



STUDY OF OBSTETRIC REFERRAL PATTERNS IN A TERTIARY LEVEL HOSPITAL

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ABSTRACT

Background: Maternal and perinatal outcomes depend heavily on timely access to quality obstetric care. Referral of obstetric cases is crucial in managing high-risk pregnancies and complications, particularly in resource-limited peripheral centers. This study aimed to analyze referral patterns, reasons for referrals, and associated maternal and perinatal outcomes at Lady Goschen and KMC Attavar Hospitals.

Methods: A prospective cross-sectional study was conducted over two years (September 2019–August 2021) at Lady Goschen and KMC Attavar Hospitals. All unregistered obstetric cases referred with a valid referral letter were included. Data were collected regarding demographic profiles, reasons for referral, associated risk factors, mode of delivery, and maternal and perinatal outcomes. Statistical analysis was performed using SPSS version 23.

Results: A total of 735 referred cases were analyzed. In Lady Goschen Hospital, 59% were multigravidae, whereas 54.2% in Attavar were primigravidae. Women above 30 years constituted 54.7% in Lady Goschen, while 62.5% of referrals at Attavar were under 30 years. The most common reasons for referral were non-availability of skilled doctors (41.4% at LGH; 41.7% at Attavar) and lack of facilities such as NICU or OT (39.7% at LGH; 40% at Attavar). Gestational hypertension (4.8%) and gestational diabetes mellitus (2.4%) were the commonest risk factors at LGH, while both were 12.5% at Attavar. Most patients underwent cesarean delivery (41% at LGH; 45.8% at Attavar). Intrauterine deaths were reported in 10.5% at LGH and 12.5% at Attavar, with maternal mortality of 0.3% in LGH and none in Attavar. **Conclusion:** Referral systems play a pivotal role in reducing maternal and perinatal mortality. The majority of referrals were due to inadequate availability of skilled doctors and essential facilities. Strengthening emergency obstetric care services, training healthcare personnel, and improving infrastructure are essential to enhance outcomes.

Keywords: Obstetric Referral, Maternal Outcome, Perinatal Mortality, Emergency Obstetric Care, Cesarean Delivery.

INTRODUCTION

The world's population is estimated to be around 7.9 billion, with India, Indonesia and China ranking among the ten most populous countries globally. Within this context, maternal health remains a

critical concern, particularly in countries like India, where the leading causes of maternal mortality include hemorrhage (38%), hypertension (5%), obstructed labor (5%), abortion (8%), and other conditions (34%).^[1] Anemia, contributing to 19% of maternal deaths, not only acts as a primary cause but also exacerbates other conditions like hemorrhage, sepsis, and toxemia.^[2] In India, the birth rate in 2020 stood at 17.4 per 1,000 live births, while the stillbirth rate in 2016 was 3 per 1,000 total births, as per the SRS (Sample Registration System) estimates.^[3]

India has made significant progress in reducing maternal mortality, as evidenced by the decline in the MMR (Maternal Mortality Ratio) from 130 per 100,000 live births in 2014-16 to 122 in 2015-17 and further to 113 in 2016-18.^[3] However, despite these improvements, the country is striving to achieve the global goal of an MMR of 70 per 100,000 live births by 2030 (4). Additionally, the NMR (Neonatal Mortality Rate) in 2017 stood at 23 per 1,000 live births, with a decrease in the SBR (Still Birth Rate) from 9 in 2006 to 5 in 2017.^[4] EmOC (Emergency Obstetric Care) plays a pivotal role in addressing maternal health challenges. It encompasses life-saving services, including basic EmOC (BEmOC), which involves interventions such as parenteral antibiotics and assisted vaginal delivery, and comprehensive EmOC (CEmOC), which includes obstetric surgery and blood transfusion.^[5] The UN recommends that comprehensive obstetric care be available in areas with populations of at least 500,000 and basic care in areas with populations of 125,000 or more.^[5]

AIMS AND OBJECTIVES

The study aimed to evaluate the maternal and perinatal outcomes of referred cases to Lady Goschen and KMC Attavar hospitals. The objective is to analyze the obstetric referral patterns to these hospitals, focusing on the reasons for referrals, in order to better understand the factors influencing the transfer of cases and assess the impact of such referrals on maternal and neonatal health outcomes.

MATERIALS AND METHODS

Study Design

This study adopts a prospective cross-sectional design and was conducted over a period of two years, from September 2019 to August 2021. The study was carried out at Lady Goschen and KMC Attavar hospitals, Mangalore, focusing on all obstetric referred cases during the specified period.

Inclusion and Exclusion Criteria

The inclusion criteria for this study included obstetric cases that were not registered in the hospital antenatally during the course of the current pregnancy but have approached the hospital with a referral letter from a government or private hospital or a medical practitioner and have been admitted for further management. The exclusion criteria include obstetric cases that were already registered in the hospital during the current pregnancy, as well as normal antenatal patients who were referred solely for financial reasons.

Sample Size Calculation

The sample size includes unregistered referred cases

Statistical Analysis

The data analysis was performed using SPSS software, version 23, to evaluate the referral patterns and associated maternal and perinatal outcomes.

RESULTS

Parity	LGH (n=735)	%	Attavar (n=24)	%
Primigravidae	434	41.0	13	54.2
Multigravidae	301	59.0	11	45.8
Total	735	100	24	100

Table 1: Distribution of Study Subjects According to Parity

Table 1 shows that most referrals to LGH were multigravidae (59%), whereas Attavar had more primigravidae (54.2%).

Age Group	LGH (n=735)	%	Attavar (n=24)	%
<30 years	333	45.3	15	62.5
≥30 years	402	54.7	9	37.5

Table 2: Age Distribution of Study Subjects

Table 2 illustrates that LGH received more referrals in the ≥30 years group, while Attavar predominantly had younger women (<30 years).

Reason	LGH (n=735)	%	Attavar (n=24)	%
Non-availability of skilled doctors	304	41.4	10	41.7
Non-availability of facilities (ICU/OT/NICU)	292	39.7	10	40.0
Need for tertiary care	69	9.4	0	0
Reason not specified	70	9.5	3	12.5

Table 3: Reasons for Referrals

Table 3 demonstrates that the main reasons for referral were lack of skilled doctors and unavailability of facilities in both centres.

High-Risk Factor	LGH (n=735)	%	Attavar (n=24)	%
Gestational Hypertension	35	4.8	3	12.5
Gestational Diabetes Mellitus	18	2.4	3	12.5
Hypothyroidism	10	1.4	1	4.2
Severe Anemia	10	1.4	1	4.2
Pre-eclampsia	10	1.4	1	4.2
Others (Bronchial asthma, Overt DM, etc.)	16	2.1	5	20.8

Table 4: High-Risk Factors in Referred Cases

Table 4 shows that gestational hypertension and diabetes were the leading high-risk factors in both hospitals.

Management	LGH (n=735)	%	Attavar (n=24)	%
LSCS	301	41.0	11	45.8
Normal Vaginal Delivery	223	36.3	6	29.2
Exploratory Laparotomy	33	4.5	4	16.7
Tocolysis	106	14.4	0	0
Suction & Evacuation	28	3.8	2	8.3

Table 5: Distribution of Cases Based on Management

Table 5 indicates that caesarean section was the most common mode of management in both hospitals.

Outcome	LGH (n=735)	%	Attavar (n=24)	%
Intrauterine Deaths	77	10.5	3	12.5
Stillbirth	3	2.7	0	0
Neonatal Deaths	28	25.4	2	40.0
Maternal Mortality	2	0.3	0	0

Table 6: Maternal and Perinatal Outcomes

Table 6 highlights that intrauterine deaths and neonatal deaths were significant perinatal outcomes, with maternal mortality observed only in LGH (0.3%).

Reason for Referral	Multigravida (LGH)	Primigravida (LGH)	Multigravida (Attavar)	Primigravida (Attavar)
Non-availability of skilled doctors	182	122	5	5
Non-availability of facility	121	171	5	5
Need for tertiary care	43	26	0	0
Reason not specified	39	31	3	2

Table 7: Causes of Referral According to Parity

Table 7 illustrates that both primigravidae and multigravidae were mostly referred due to lack of skilled doctors or facilities.

DISCUSSION

The present study was conducted in Lady Goschen and KMC Attavar Hospitals to examine referral patterns and their impact on maternal and perinatal outcomes. The findings highlighted several critical issues contributing to obstetric referrals, such as the lack of basic and comprehensive Emergency Obstetric Care (EmOC) facilities, shortage of trained personnel, and inadequate infrastructure in peripheral healthcare centers. The absence of competent attendants at the time of delivery in many outlying health facilities significantly influences maternal and neonatal outcomes. Similar concerns were observed in the study by Minerva et al.^[6] where 35% of cases indicated that the clinical staff's skills were insufficient for the complexity of the cases they handled. Furthermore, a lack of skilled doctors and limited facility availability led 70% of the respondents to report inadequate equipment in their maternity units.

Demographic patterns in our study align with previous research. More than 85% of the referred patients were between 20 and 30 years of age, consistent with findings by Gupta et al.^[7] who reported 62.5% in this age group. This trend was also comparable to Goswami P et al.^[8] (78%), Jyotsana et al.^[9] (71%), Panchal et al.^[10] (64%), Devneni and Sodumu et al.^[11] (73%), Latika et al.^[12] (65%), JyotiBindal et al.^[11] (87%), and RekhaJakhar et al.^[13] all of whom noted that the majority of referred patients were in the 21–30 age range.

In the current study, 54.2% of referred cases at KMC Attavar were primigravidae, comparable to findings by Gupta et al.^[7] (52.1%), Morsheda Banu et al.^[14] (50%), Nidhi Jha et al.^[15] (65.3%), and Indranil Dutta et al. (62%). Conversely, in Lady Goschen Hospital, 59% of referrals were multigravidae, which is in line with studies by Goswami P et al.^[11] (53%), Latika et al.^[12] (52.6%), and JyotiBindal et al.^[11] (50%).

Hypertensive disorders of pregnancy emerged as the most common indication for referral in our study, reflecting similar findings in Rathie et al.^[16] 2010 study. Jyotsana et al.^[9] also identified hypertensive disorders in 31% of referred cases, while Sabale et al.^[17] reported 25.79% of referrals due to pre-eclampsia and related conditions. However, contrary results were observed in studies by Latika et al.^[12] (15.77%) and Jyoti et al.^[11] (25.13%), where anemia was found to be the most prevalent high-risk factor.

In terms of logistical challenges, JyotiBindal et al.^[11] reported that 7.01% of cases were referred due to non-availability of an operation theatre, and 3.92% due to the lack of obstetricians-figures higher than those in our current study. Multiple studies from sub-Saharan Africa similarly indicate that the lack of trained personnel and inadequate infrastructure severely limit the provision of EmOC services. Geleto et al.^[18] in a systematic review, concluded that the absence of operation theatres and shortage of maternity service rooms consistently hindered EmOC delivery in developing countries.

Mode of delivery in the referred cases showed that a significant proportion underwent LSCS (Lower Segment Caesarean Section)-41% in Lady Goschen and 45.8% in KMC Attavar. These results are comparable to Indranil et al.^[19] (62.3%) and Panchal et al.^[10] (64%). In contrast, studies by Prakriti Goswami et al.^[11] showed that 48% of patients had vaginal deliveries and only 28% underwent caesarean section. Similarly, JyotiBindal et al.^[11] reported a higher rate of vaginal delivery (48.1%), and Poornima et al. found 56% had normal vaginal delivery and 44% underwent LSCS.^[20]

Regarding perinatal outcomes, perinatal deaths were observed in 8.3% of cases at KMC Attavar, closely aligning with Sabale et al.^[17] (10.23%). At Lady Goschen Hospital, perinatal mortality was

4.2%, comparable to Gupta et al.^[7] (4.43%) and Mahendra et al.^[21] (4%). Maternal mortality in our study was relatively low-0.3% at Lady Goschen and none at KMC Attavar-lower than that reported by Sabale et al.^[18] (0.79%), Latika et al.^[12] (0.99%), Jyoti Bindal et al.^[11] (2.2%), Panchal et al.^[10] (2%), and Poornima et al.^[20] (7%). Notably, Goswami et al.^[22] reported no maternal mortality, consistent with our findings at KMC Attavar. Overall, this study reaffirms the critical need for strengthening peripheral health infrastructure, training staff, and timely referrals to improve maternal and perinatal outcomes.

LIMITATIONS

The present study has certain limitations. The study did not assess key contributing factors such as socioeconomic status, women's awareness of obstetric risk indicators, travel time to healthcare facilities, transportation sufficiency, promptness in the decision to seek care, and availability of financial resources for transportation. Additionally, high-risk maternal conditions were not evaluated as specific causes for referral, which may have limited the comprehensive understanding of the underlying reasons for obstetric referrals.

CONCLUSION

Referral is a critical component of maternal healthcare, involving timely decision-making, risk perception, accessibility, and availability of skilled personnel and services. This study found that most referrals to Lady Goschen and KMC Attavar hospitals were due to the non-availability of doctors, with referred women showing higher caesarean rates and poorer neonatal outcomes, indicating effective identification of high-risk cases. Strengthening existing health systems-such as CHPS, midwife training, and referral audits-is essential. To improve maternal and perinatal outcomes, gaps in EmOC, skilled staffing, and referral infrastructure must be addressed. Further research is needed to assess healthcare providers' EmOC knowledge and treatment delays.

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