.8%
8	Dhar	62	3.3%

9	Depalpur	25	1.3%
10	Khandwa	41	2.2%
11	Mandsaur	13	0.6%
12	Others	76	4%
		1863	100

Table 4 shows that, maximum patients were from outside Indore District i.e-1218 (65.6%) and had to travel distance of 50-250 km to reach our tertiary referral centre. 645 (34.4%) patients were from within Indore district. Outside Indore district, maximum referred patients were from Khargone (125 km) 243 (13.4%), Shajapur (104km) 188 (10.4%), Dewas 198 (10.6%) and Badwani 155 km 178 (9.5%) districts.

Table 5: Distribution of cases according to management of patients

1	**Normal vaginal delivery**	**563**	**31.2%**
2	Abnormal vaginal delivery	230	12.3%
3	LSCS	626	33.6%
4	Conservative	271	14%
4	Abortion cases	57	3%
5	Exploratory laparotomy	18	0.9%
7	Others	98	5%
		1863	100

Table no 5 shows that, majority of patients had vaginal delivery i.e. 793 (43.5%), 626 (33.6%) patients underwent LSCS. Conservative management was done in 271 (14%) cases.

Table 6: Total maternal deaths were 79 during this period of 6 months out of which 50 were referred patients

Total deaths	**79**
Referred	50

Table 7: Causes of maternal mortality among referred patients

Direct

1	**Hypertensive Disorders**	**19**	**38%**
2	Hemorrhagic causes	13	26%
3	Sepsis	1	2%
4	Rupture uterus	1	2%

Indirect

1	**Anemia**	**6**	**12%**
2	Hepatitis	1	2%
3	Heart disease	2	4%
4	Renal disease	3	6%
5	Embolism	2	4%
6	Others	2	4%

Table 7 shows, deaths among referred patients were 2.6% of total referred. Hypertensive disorders (38%) and hemorrhagic (26%) causes were most common direct causes. Anemia was commonest indirect cause (12%).

Discussion

The death of women in child birth is a tragedy, an unnecessary and wasteful event that carries with it a huge burden of grief and pain. Pregnancy is not a disease and pregnancy related morbidity and mortality are almost preventable, if proper antenatal, intra and postnatal care is taken. Timeliness and appropriateness of referral is of immense importance for good maternal and perinatal outcome.

This study included 1863 referrals during a period of 6 months, total obstetric admissions being 5724 during this period. Hence referred cases account for 32.5% of total admissions in our tertiary care hospital. This is much higher than reported in other studies like study done by Gupta *et al* [3] in 2016 which showed 15.37% of obstetric referrals. Similarly study by Sable and Patankar [6] in 2015, Pandya and Patel [7] in PHC's of Gujarat and Sharma [8] at Indore (2007) reported referral rate of 17.83%, 15.2% and 14.02% respectively.

In the present study, most patients were in the age group of 20-30 yrs i.e. 82.9%, which is similar to other studies like Gupta *et al* [3] 2016, reported that 86.98% were in this age group. Morsheda Banu *et al* [9] found that 74% of patients were in 20-35 years age group which is lower than that found in our study. Devneni and Sodumu [1] found 73% and Pandya and Patel [7] reported 64% belonged to 20-30 yrs age group which is lower than in our study.

In our study, 1026 patients (55.2%) were primigravida this is comparable to study conducted by Morsheda Banu *et al* [9] had found 50% of the women were primigravida. In study done by Gupta PR *et al* in 2016, found 52.17% of patients were primigravida [3]

In our study 34.4% (645) patients were from within Indore District. Remaining 65.6% had to travel 50 - 250 km distance to reach our territory care centre. Sakhare A.P, Thakare [10] observed that 65% cases travelled more than 50 km distance before reaching to hospital and had increased incidence of complications contributes to poor maternal outcome Gupta PR *et al* [3] also found that 65% patients travelled more than 50 km to reach tertiary care centre.

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 patient's and her relatives attitude, awareness and socio economic status and that affects directly fetomaternal outcome.

In our study, majority of patients were referred due to hypertensive disorders 491 (26%). Other common causes were previous caesarean 172 (9.2%), anemia 151 (8.1%), PROM 126 (6.8%) and ante partum hemorrhage 108 (5.7%). Gupta *et al* [3] reported that majority of cases were referred for anemia (18.05%), hypertensive disorders of pregnancy (22.27%) and malpresentations (15.19%). Rathi *et al* [11] noted that majority of cases were referred for hypertensive disorders of pregnancy (26%), preterm labor (26%), and medical disorders complicating pregnancy (21%). Maskey S *et al* [12] showed in a study that most common diagnosis at referral was medical disorders complicating pregnancy (38%),among which cardiac disease accounted for (20%), followed by hypertensive disorders (17%).

Anemia can be prevented by increasing awareness among pregnant females regarding proper diet and intake of iron and folic acid tablets. Participation by NGO'S and mass media can be of substantial help to combat anemia.

Malpresentations (5.4%), previous caesarean section (9.2%), MSL (5%), CPD (4.3%) are also major causes of reference. Such patients are referred due to unavailability of operation theatre, gynecologist, anesthetics, trained staff or basic infrastructure deficit. Obstructed labor accounted for 2.1% of referrals. This is also preventable by early diagnosis through proper monitoring by partogram.

Referrals due to Ante partum Hemorrhage were 5.7% and due to Hbs Ag infection & HIV infection were 0.6% and 0.16%

respectively. This is similar to study done by Gupta PR *et al* [3] where referral due to ante partum hemorrhage and HbsAg reactive were 6.13% and 1.1% respectively.

In our study 43.5% had vaginal delivery, 33.6% underwent caesarean section. Conservative management was done in 14% cases. Exploratory laparotomy was done for cases like rupture uterus and rupture ectopic in 0.9% cases. Gupta PR [3] 2016, found that 69.48% underwent vaginal delivery and 22.75% underwent LSCS. 7.76% causes were managed conservatively and discharged. Sorbe *et al* [13] found that referral status contributed to substantially to increased caesarean rate which was 55% in formally referred. This is much higher than our study (33.6%).

There were 79 maternal deaths in our hospital during this period, out of which 50 were referred patients. Thus, it can be seen that 63.9% of mortality occurred in referred patients. Hypertensive disorders were commonest cause of mortality 19 (38%), followed by hemorrhage causes in 13 (26%) commonest indirect cause was anemia 6 (12%) This is same as founded by Gupta PR *et al*, who have found that leading causes are hypertensive disorders (35%) and obstetrical hemorrhage 20%. In contrast, Borchert M *et al* [14] found obstetrical hemorrhage 32.2% and infections (31.6%) were leading causes of maternal death. Dilpreet *et al* [15] found in their study hemorrhage as a major cause.

In present study maternal deaths occurred in 50 patients i.e. 2.6% of all referrals. Maskey *et al* [12] found in their study that maternal deaths occurred in 2 cases (1.8%) which correlate with our study.

Among indirect causes anemia accounted for 12% of deaths in our study. Gupta *et al* [3] found malaria (17.5%) and anaemia (7.5%) as leading indirect causes of maternal mortality. Treatment of anemia in antenatal period and primary treatment of hemorrhage including administration of fluids, uterotonics, suturing of tears at referring centre help in reducing mortality due to hemorrhage.

Conclusion

Wide spectrums of complicated obstetric cases were referred to our tertiary care hospital. Coordination between healthcare providers at grass root level to tertiary care centre is the need of time. Timely referrals with detailed referrals slips or prior information of referred cases might help in early and optimal interventions so that both major morbidity and mortality can be avoided. Provision of a dedicated ambulance meant solely for the transport of referred cases is desirable.

Hypertensive disorders are a major cause of referral. Check list should be provided; also first dose of Mgso4 should be given in referral unit in cases of eclampsia and severe preeclampsia. Trained birth attendants should be trained properly. Partogram should be charted. Health education and awareness by mass media and NGO'S can improve health and social status of women.

In order to reduce the number of unnecessary referrals and reduce burden on tertiary care hospitals, health care workers should be trained in essential and emergency obstetric care which will help in reducing morbidity and mortality.

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