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8Original Research Article

Overview of referred cases both referred in and referred out obstetric patients and outcome of referred out cases in tertiary hospital, Hassan Institute of Medical Sciences, Hassan

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ABSTRACT

Background: An effective obstetric referral system is essential for ensuring timely management of high-risk pregnancies and reducing maternal morbidity and mortality. Tertiary care centers play a crucial role in managing complicated obstetric cases referred from peripheral health facilities. This study aimed to evaluate the pattern of obstetric referrals, including both referred-in and referred-out cases, and to assess the outcomes of referred-out patients at a tertiary care hospital.

Methods: A retrospective observational study was conducted at the Department of Obstetrics and Gynecology, Hassan Institute of Medical Sciences, Hassan. Data were collected from hospital records for the years 2021 and 2022. Information regarding total obstetric admissions, referred-in cases, causes of referral, monthly distribution of referrals, and outcomes of referred-out patients was analyzed using descriptive statistics.

Results: A total of 6,344 obstetric admissions were recorded in 2021, with 2,171 (34.2%) referred cases, while in 2022 there were 6,210 admissions with 3,307 (53.3%) referred cases, indicating an increase in referrals. The most common indications for referral included hypertensive disorders of pregnancy, anemia, previous caesarean section, fetal distress, preterm labor requiring NICU care, and PROM. System-related factors such as unavailability of obstetricians and patient request also contributed to referrals. Most referred-out patients were discharged after treatment; however, a small proportion were lost to follow-up and a few maternal deaths were recorded.

Conclusions: The study highlights a substantial proportion of obstetric referrals to tertiary care centers, mainly due to high-risk pregnancy complications and limitations in peripheral healthcare facilities. Strengthening antenatal care, improving infrastructure, and ensuring timely referral may help improve maternal outcomes.

Keywords: Referred out, Mortality, High risk, Referred in, Higher center

INTRODUCTION

Maternal health remains a major public health priority worldwide, particularly in developing countries where preventable maternal morbidity and mortality continue to occur despite advancements in obstetric care. Timely identification and management of high-risk pregnancies is crucial to improving maternal and perinatal outcomes. An effective referral system plays a key role in ensuring that pregnant women who develop complications receive appropriate and specialized care at higher levels of the

healthcare system. The referral mechanism links primary, secondary, and tertiary healthcare facilities and facilitates the transfer of patients requiring advanced obstetric services that are not available at peripheral centers.¹

In many developing countries, including India, the healthcare delivery system follows a hierarchical structure consisting of primary health centers, community health centers, district hospitals, and tertiary care institutions. Peripheral health facilities often lack specialized obstetric expertise, intensive care facilities, and emergency surgical

services, making referral to higher centers necessary when complications arise during pregnancy, labour, or the postpartum period.² Efficient referral systems ensure early recognition of complications and prompt transportation of patients to tertiary hospitals where comprehensive emergency obstetric and neonatal care can be provided. However, inadequacies in referral practices, delays in decision-making, lack of transportation, and poor communication between institutions can adversely affect maternal and fetal outcomes.³

Referred obstetric cases often present with severe complications such as hypertensive disorders of pregnancy, severe anemia, obstetric hemorrhage, obstructed labour, and sepsis. These complications significantly increase the risk of maternal and perinatal morbidity and mortality. Studies conducted in tertiary care centers have shown that referred patients frequently arrive in critical condition, often without adequate stabilization at the referring facility. In many instances, a large proportion of patients are unbooked and have not received adequate antenatal care prior to referral, which further contributes to adverse outcomes.⁴

Research from various tertiary hospitals in India has demonstrated that a significant proportion of obstetric admissions consist of referred cases. These referrals commonly originate from primary health centers, rural hospitals, and private clinics that are unable to manage high-risk pregnancies or obstetric emergencies. In such settings, delays in referral or inadequate pre-referral management can lead to increased maternal complications, need for intensive care, operative interventions, and higher perinatal mortality.⁵ Studies comparing referred and non-referred obstetric cases have also shown that referred mothers are more likely to experience adverse fetal outcomes, highlighting the importance of timely and well-coordinated referral systems.⁶

Apart from referred-in cases, tertiary care hospitals also encounter situations where patients must be referred out to other specialized centers for advanced care such as neonatal intensive care, higher surgical expertise, or management of complex medical comorbidities. The outcomes of such referred-out cases depend on multiple factors including the indication for referral, stabilization prior to transfer, transport facilities, and timely access to definitive care. Evaluation of both referred-in and referred-out obstetric cases helps in assessing the efficiency of the referral system and identifying gaps in maternal healthcare delivery.

Understanding the patterns, indications, and outcomes of obstetric referrals is therefore essential for improving maternal and perinatal health services. Analysis of referral trends can help identify preventable delays, strengthen peripheral healthcare services, and optimize resource utilization at tertiary hospitals. With this background, the present study aims to provide an overview of referred obstetric cases-both referred in and referred out-and to

evaluate the outcomes of referred-out cases at a tertiary care center, Hassan Institute of Medical Sciences, Hassan. Such evaluation can provide valuable insights into the effectiveness of the existing referral system and help formulate strategies to improve maternal and neonatal outcomes.

METHODS

Study type, place and duration

Current study was a retrospective analytical study conducted at department of Obstetrics and Gynaecology, Sri Chamarajendra hospital, Hassan Institute of medical sciences, Hassan, Karnataka from January 2021 to December 2022.

Inclusion criteria

All pregnant patients referred in and referred out in the department of Obstetrics and Gynaecology, Sri Chamarajendra hospital, Hassan Institute of medical sciences, Hassan, Karnataka from January 2021 to December 2022 were included in the study.

Exclusion criteria

Gynaecological referrals were excluded from the study.

Procedure

Retrospective analysis of data of obstetrics patients from the referral register and triage admission register from January 2021 to December 2022, was obtained and cause of referrals were studied. The outcome of referred out cases was also followed up.

Statistical analysis

Data was collected and exported to Microsoft Excel sheet version 16.2. For statistics analysis SPSS software version 20.0 was used. Results were tabulated using Graphs, pie charts and bar diagrams. Results calculated in percentages.

RESULTS

During the study period, a total of 6,344 obstetric admissions were recorded in 2021, of which 2,171 cases were referred, accounting for 34.2% of admissions as shown in Table 1. In 2022, there were 6,210 obstetric admissions, among which 3,307 cases were referred, representing 53.3% of admissions. This indicates a marked increase in the proportion of referred cases in 2022 compared with 2021 as shown in Figure 1.

The majority of referred obstetric patients were in the 20-30 years age group in both years. In 2021, 1,562 cases (71.9%) were aged 20-30 years, followed by 513 (23.6%) in the 30-40 years group, 73 (3.4%) below 20 years, and 23 (1.1%) above 40 years. Similarly, in 2022, most patients

were aged 20-30 years with 2,496 cases (75.5%), followed by 712 (21.5%) in the 30-40 years group, 69 (2.1%) below 20 years, and 30 (0.9%) above 40 years shown in Table 2.

Hypertensive disorders of pregnancy were among the major causes of referral, increasing from 237 cases in 2021 to 355 cases in 2022 (Table 3). Anemia also showed an increase from 139 cases in 2021 to 195 cases in 2022. Previous caesarean section remained significant indication for referral with 201 cases in 2021 and 198 cases in 2022. Other common obstetric indications included fetal distress (62 in 2021 vs 129 in 2022), PROM (68 vs 112), malpresentation (80 vs 101), and preterm pregnancy requiring NICU care (108 vs 176). Oligohydramnios increased from 69-108 cases, while fetal growth restriction increased from 20-79 cases. Intrauterine fetal demise also increased from 26 cases in 2021 to 78 cases in 2022. Hemorrhagic complications such as antepartum hemorrhage (59 vs 78) and postpartum hemorrhage (86 vs 112) were notable contributors to referral (Figure 2).

System-related factors also played an important role. Unavailability of an obstetrician accounted for 258 referrals in 2021 and increased to 381 in 2022, while referrals due to patient's request increased from 212 to 368

cases. The monthly distribution showed variation throughout the year, with the highest referral proportion in 2021 occurring in January (46.2%) and in 2022 occurring in November (61.9%).

A total of 13 obstetric cases were referred out in 2021 and 18 cases in 2022. In 2021, the majority of referrals were due to need for multidisciplinary care (9 cases, 69.2%), while 4 cases (30.8%) were referred on patient request as shown in Table 4. In 2022, 12 cases (66.7%) were referred due to need for multidisciplinary care, and 6 cases (33.3%) were referred on request. The monthly distribution showed few referred-out cases throughout the year, with slightly higher numbers observed in August and November in 2021, and June, July, and November in 2022. Overall, the need for multidisciplinary care was the predominant reason for referral in both years.

Regarding maternal outcomes of referred out cases, most patients were discharged after treatment. In 2021, 8 patients (62%) were discharged, 3 (23%) were lost to follow-up, and 2 (15%) expired as shown in Figure 3. In 2022, 10 patients (55.6%) were discharged, 5 (27.8%) were lost to follow-up, and 3 (16.6%) expired as shown in Table 5 and Figure 4.

Table 1: Monthly distribution of referred in patients in 2021 and 2022.

Months	2021		2022	
	Total no. of admissions	Referred in cases	Total no. of admissions	Referred in cases
January	591	273	453	261
February	522	187	532	313
March	601	258	554	294
April	499	106	489	229
May	513	145	467	291
June	582	211	564	301
July	553	168	502	192
August	482	201	490	165
September	521	164	472	252
October	474	102	582	345
November	508	235	586	363
December	498	121	519	301
Total	6344	2171	6210	3307

Table 2: Age wise distribution of referred in patients in 2021 and 2022.

Age groups (in years)	Year 2021	Year 2022
<20	73	69
20-30	1562	2496
30-40	513	712
>40	23	30
Total	2171	3307

Table 3: Distribution of referred in patients with cause for referral in 2021 and 2022.

Causes for referral	2021	2022
Hypertensive disorders of pregnancy	237	355
Gestational diabetes	80	64
Bad obstetric history	18	27

Continued.

Causes for referral	2021	2022
Previous cesarean section	201	198
Antepartum hemorrhage	59	78
Obstructed labor	21	18
Anemia	139	195
Non progression of labour	32	62
Malpresentation	80	101
PROM	68	112
Pre-term (NICU not available)	108	176
Oligohydramnios	69	108
Fetal growth restriction	20	79
Intrauterine fetal demise	26	78
CPD/contracted pelvis	57	90
Post-term	34	88
Fetal distress	62	129
Congenital malformation	12	38
Twin/triplet	49	81
Rupture uterus	1	0
PPH	86	112
Thrombocytopenia	12	8
Unavailability of obstetrician	258	381
Rh negative pregnancy	22	39
Patient's request	212	368
Heart diseases in pregnancy	19	29
Incomplete abortion	127	198
Molar pregnancy	38	64
Polyhydramnios	24	31
Total	2171	3307

Table 4: Distribution of referred out patients with causes for referral in 2021 and 2022.

Months	2021			2022		
	Reason for referral					
	Total number of referrals	Need for multidisciplinary care	On request	Total number of referrals	Need for multidisciplinary care	On request
January	1	1	0	0	0	0
February	1	0	1	2	1	1
March	0	0	0	1	1	0
April	2	1	1	0	0	0
May	1	1	0	1	1	0
June	0	0	0	3	2	1
July	0	0	0	4	4	0
August	3	2	1	0	0	0
September	1	0	1	2	1	1
October	1	1	0	1	0	1
November	2	2	0	3	2	1
December	1	1	0	1	0	1
Total	13	9	4	18	12	6

Table 5: Distribution of outcomes of referred out patients in 2021 and 2022.

Maternal outcome	2021		2022	
	N	%	N	%
Discharged	8	62	10	55.6
Lost to follow up	3	23	5	27.8
Expired	2	15	3	16.6
Total	13	100	18	100

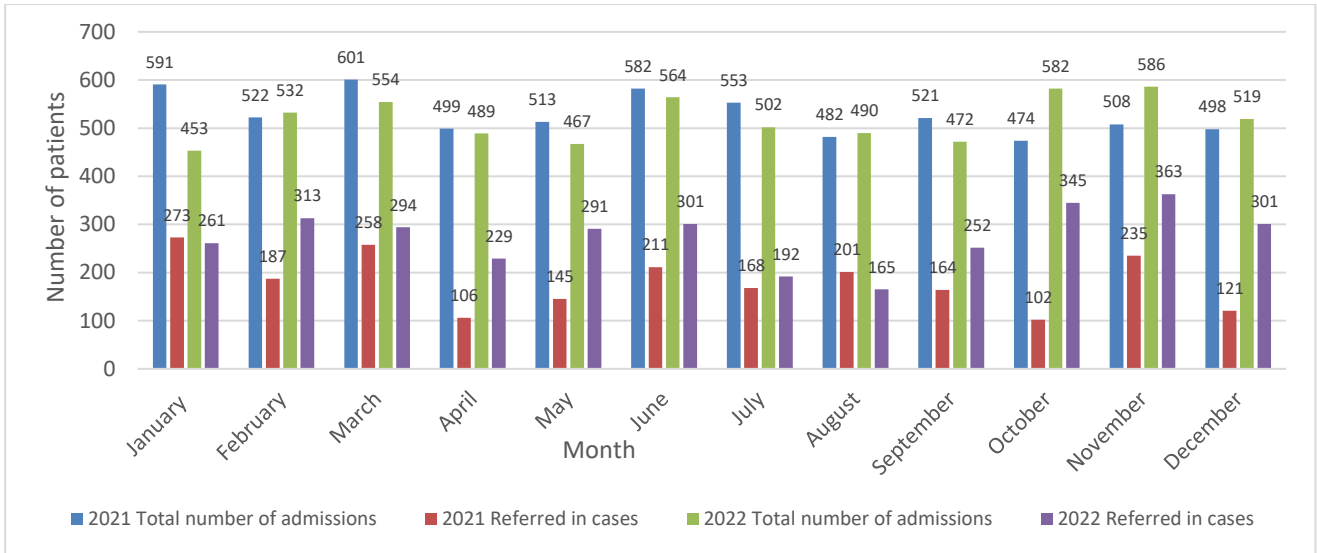


Figure 1: Monthly distribution of referred in patients in 2021 and 2022.

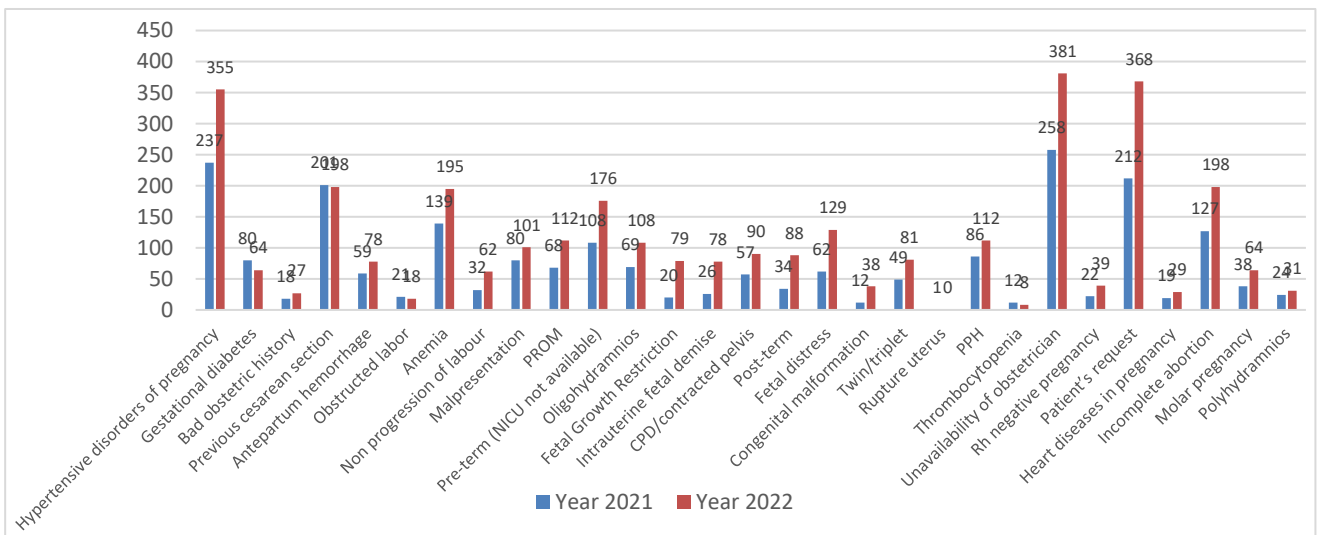


Figure 2: Distribution of referred in patients with cause for referral in 2021 and 2022.

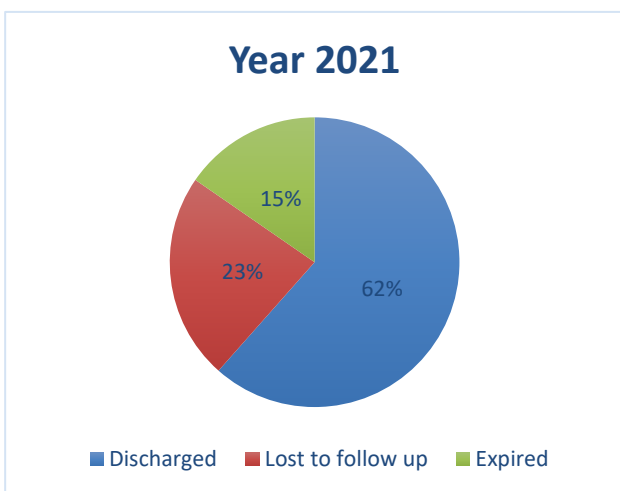


Figure 3: Distribution of outcomes of referred out patients in 2021.

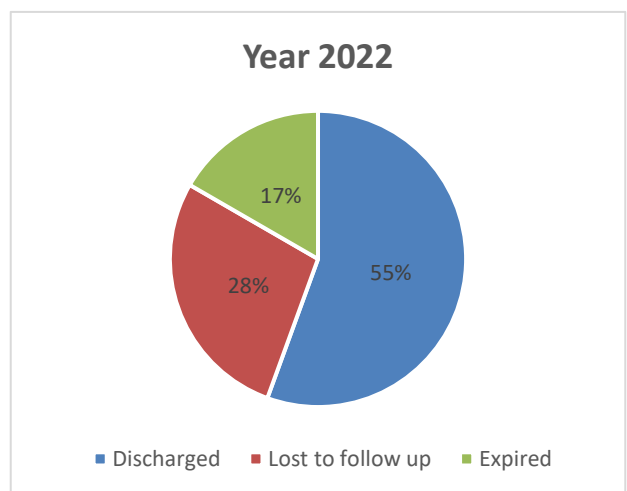


Figure 4: Distribution of outcomes of referred out patients in 2022.

DISCUSSION

The obstetric referral system plays an essential role in reducing maternal and perinatal morbidity and mortality by ensuring that high-risk pregnancies receive timely and appropriate management at higher health care centers. In the present study, the proportion of referred cases increased from 34.2% in 2021 to 53.3% in 2022, indicating a considerable rise in referrals to the tertiary care center. This increase may reflect a growing burden of high-risk pregnancies as well as greater utilization of referral services by peripheral health facilities. Similar findings were reported by Dwivedi et al who observed that a substantial proportion of admissions in tertiary hospitals were referred cases, suggesting that complicated obstetric conditions are frequently managed at higher centers.⁷

Hypertensive disorders of pregnancy were among the leading causes of referral in the present study. This finding is consistent with several studies conducted in India where hypertensive disorders were identified as a major indication for referral due to the need for specialized monitoring and management. Dwivedi et al reported that hypertensive disorders were one of the most common reasons for referral to tertiary care hospitals and were associated with increased maternal complications.⁷ Similarly, Sharma et al found that hypertensive disorders of pregnancy constituted a significant proportion of referred obstetric cases and were associated with increased maternal morbidity and operative interventions.⁹ Early diagnosis and effective management at peripheral centers are therefore crucial to reduce complications and unnecessary referrals.

Anemia was another important cause of referral observed in the present study. Anemia in pregnancy remains a major public health problem in developing countries and is associated with increased risk of maternal and perinatal complications. Kumar et al reported that anemia was one of the leading causes of referral in their study, particularly in women who had inadequate antenatal care or late registration of pregnancy.¹¹ Poor nutritional status and lack of early detection contribute significantly to the high prevalence of anemia among pregnant women. Strengthening antenatal care services and ensuring early screening and treatment for anemia can help reduce maternal complications and the need for referral.

Previous cesarean section was also a frequent indication for referral in this study. Women with a history of cesarean section are often referred to tertiary care centers due to the risk of uterine rupture, scar dehiscence, and other complications requiring emergency obstetric care. Patel et al reported that previous cesarean section was a common indication for referral and was associated with a higher rate of operative deliveries in referred cases.¹⁰ The availability of skilled obstetricians and emergency surgical facilities at tertiary care centers makes referral necessary for safe delivery in such high-risk pregnancies.

Other obstetric complications such as malpresentation, premature rupture of membranes, fetal distress, oligohydramnios, and fetal growth restriction were also common indications for referral in the present study. These conditions often require continuous fetal monitoring and specialized obstetric management, which may not be available at peripheral healthcare facilities. Patel et al similarly reported that fetal distress, PROM, and malpresentation were among the common causes of obstetric referral in their study.¹⁰ Dwivedi et al also observed that these complications frequently required referral due to the need for advanced diagnostic and therapeutic interventions.⁷

In addition to clinical indications, system-related factors such as unavailability of obstetricians and lack of neonatal intensive care facilities were important contributors to referral in the present study. Singh et al reported that a significant proportion of obstetric referrals in India occurred due to inadequate infrastructure, shortage of skilled healthcare personnel, and absence of essential services such as blood banks and NICU facilities at peripheral centers.⁸ These findings highlight the need to strengthen the healthcare system at primary and secondary levels in order to reduce unnecessary referrals and improve maternal care.

Maternal outcomes of referred out cases in the present study showed that the majority of patients were discharged after treatment, although maternal mortality was observed in both years. Referred obstetric cases often present with advanced complications due to delays in diagnosis, referral, or transportation. Kumar et al reported that delayed referral and inadequate antenatal care were major factors associated with adverse maternal outcomes among referred patients.¹¹ Similarly, Sharma et al observed that referred obstetric cases had higher rates of maternal morbidity compared with non-referred cases, emphasizing the importance of timely referral and prompt management.⁹

Overall, the findings of the present study emphasize the importance of strengthening antenatal care services, improving early detection of high-risk pregnancies, and ensuring timely referral to tertiary care centers. Improving infrastructure, availability of skilled healthcare providers, and neonatal care facilities at peripheral health institutions can reduce unnecessary referrals and improve maternal and perinatal outcomes.

CONCLUSION

The study highlights a significant increase in obstetric referrals, with hypertensive disorders, anemia, and previous cesarean section being the most common indications. Strengthening peripheral healthcare services, improving antenatal care, and ensuring timely referral may help reduce maternal complications and improve maternal outcomes.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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