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Evaluation of obstetrics referral causes and their outcome at a tertiary care centre of northern Madhya Pradesh: A descriptive study

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ABSTRACT:
Background: Pregnancy and child birth especially in high risk women necessitate proper antenatal, intranatal and immediate post partum care. Lack of knowledge, ignorance and poor transport facilities are major contributors of poor pregnancy outcome. Early detection of complications and prompt referral to higher centre is crucial in improving maternal outcome .**Aims & Objective**: The aim of the study was evaluation of the causes of obstetric referrals and their outcome in our hospitals. **Materials and Methods**: A retrospective observational study was conducted in the Department of Obstetrics and Gynecology Bundelkhand Medical College Sagar , Madhya Pradesh India .All the referred obstetrics case from 1january 2022 to 31st December 2022 were evaluated and analyzed. All the referred cases of obstetric indications >28 week s of gestation were analyzed for reason of referral and their outcome. **Results:** Obstetric referral accounted for 52% of the total obstetric admission (3510/6751).The maximum number of patients between 21-30 years age group (83.5%) and majority being primigravida (54%).The major reason for referring patient were hypertensive disorder of pregnancy (39.54%), previous caesarean section (14.84%) and severe anemia (13.78%). There were 28 maternal deaths while 98.05% of patient discharged healthy. **Conclusion:** Lack of knowledge, ignorance and poor transport facilities are major contributors of poor pregnancy outcome .Timely and appropriate referral is crucial in improving maternal outcome. Improvement in the quality of maternal and child health at different tiers of health centre ,regular training of health care providers in emergency obstetrics care is required to curb unnecessary referrals and consequently in reducing maternal morbidity and mortality.

KEYWORDS: Maternal Mortality, Morbidity, Referral, Antenatal care

I.INTRODUCTION

Although motherhood is a boon of nature delivery is the most crucial event in a women's life where a mother is born along with her baby .Prevention of maternal mortality is one of our prime goal to provide safety to motherhood and to avoid loss to the family society and the nation. Maternal mortality is one of the standard indicators to assess the quality of services provided by a health care system.

The world health organization reports that about 800 women die from pregnancy and child birth related complications around the world every day.[1]Approximately one quarter of all pregnancy and delivery related maternal deaths worldwide occurs in India, which has a higher burden of maternal mortality for any single country.[2,3]India has come a long way in improving maternal health as evident from significant decline in maternal mortality ratio (MMR) from 130 in 2014-2016to 113 in 2016-2018.[4] .After the implementation of '**Janani Suraksha Yojana'** there is a three-fold rise in institutional deliveries, but unfortunately, maternal mortality rate (MMR) has not declined appreciably.

The referral system is the foundation of the healthcare delivery system. The World Health Organization estimates that at least 88-98% of maternal death can be averted with timely access to emergency obstetrics care services using efficient referral system.[5]

The Indian healthcare system is divided into 3 basic healthcare levels -

Primary level-Sub centre (SC'S) and Primary health centre (PHC'S): first level of contact between patient and health care system.

Secondary level –Districts hospital (DH) and (CHC) act as a first referral level.

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Tertiary level- Medical colleges and All India institute and Regional hospitals act as second referral level

The Government of India has introduced the referral system to improve service delivery and reduce workload at tertiary healthcare facilities, allow maximal utilization of healthcare facilities, strengthen peripheral infrastructure, improve teaching standard, and promote research activities.

Aims and objectives –

The aim of this study was to evaluate the maternal determinants of obstetrics referral, referral characteristics (source of referral, distance travelled to receive comprehensive emergency obstetrics care) mode of delivery and maternal outcome.

II.MATERIAL AND METHODS –

This was a retrospective study conducted in the Department of Obstetrics and Gynecology Bundelkhand Medical College Sagar , Madhya Pradesh India .All the referred obstetrics case from 1january 2022 to 31st December 2022 were evaluated and analyzed .

Inclusion Criteria: All the cases referred from DH, phc's, chc's, and sub centers from Sagar district >28 week of gestation .

Exclusion Criteria: Referred cases of <28 week gestation, booked patients, and gynecological referral were excluded.

The detailed history regarding ,socio demographic profile ,obstetrics history ,details of referral hospital ,mode of transportation , indication of referral ,adequacy of referral slip , condition of patient on admission were noted .Management of patient was recorded whether conservative or interventional .Mode of delivery and maternal outcome in the form of maternal morbidity and mortality was noted .Data were analyzed using Microsoft office excel 2013. The result was computed in the form of percentages.

III.RESULTS

As we analyzed the data of one year total 6751 obstetric patient were admitted. Out of them 3510 (52%) women with pregnancy related complications were referred to BMC Sagar from surrounding health facilities. (Figure 1)

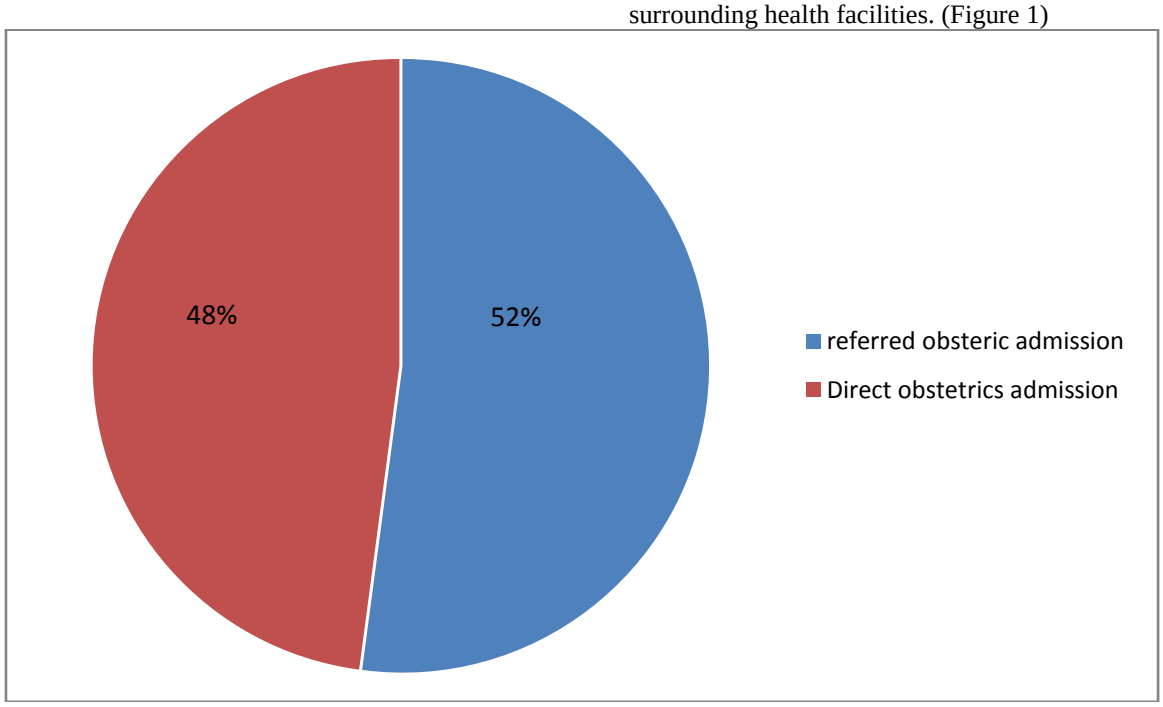

Figure 1 –distribution of referred cases

The majority of patients were in the age group of 21-30 years (83.5%) and most of them were primigravida (54%). The majority of study population (70.9 %) resided in rural areas .The most of the patient were poorly educated (illiterate 44.38% or primary education 36.46%). About (68.3%) of the referred cases have gestational age more than 36 week (Table 1)

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Table 1 socio demographic profile

Parameter	Number	Percentages
Age		
<20	133	3.8
21-30	2913	83.5
31-40	445	12.7
>40	12	.5
Parity		
Primi	1895	54
Multi	1221	34.80
grandmulti	394	19.2
Socioeconomic status		
High	191	5.08
Middle	1135	32.34
low	2184	62.23
Domicile		
Rural	2488	70.90
Urban	1022	29.09
Education		
Illiterate	1557	44.38
Primary school	1209	36.46
Secondary school	416	11.86
Higher secondary	200	5.7
College and above	56	1.6
Gestational age		
28-32 week	268	7.70
32-36 week	845	24.01
>36 week	2397	68.3

Hypertensive disorders of pregnancy (39.54%) were found to be the most common cause of obstetric referral. The previous caesarean sections, anemia and post partum hemorrhage account to (14.84%, 13.78% and 3.58%) referral to tertiary care centre respectively. (Table 2)

Table 2 Causes of referral

Causes	Number	Percentage
Hypertensive disorder of pregnancy	1388	39.54
Previous LSCS	521	14.84
Anaemia	484	13.78
Obstructed labour	126	3.58
APH	109	3.10
NPOL	113	3.21
Malpresentation	94	2.67
PROM	86	2.45
Preterm labour pain	82	2.33
IUFD	76	2.16
oligohydraminos	71	2.02
CPD	64	1.82
Post term	56	1.59
Fetal distress	49	1.39
Twin pregnancy	35	0.99

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Congenital malformation	28	.79
Rupture uterus	12	.34
PPH	26	.74
Heart disease	08	.22
Hiv/HbsAg	13	.37
thrombocytopenia	15	.42
Cervical tear	18	.51
Uterine prolaps	15	.48
Uterine inversion	06	.17
On attender request	15	.42
Total	3510	100

The majority of cases referred from community health centre, that is 2217 (63.3%) followed by district hospital 960 (27.3%).least cases referred from PHC and SC .6.3% and 3.1% respectively . (Table 3)

Table 3 Distribution of cases according to the places of referral centre

Places of referral	**Number**	**Percentage**
Institution from where referred		
CHC	2217	63.3
DH	960	27.3
PHC	223	6.3
SC	110	3.1
Distance from referral centre		
<10 km	366	10.45
10-50 km	946	26.98
50-100 km	2097	59.75
>100 km	101	2.8

The majority of patients 3442 (98.05%) were discharged. There were 28 maternal mortalities and 40 patients were transferred from our department to higher centre for further management of respective complication. (Table 4)

Table 4 maternal outcome

Maternal outcome	**Number**	**percentage**
Discharged	3442	98.05
Referred to higher centre	40	1.15
Expired	28	0.8
Total	3510	100

Hypertensive disorder of pregnancy (46.42%) were found to be the most common cause of maternal mortality Anemia (21.42%) was next important cause of maternal deaths. Post partum hemorrhage were responsible for 10.71 % of maternal deaths (Table 5)

Table 5 causes of maternal mortality

Causes	**Number**	Percentage
Hypertensive disorder of pregnancy	13	46.42
Severe anaemia	6	21.42
APH	1	3.57
PPH	3	10.71
Rupture uterus	1	3.57
Heart disease	1	3.57
CVA	1	3.57
Others	2	7.14

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The most of the patients delivered vaginally (55.94%) while 37.93% patient underwent caesarean section. Conservative management was done in 5.71 % cases. (Figure 2)

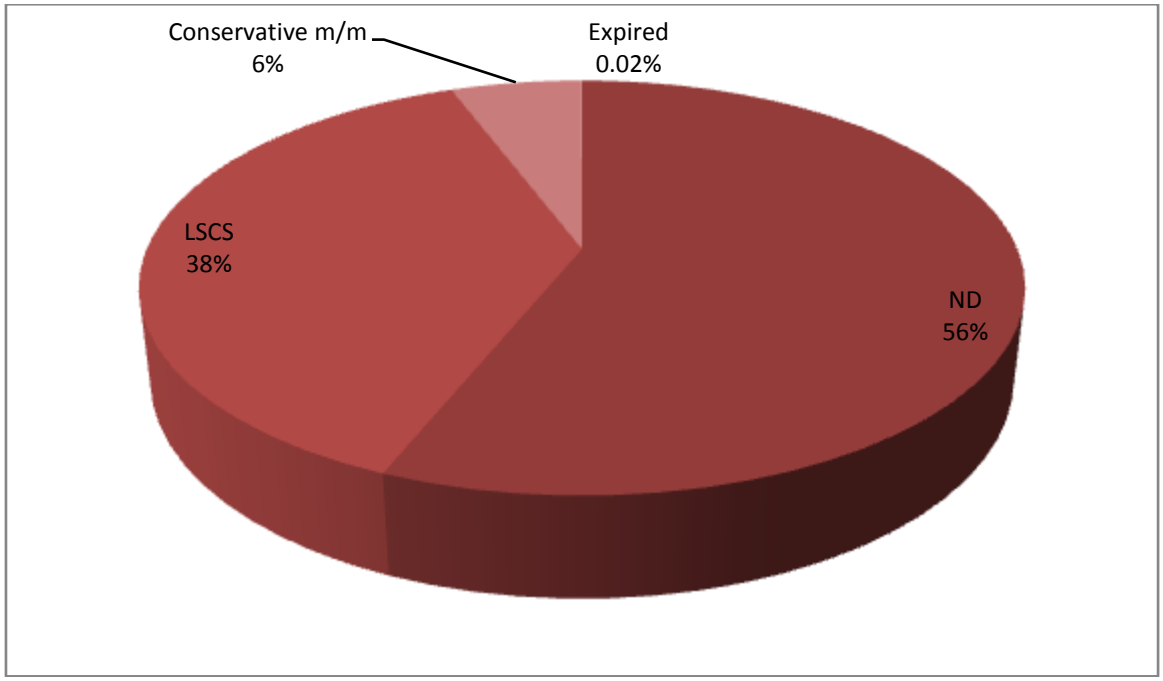

Figure 2-management of cases

IV.DISCUSSION

Obstetric complication are unpredictable and may prove fetal if appropriate treatment is not provided within a short window of time .An effective and efficient referral system is important to facilitate efficient transfer to the next level of care , particularly in case of obstetric emergencies .

Referral rate and maternal demographics

Referral rate was 52.10% in this study .Which was higher than other studies .Puri et al[6] noted 24.16% of obstetrics referral .Similarly study by Agrawal et al[7], Sabal and Patnakar [8] and patel et al [9] reported referral rate of 20.86%, 17.83% and 15.2% respectively.

Maternal age

In present study most of the cases (83.5%) were in the age group of 21 -30 years. This age is usually considered as low risk group .However our analysis showed that the majority of patients requiring referral belonged to this age group .Hence the high risk approach for better utilization of the scarce resources is irrational and pregnancies in this particular age group are equally vulnerable to complicate if not monitored properly and also these complication can not be predicted with reasonable accuracy .Our finding were consistent to the finding of Gupta et al[10]where 86.98% of patient were in this group . Devineni and Sodumu[11] and Patel et al [9]showed that 73% and 64% of obstetrics referral were in the age group of 21 -30 years .The possible reasons could be the culture of early marriage in rural Madhya Pradesh.

Parity

The majority of patient referred were primigravida (54%) which is comparable to other studies[12,] whereas 34.80%were multigravaida and 19.2%were grandmultipara.

Educational status and socioeconomic status

In our study maximum number of referred patient were either uneducated (44.38%) or poorly educated (36.46%) that is up to the primary school. This is comparable to the study performed by Devineni and Sodumu et al[11]who showed that 40% were illiterate .Similar results were shown by Thaker et al [12] who reported that 34.7% of cases were illiterate .The majority of patients (62.23%) belonged to low socioeconomic status . The educational status of women plays a significant role in utilization of health services. This is in accordance to the finding of Limaye et al[13]

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Domicile

Approximately two third (70.90%) of referred patient belonged to rural areas. This is possibly because the majority of population of northern Madhya Pradesh resides in rural areas. This high proportion of ignorant rural population could be a reason for delayed access to health care services .This was consistent to the studies performed by Vinayak et al [14]and Wahane and Koranna [15] who reported a rural domicile of 77%.

Referring centers

The most of cases referred from community health centre, that is 2217 (63.3%)followed by district hospital 960 (27.3%).least number of cases referred from PHC and SC .6.3% and 3.1% respectively. A study performed by Goswami et al [16] showed that 15.79% were referred from PHCs, 42.37% from district hospitals, 34.74% from referred hospitals, and 2.63% from ESI hospitals.

In these series the main reason for referral includes non availability of obstetrician, anesthetists pediatrician, trained staff inadequate infrastructure to perform caesarean section, logistic constrains, lack of blood bank services and no availability of NICU. Other studies also reported the same [17-18] .This inadvertently increase the number of referral and burden on tertiary centers consequently lowering the quality of health services .Hence provision of adequate infrastructure ,manpower and strengthening of existing first referral units could provide prompt treatment then and there and ultimately saved life .

Causes necessitating obstetric referral

In this study , the major reason for transferring patient was hypertensive disorder of pregnancy (39.54%) and previous caesarean section (14.84%).Hypertensive disorder were also found to be major contributor of referral in other studies [19-22].Referring the patient with previous caesarean section was primarily due to an understanding that a third to half caesarean section are performed because of the history of prior caesarean delivery [23].The previous two or previous three caesarean section surgeries are risky to be perform at primary or secondary care facilities due to lack of skilled staff ,equipments ,and blood bank facilities .Our finding were contrary to the finding of patel et al[24]who documented most of the cases referred due to obstructed labor .

Mode of delivery

The majority of cases of this study delivered vaginally (56.36%) whereas (37.93%) underwent caesarean section .In medical colleges and teaching hospitals in India the overall caesarean section rate is 24.4%. [25] while rats of caesarean section in public ,charitable and private sector hospitals are 20 %,38% and 47% respectively[26].showing a progressive increase in caesarean delivery in different health care facilities .

Maternal outcome

The present study analyzed that 3442 (98.05 %) of the referred patient were discharged in satisfactory condition .There were 28 (0.8%) maternal deaths in our hospital during the period taken for study and 40 (1.18%) were referred to higher center for further management Hypertensive disorders (46.42%) were the most common cause of maternal mortality followed by anemia (21.42%) and PPH (10.71%) .Hypertensive disorder of pregnancy were reported to be the most common cause of maternal mortality in other studies also [10, 27]

V .LIMITATIONS OF STUDY

This study provides information on the referral of obstetrics emergency to a tertiary health facility of Madhya Pradesh ,India .It leads to an understanding of the inherent challenges in the system using multiple stakeholder perspective and other challenges which are encountered in receiving care at tertiary care hospital .This study was focused on the receiver end of the referral system only and to have a comprehensive view challenges of the entire system , it will be prudent to involve sending facility also .

VI.CONCLUSION

Most death could be prevented with the help of early identification of high risk pregnancies timely referral, quick and efficient transport facilities, availability of blood and maternal awareness, proper implementation of government policies with community participation and strengthening of referring centers can help to reduce maternal mortality and thus promoting overall safe motherhood.

VII.RECOMMENDATIONS

Strengthening of referring centers should be emphasized to improve the quality of maternal and health services and resulting in saving life of mother and newborns.

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