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## Original Research Article

# Maternal and foetal outcome in patients referred to tertiary care hospital: 6-month prospective study

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## ABSTRACT

**Background:** Early identification, initiation of early treatment and timely referrals are the crucial components for success of any maternal and fetal health intervention to reduce the maternal and fetal mortality. Objectives of the study were: to know the incidence of referred patients to C.U. Shah Medical College and Hospital, Surendranagar; to evaluate maternal and foetal outcome in the referred patients; and to identify lacunae in appropriateness and timeliness of referral. **Methods:** The present study was done in department of obstetrics and gynaecology C. U. Shah Medical College and Hospital, Surendranagar, during January 2022 to June 2022 (duration of 6 months) to study the referred patients with respect to age, parity, place of referral, types of transport used, causes of referral, maternal and perinatal outcome and if maternal and fetal death occurs, identify its cause.

**Results:** Maximum patients are primigravida and of 20-30 years of age. Majority of patients used government vehicles/108 and only few have been using private vehicles. All patients reached C. U. Shah Medical College and Hospital within 2 hours, which is adequate for management of complications unless the patients are referred timely from the referring site. About 30% of patients are referred with no high-risk factors and 80% of patients are referred during emergency hours.

**Conclusions:** Early identification, initiation of early treatment and timely referrals are the crucial components for success of any maternal health intervention. Minimizing the causes of delay to emergency obstetric care significantly decrease maternal and neonatal morbidity and mortality.

**Keywords:** Emergency, Referral, Maternal outcome, Neonatal mortality

## INTRODUCTION

Gujarat is a state with moderate maternal mortality ratio which is now showing a declining trend because of various interventions that have been planned and implemented. However current trends are still far from achieving millennium development goals. C. U. Shah Medical College and Hospital having obstetrics and gynaecology department, being a tertiary care center, it caters lot of high-risk obstetric patients. These referred patients are from various government and private hospital from within and outside Surendranagar.

Obstetric complications claim so many women's lives each year. Nearly all of these lives would be saved if good quality emergency obstetric care is made available 24 hours a day, 7 days a week. Most of these deaths are caused by haemorrhage, obstructed labour, infection (sepsis), unsafe abortions and eclampsia. Indirect causes like malaria, human immune-deficiency virus (HIV) and anaemia also contribute to maternal deaths.<sup>1</sup>

About fifteen percent of all pregnancies will have some complication. Most complications occur randomly in both high and low risk patients. Life threatening complications

can occur any time before, during and after delivery and quite often they are neither predictable nor preventable. However, if they are identified and addressed timely and if the basic and comprehensive emergency obstetric services are provided to all pregnant women closer to their homes; most of the maternal and perinatal deaths can be averted.<sup>2,3</sup>

The delay occurs at the following three levels: delay in decision to seek medical care; delay in reaching health facility; and delay in receiving appropriate care at health facility due to staff insensitivity, lack of appropriate resources or poor organizational setups that is not conducive for emergency care.

The third delay (delay in receiving appropriate care at health facility) relates to factors in the health facility including quality of care. In practice it is crucial to address the third delay first, for it would be useless to facilitate access to a health facility, if it was not available, well-staffed, well equipped and providing good quality care.<sup>4</sup>

### Aim

This study was conducted to evaluate maternal and fetal outcome in patients referred to C. U. Shah Medical College and Hospital from within Surendranagar.

### METHODS

The present study was a prospective study conducted in department of obstetrics and gynaecology, C. U. Shah Medical College and Hospital, Surendranagar, during January 2022 to June 2022 (duration of 6 months) on 100 obstetric patients in single phase to strengthen the referral facility for better outcome. All obstetric patients referred from inside Surendranagar to C. U. Shah Medical College and Hospital were studied. Detailed history was taken from patients or attendants regarding the age, obstetric history, place of referral, duration of stay at referral centre, management done at referral centre, time and date of referral, mode of conveyance and time taken and information given on referral letter.

### Inclusion criteria

All obstetric patients referred from inside Surendranagar with or without referral letter were included.

### Exclusion criteria

Booked patient of C. U. Shah Medical College and Hospital; and all un-booked direct obstetrics patients to C. U. Shah Medical College and Hospital were excluded.

Detailed clinical examination of the patient and findings noted in proforma. The maternal outcome i.e., vaginal delivery, operative delivery and any other operative intervention and conservative management done was recorded. Fetal outcome was recorded with reference to

condition, need for neonatal intensive care unit (NICU) admission and still births and early neonatal deaths.

### RESULTS

A total 100 obstetric patients were referred to C. U. Shah Medical College and Hospital. Maximum patients were primigravida and of 20-30 years of age. Gandhi General Hospital, CHC, PHC and private hospitals were the places from where maximum patients are referred. Majority of patients used hospital vehicles/108 and only few were provided with private vehicles. Most patients reached C. U. Shah Medical College and Hospital within 2 hours, which was adequate for management of complications unless the patients are referred timely from the referring site. About 22% of patients were referred with no high-risk factors and 80% of patients were referred during emergency hours.

The present study is a prospective study of 6 months period on 100 obstetric patients. Observations recorded in the study are as follows.

Total obstetric admissions during the study period were 1800 of which 5.55% were referred patients (Table 1).

**Table 1: Total number of patients.**

Parameters	No.	%
<b>Total number of obstetric admissions in CUSMCH</b>	1800	-
<b>Total number of referred patients to CUSMCH</b>	100	5.55

Maximum 80% of the patients were of age group 20-30 years. Because this age group has maximum fertility (Table 2).

**Table 2: Age wise distribution.**

Age (years)	Phase I	
	No.	%
<20	6	6
20-30	80	80
30-40	12	12
>40	02	2
<b>Total</b>	100	100

During the study period, maximum patients referred are primigravida (65%) (Table 3).

**Table 3: Parity wise distribution.**

Age	Phase I	
	No.	%
<b>Primi</b>	65	65
<b>Multi</b>	30	30
<b>Grandmulti</b>	5	5
<b>Total</b>	100	100

Hospital vehicles/108 was the type of transport maximum used by the patient (Table 4).

**Table 4: Type of transport.**

Transport	Phase I	
	No.	%
Hospital ambulance/108	62	62
Private vehicle	38	38
<b>Total</b>	100	100

Maximum 24% of patients were referred in intrapartum period with no high-risk factor associated, which proves to be unnecessary overburdening of the C. U. Shah Medical College and Hospital.

Among the high-risk pregnancies anaemia accounted for maximum i.e., 21% of the referrals followed by hypertensive disorders (13%) and meconium-stained liquor (12%) (Table 5).

**Table 5: Causes of referral.**

S. no.	Cause of referral	Phase I	
		No.	%
1	Full term pregnancy with labour pains'	24	24
2	Hypertensive disorders	13	13
3	Anaemia	21	21
4	Premature rupture of membranes	9	9
5	Malpresentations	4	4
6	Fetal distress	5	5
7	Hemorrhage	7	7
8	Meconium-stained liquor	12	12
9	Post-partum patient	5	5
<b>Total</b>		100	100

Maximum (76%) patients referred underwent vaginal delivery which includes both high low risk patients. 24% patients have undergone lower segment caesarean section (LSCS) (Table 6).

**Table 6: Maternal outcome.**

Maternal outcome	Phase I	
	No.	%
Vaginal delivery	76	76
LSCS	24	24
<b>Total</b>	100	100

Maximum 76% babies are delivered vaginally and 24% babies are born by LSCS. Among vaginal deliveries 71% babies are alive and healthy, 5% needed NICU admission. Among LSCS deliveries 20% babies are alive and healthy, 4% needed NICU admission (Table 7).

Hopefully no maternal deaths noted during study periods.

**Table 7: Perinatal outcome.**

Perinatal outcome	LSCS	Normal vaginal	%
Alive and healthy	20	71	91
NICU admission	4	5	9
<b>Total</b>	24	76	100

## DISCUSSION

About 10% of all pregnancies will have some complication. Most complications occur randomly in both high and low risk patients. Life threatening complications can occur any time before, during and after delivery and quite often they are neither predictable nor preventable. However, if they are identified and addressed timely and if the basic and comprehensive emergency obstetric services are provided to all pregnant women closer to their homes; most of the maternal and perinatal deaths can be averted. Early identification, initiation of early treatment and timely referrals are the crucial components for success of any maternal health intervention. Therefore, it is imperative to impart the knowledge and skills for early identification of complications and initiation of early treatment to all the health functionaries of the state.

Majority of patients are referred from community health centre followed district general hospital, primary health centre and private hospitals in Surendranagar, and maximum number of patients are referred in intrapartum period with no high-risk factors, which causes overutilization of higher-level facilities. Study by Sable and Patankar showed that 15.79% were referred from PHCs, 42.37% from DHs, 34.74% from referral hospitals and 2.63% from employee's state insurance (ESI) hospital.<sup>5</sup> This is important because it has cost implication in resource constrained situation and because it may be detrimental to quality of care as the higher-level facility becomes overburdened.

Anaemia 21 (%) followed by hypertensive disorders (13%) and meconium-stained liquor (12%), have been the leading causes of referral which can be managed, right at the place of referral. Proper antenatal care is required to pick-up high-risk case especially early identification and treatment of hypertensive disorder of pregnancy and anaemia, which can improve the maternal and fetal outcome. Gupta et al reported that majority of cases were referred for anemia (18.05%), hypertensive disorders of pregnancy (22.27) and mal-presentations (15.19).<sup>6</sup>

Maximum patients (76%) underwent vaginal delivery including both low risk and high-risk patients. 24% patients underwent LSCS. No patients in our study required ICU admission. Whereas study by Goswami and Makhija showed that 12.34% of referred patients required an ICU admission with an average stay of 4.26 days.<sup>7</sup> Low risk patient's vaginal deliveries and LSCS can be done at the referring centre, their unnecessary referral overburdens the higher-level facility. Perinatal outcome is better in

patients with vaginal deliveries than those undergoing LSCS. This is because most of the caesarean sections were done for fetal distress, malpresentation especially transverse lie with hand prolapse and obstructed labour. If their caesarean section were done at referring centres unnecessary delay in operative intervention can be avoided and perinatal morbidity and mortality can be improved.

In our study 62% patients used hospital vehicle/108 and 38% patients could manage private vehicle to reach hospital. Referral arrival time is also comparable which is 1 hours in 54% patients. Maximum patients referred are with no high-risk factors, hypertensive disorder, anaemia which can be managed at the referring site.<sup>8</sup>

### Limitations

In our study, majority of referral were from rural areas and illiterate or poorly literate and most of them have a poor knowledge of existing antenatal services in the rural areas. Illiteracy and ignorance of female regarding healthcare requirements and unavailability of proper healthcare facilities in the region came out to be a major contributor of poor pregnancy outcome.

### CONCLUSION

Hence it can be concluded that a lot of low-risk patients are being referred to C. U. Shah Medical College and Hospital from inside Surendranagar, most of whom delivers vaginally. Maximum patients were referred during emergency hours (2pm to 8am) which reflects negligence and irresponsibility at part of health personnel. Most common cause of referral as well as maternal morbidity is hypertensive disorders and anaemia which can be prevented and diagnosed early by proper antenatal care. Also, administration of 1st dose of magnesium sulfate therapy must be done in all cases of eclampsia and severe preeclampsia prior to referral.

Hypertensive disorder of pregnancy has been the common causes of maternal mortality, followed by haemorrhage and anaemia all of which are preventable by proper antenatal care and early diagnosis of risk factors.

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