ORIGINAL RESEARCH ARTICLE

A Retrospective Record-Based Study to Identify the Indications and Outcomes of Obstetric Referrals to A Tertiary Care Centre in Gujarat, India

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ABSTRACT

Background: Obstetric referral services in the public health system play a crucial role in managing obstetric emergencies. However obstetric referrals to tertiary care centres should be used judiciously and effectively and not convenience-based.

Objectives: To study the indications of obstetric referrals from primary and secondary care centres and to assess the referral communications and outcome of referred mothers.

Methods: This was a retrospective record-based study done at a tertiary care centre in Gujarat from January to December 2022. All obstetric referrals during the study period were included in the study. Non-obstetric referrals and registered antenatal cases were excluded from the study.

Results: Of 1227 mothers referred 62.7% were referred from CHC and 34.7% from SDH. 96.7% of them were referred to in the first stage of labour. There was no pre-referral communication in about 44% of referrals. Referral slip was incomplete in 15% of the mothers. Two-thirds of them had normal delivery (64.5%). Only 3.7% of mothers needed ICU support. 97.91% of the mothers had live births.

Conclusion: Unjustified, unindicated, and convenience-based referrals from peripheral health centres and poor referral communication were noted. This study highlights the need for formulation, implementation and monitoring of an obstetric referral policy to avoid clogging tertiary care centres with patients that can be managed at peripheral health centres.

Keywords: Emergency Obstetric care, Obstetric referral, pregnancy outcome, public health system, referral communication

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INTRODUCTION

Substantial progress has been made by India in the reduction of maternal mortality by 70% over the last two decades from 398/100 000 live births in 1997-98 to 99/100000 live births in 2020.[1] However, we are still behind the Sustainable Developmental Goal target of less than 70/100000 live births by 2030.[2]

In India, Obstetric care is provided at three levels of healthcare facilities. At the primary level are the Sub-centres (SC) and Primary health centres (PHC) provide basic emergency obstetric care services (BEmOC) such as routine Antenatal care check-ups, normal delivery and referral of complicated cases. At the secondary level, the Community Health centres (CHC) and sub-district hospitals (SDH) act as First Referral Units (FRU) providing Comprehensive emergency Obstetric care (CEmOC) services such as a facility for surgical delivery and blood transfusion in addition to BEmOC services. The tertiary level comprising district hospitals (DH) and medical college hospitals (MCH) provides for the management of complicated cases referred from FRU.[3,4]

A functional and effective referral system is needed for obstetric emergencies in providing quality maternity services at primary levels and above. Monitoring of these referral services can provide insight into the gaps in service provision, training needs and logistic requirements in providing Emergency Obstetric care (EmOC) at primary and/or secondary levels.[5]

Although emergency referral services are an important component of providing EmOC, very few studies have been carried out, especially from the perspective of a tertiary care centre. Hence this study was done with the objectives of studying the indications for obstetric referrals from primary and secondary centres, pre-referral communications and documentation and post-referral feto-maternal outcomes at a tertiary care centre.

METHODOLOGY

The current study was a retrospective descriptive record-based study conducted in the Obstetrics and Gynaecology department of GMERS Medical College and Hospital of Junagadh district, Gujarat. This facility is a CEmOC centre conducting more than 6000 deliveries a year in addition to serving as FRU to all mothers referred from peripheral health centres of the district.

Inclusion and Exclusion Criteria: All emergency referred antenatal and intra-natal patients from January 2022 to December 2022, at the tertiary hospital were included. All registered antenatal cases and gynaecological referrals were excluded. Those referred mothers for whom the required information could not be obtained were also excluded from the study.

Study tools: A pre-structured pre-tested questionnaire was developed to record information for the referring centre, about transport, management and outcomes at the study centre. Records of all the mothers referred to the department for the study duration were obtained from the Refer-in register, Labour room register, Operation Theatre register, antenatal and post-natal maternity wards and available refer slips. Data was collected for demographic details of the mother, obstetric profile, gestation age, indications for referral, referring centre, referral communications, mode of referral, pre-referral management, mode of delivery, and pregnancy outcome. Although there were multiple indications for referral for a given patient, the single predominant cause of referral was noted in the proforma.

Statistical analysis: The data entry and analysis were done using MS Excel 2016 software. Descriptive statistics was used to analyse mothers' profiles, indications for referral, referral communications, and maternal and foetal outcomes. The results were expressed as proportions and percentages.

Ethical statement: Ethical approval for the study was obtained from the Institute Ethics Committee of the GMERS Medical College, Junagadh. (Ref No. IEC/04/2023)

RESULTS

Table 1 describes the distribution of mothers as per referring facility and stages of Labour. A total of 1227 mothers were referred to tertiary care centre from peripheral health facilities during the study period. Over ninety-seven per cent of the women were between 19 to 35 years of age; the mean age of mothers was 25.05 years. The majority of the referred mothers received at tertiary care centre were from CHC (62.7%) and SDH (34.7%).

The majority of mothers (96.7%) were referred in the first stage of labour. Less than 1% of the mothers were referred post-delivery (stages 3 & 4) for conditions such as retained products of conception or post-partum haemorrhage.

Table 1: Distribution of the mothers as per the referring facility and stages of Labour

Referring facility	Antenatal Period	First stage of Labour	Second stage of Labour	Third stage of Labour	Fourth stage of Labour	Post MTP Bleeding	Total (%) N = 1227
SDH	5	415	2	1	2	1	426 (34.72)
CHC	17	742	5	1	5	0	770 (62.75)
PHC	0	28	0	0	1	0	29 (2.36)
Private	0	2	0	0	0	0	2 (0.16)
Total (N=1227) (%)	22 (1.79)	1187 (96.74)	7 (0.57)	2 (0.16)	8 (0.65)	1 (0.08)	1227 (100)

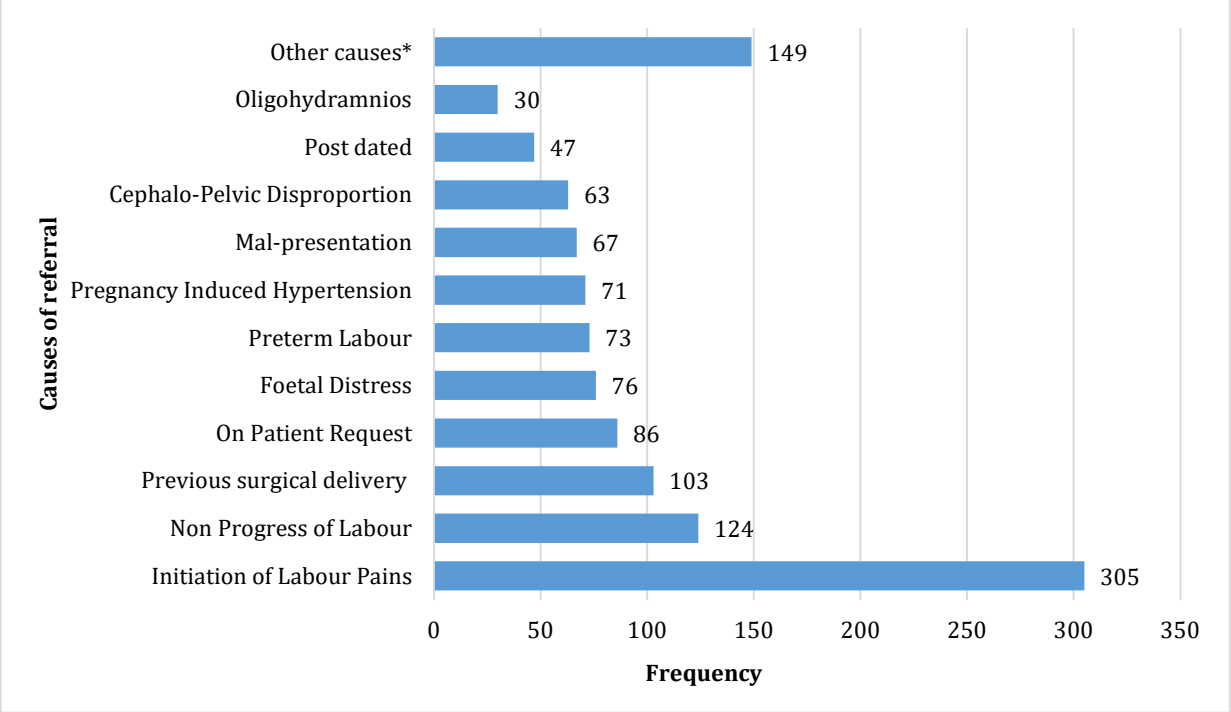
Table 2: Quality of the referral services

Variables	Cases (n=1227) (%)
Status of referral communication to higher Centre	
Informed higher center before referral	695 (56.64)
Referral slip available	1132 (92.26)
The referral slip was filled out completely	1038 (84.60)
Admitted at the first institution before referral	585 (47.68)
Pre-referral treatment mentioned in the referral slip	148 (12.06)
Mode of transport	
108/Govt.	1050 (85.57)
Private	177 (14.43)

Table 3: Mode of delivery and outcome of the referred mothers

Mode of Delivery	Primipara	Multipara	Total (%) (N = 1194)	Preterm	Term
Normal Delivery	437	333	770 (64.49)	346	424
Instrumental Delivery	15	1	16 (1.34)	11	5
Caesarean Delivery	204	187	391 (32.75)	179	212
Normal Delivery (In Ambulance)	3	2	5 (0.42)	1	4
Not Delivered (Discharged, DAMA* or RHC†)	8	4	12 (1.01)	8	4
Total	667	527	1194	545	649

*DAMA – Discharged against medical advice, †RHC- Refer to Higher centre



*Other causes for obstetric referral included any of the following: mothers with communicable diseases, co-morbidities, blood-related conditions, uteroplacental causes, congenital malformation in the foetus or Bad Obstetric History

Figure 1: Bar chart showing predominant causes of obstetric referral

Table 4: Fetal outcome amongst referred mothers

Fetal outcome	Total (N=1182*)	Percentage
Live Birth	1170/1195	97.91
Still Birth	5/1195	0.42
Intra Uterine Fetal Death	20/1195	1.67
Need for resuscitation and NICU admission	107/1170	9.15
Early Neonatal Death	11 /107	10.28

*13 twin babies, NICU neonatal intensive care unit

About 1.8% (22) of the mothers were referred during the antenatal period. Two-thirds of them (14/22) were referred for per vaginal bleeding during the antenatal period and half of them resulted in miscarriage. Other causes of referral in the ANC period included preterm or false labour pains, anaemia or absent FHS. (Table 1)

Figure 1 highlights the single predominant cause of obstetric referral. A total of 1194 women were referred to teaching hospital for delivery services. The

ten most frequent causes for referral of mothers for delivery in decreasing order of total mothers referred were initiation of labour pains (25%), non-progress of labour (10%), previous surgical delivery (8%), patient request (7%), foetal distress (6%), preterm labour (6%), Pregnancy Induced Hypertension (6%), Malpresentation (6%), Cephalo Pelvic disproportion (5%) and Post-date (4%).

Other reasons for obstetric referral were mothers with communicable diseases (hepatitis B, HIV, Syphillis), co-morbidities (Anaemia, Gestational Diabetes Mellitus), Blood related (Rh negative blood group, Sickle cell anaemia, Thalassemia minor), Utero-Placental causes (Oligo- or poly-hydramnios, Utero-vaginal Prolapse, Placental Abruption, Placenta Previa, Premature Rupture Of Membranes), foetus related (Congenital malformation in foetus, growth retardation, Twin pregnancy, intrauterine foetal death), Hyper/hypothyroidism, Bad Obstetric History, Unavailability of Anaesthetic and Uncooperative patient, collectively accounted for 12.48% of all referrals (Figure 1).

Table 2 highlights the quality of referral services for referral communications and modes of transport. Around 44% of the mothers were referred without any prior information to the referral centre. Referral slip was not available with approximately 8% of the mothers. The referral slip was incomplete in over 15% of the mothers. Over half (52%) were not even admitted or given preliminary treatment at the referring centre before referral. Similarly, pre-referral treatment was mentioned in the referral slip of only 12% of the mothers. Most (85%) of the mothers had used 108 services as a mode of transport. (Table 2)

Table 3 describes the mode of delivery and outcome of the referred mothers. A little over half of the mothers (55.86%) referred for delivery were primipara. Two-thirds (64.5%) of the mothers referred had normal delivery. Instrument delivery was needed for only a few (1.34 %) of the mothers. Surgical delivery was required for the remaining one-third of the referred mothers (32.75%). There was no significant difference in the mode of delivery (vaginal or surgical delivery) for the referred primipara and multipara mothers (Yates' chi-square 2.797, p 0.09, Df = 1).

Preterm delivery was found in 45.6% of the referred mothers. However, there was no significant difference in the mode of delivery for preterm and term delivery amongst referred mothers (Yates' chi-square 0.003, p 0.95, Df = 1).

Amongst 1194 mothers referred for delivery 12 mothers did not deliver as they absconded or were discharged or were referred to higher centre. Out of 1182 women delivered a total of 44 (3.7%) mothers needed ICU support and in addition 13 (1.1%) women also required Blood transfusion. The maternal outcome was uneventful in the remaining 1138 (96.3%) women. One mother was referred to a higher centre for the unavailability of blood components. No maternal deaths were reported amongst the referred mothers. (Table 3)

Table 4 describes the foetal outcome amongst referred mothers. Amongst 1182 mothers who delivered at the referral hospital, 13 mothers had twin pregnancies. So a total of 1195 babies were delivered at referral hospital. The majority of the babies (97.91%) were delivered successfully with a few exceptions of stillbirths (0.42%) or intrauterine foetal death (1.67%). About one-tenth of the babies delivered alive required resuscitation and neonatal intensive care unit support and around 10% of these babies had early neonatal deaths, primarily due to respiratory distress syndrome.

Discussion

SDH and CHC are secondary care centres that act as FRUs and are supposed to provide CEmOC services.[3,4] However, in the present study, over 97% of referrals were from secondary care centres (Table 1). A similar finding was reported by Chaturvedi et al.[6] who reported that 62% of in-referrals in a tertiary care centre were from secondary-level facilities and 27% from PHCs. Prathiba P et al.[7] in their study in Puducherry found that 38% and 45% of the patients were referred from the primary level and secondary level to higher centres respectively. This pattern of higher referrals from secondary facilities to tertiary facilities could be due to better connectivity and ease of accessibility of a tertiary care centre.

The purpose of referrals of mothers in the present study was mainly for delivery (97%) and minimal for ANC (2%) or Post-delivery complications (<1%). Narsaria K et al.[8] reported 87% of the referrals for delivery and about 13% for complications in the antenatal period. (Table 1)

Studies on obstetric referral done in various states across India mention Pre-eclampsia and other obstetric emergencies as the main cause of referral.[9-13] In contrast the single most common cause of obstetric referral in the present study was Initiation of labour pains (25%). The possible explanation could be a lack of confidence and/or skills of the peripheral health staff in dealing with obstetrical conditions or a convenience-based approach of referring obstetrical cases to easily accessible tertiary care centres. This leads to the overburdening of tertiary care centres with simultaneous underperformance of secondary and primary level facilities for obstetric care (Figure 1).

Referral slips were either not available or lacking crucial details in about 10 to 20% of the referred mothers, a finding supported by other studies as well.[6,7,14] Chaturvedi et al.[6] showed admission before referral at a referring facility in about 60% of cases which is a little more than that found in the present study (47%). Non-intimation to higher centre, non-admission at the first institution before referral, not

providing of refer slip or incompletely filled refer slip with lack of details about the pre-referral treatment of the mothers shows the casual and lethargic approach of the referring facilities towards mothers in labour. This referral communication gap may compromise the delivery of emergency obstetric care services in time and contribute to type 3 delay.[15]

Over 85% of the mothers were referred through government-provided 108 Ambulance services as opposed to the study by Pratibha et al.[7] where a majority had to arrange for their own transport. This indicates a powerful system of emergency transport services in the study area. However, about 15% of the mothers had used private services for transport possibly as it was a non-emergency referral. (Table 2)

The proportion of multipara & primipara in the present study was almost similar. This finding was echoed by other similar studies done by Jyoti Bindal et al.[16] (50%), Gupta PR et al.[17] (47%) and Goswami P et al.[18] (53%). Logically multipara are ideal candidates for non-referral and delivery at peripheral health centres, provided they have no co-morbidities. However equal referrals of multipara as compared to primipara in the present study suggest the requirement for risk-based and need-based approaches for referral.)

Less than one-third (32.7%) of the referred mothers in the present study required surgical delivery. The rate of surgical delivery amongst referred patients was similar in studies by Goswami P et al.[18] (28%) and Prasad D et al.[19] (28.5%). Over two-thirds (67.3%) of the referred mothers delivering normally at the teaching hospital, highlighting the frequency of unnecessary avoidable referrals.

Only a few (3.7%) out of all mothers referred to teaching hospital for delivery needed ICU support. Over 96% of the referred mothers in the present study did not require any ICU support at referral hospital. These referrals lead to the dilution of quality care provided to critical mothers at tertiary care centres with an excess of normal deliveries that otherwise could have been managed at peripheral centres.

A total of 5 mothers had delivered in the ambulance while being referred. This is of grave concern as it endangers the life of the mother and the baby. This highlights the need for training of the peripheral health care staff for delivery-related services. (Table 3)

The referral hospital had successfully delivered 98% of the babies of referred mothers. 98% of the babies in the present study had live births as compared to other similar studies by Shenoy HT et al.[20] (85%) and Devineni et al.[21] (78%). The stillbirth rate in the present study was 0.4% which was much less than studies from West Bengal (5%)[8] or Mumbai (4.9%)[22] suggesting excellent delivery services by the teaching hospital. The present study reported the need for NICU admission in about 9% of the babies delivered. About 10% of babies admitted to NICU had perinatal mortality. In other similar studies, the NICU admission rates of babies born to referred mothers ranged from 15% to 30% [8,21-23] and perinatal mortality rates ranged from 5% to 40%.[20,21,23] (Table 4) This indicates the quality of Maternal and child care services provided at the concerned referral centre.

Since this was a retrospective record-based study, many referred cases with missing details had to be excluded from the study. A prospective study comparing the maternofetal outcome of referred mothers to booked mothers would be a good supplement to the present study.

Conclusion

The findings such as the majority of referred mothers were referred from CHC and SDH, initiation of Labor as the most frequent cause of referral and over two-thirds of them having normal delivery at teaching hospital indicates sub-optimal provision of delivery services by CHC and SDH. Unnecessary and unindicated referrals that could have been managed locally, and closer to the community were seen overburdening the tertiary care centre. Referring facilities need to be trained in pre-referral communications, and referral documentation and monitored for the same. This highlights the need for the formulation, strict implementation and monitoring of an obstetric referral policy depicting whom to refer, when to refer, where to refer and how to refer. This can lead to improved obstetric outcomes in an inexpensive way.

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