



Original Research Article

## Epidemiological Determinants of Delivery Outcomes in Rural Area of Gujarat

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### ABSTRACT

**Objective:** This study was carried out to determine epidemiological determinants of delivery outcomes in rural area.

**Materials and Methods:** Total 370 deliveries occurred in last 3 years were included in study and various epidemiological factors related to outcome of delivery were identified.

**Results:** Total 370 deliveries were included in study, out of which 24 were Caesarean section. Majority of deliveries were conducted at home (62.7%). Among institutional delivery also majority was done in private sector only (79 out of 138). All Caesarean section occurred in private hospitals only. Caesarean section is more common in higher socio economic class as compared to normal delivery, which is more common on lower class.

**Conclusions:** Majority of Caesarean section in present study were conducted in private sector, which suggests some commercial interest may be at work. Caesarean section is more common in higher socioeconomic class due to their affordability. Good job status and higher education also associated factors for occurrence of Caesarean section.

**Key words:** Deliveries, Caesarean section

### INTRODUCTION

Child birth through normal vaginal delivery is a natural process. During delivery ideally there should be no morbidity and mortality to either mother or child but because of various factors involved such as biological, social, environmental etc. the process becomes complicated and need medical assistance in order to ensure a healthy outcome that is delivery of a healthy child and quick recovery of mother with nil to minimum morbidity.<sup>[1]</sup> To achieve this, a medical procedure known as Caesarean

section is available. It's a surgical procedure which is always helpful to both mother as well as child. It helps in dealing with complicated delivery thus reducing the maternal mortality as well as neonatal mortality and can significantly decrease the maternal as well as infant (mainly neonatal) mortality rates.<sup>[2]</sup> However, like any major surgeries it has its own side effects and complications.<sup>[1]</sup> Further when if performed in private sector (even in government sector), we cannot ignore its economic implications in terms of operative charges,

cost of drugs, prolonged hospital stay and loss of wages of the patient as well as the attending family members. In ancient obstetrics practice caesarean section had limited role due to inadequate facilities and it was done only during emergencies like cases of badly obstructed labour. At that time skillful obstetricians tried various methods to deliver the baby through vaginal passage, even at the cost of fetal well being and complicated vaginal deliveries were allowed. Obviously the rise in incidence of caesarean section is more directed to the welfare of baby besides saving the mother from risk of complicated vaginal delivery. [3]

**Objectives:**

1. To obtain an estimate of delivery rates in rural community of Surat district.
2. To know various factors like (Medical, Socio – Economical) responsible for delivery outcomes in rural settings.

**MATERIALS AND METHODS**

This study had been done in rural area of Surat district. As our primary object was to find out trends of delivery in rural area, so among all rural area of Surat district one area Mangrol had been selected by simple random sampling technique applying chit method. The present study was a cross-sectional population based enquiry and lasted from November 2010 to January 2011. The study was conducted in rural community of Mangrol. Data collection was done by house to house survey with semi structured and semi open ended questionnaire. Mangrol taluka was situated 70 kms away from Surat. Nearest big railway station was Kosamba, situated at a distance of 25 kms from Mangrol. Nearest general hospital was 2 kms away, but private nursing home with well equipped delivery facility was situated at a distance of 8 kms. Government setup with well equipped

delivery facility was available at Kosamba which is 25 Kms ahead. Mangrol rural population comprises of two portions, one was Mangrol proper village population and other was tribal population. Majority population were tribal population mainly belongs to lower social economical class. Total households were 1576. Total population was 6489. Total area in square kms was 15. Only those houses could not be covered which were found locked. Data was collected from mothers and family members for deliveries in family during last 3 years. Data was collected on a semi-structured, semi open-ended proforma. Subsequently, all the data was entered into a master chart and then entered in MS-Excel, from where it was transferred to SPSS software (version 17). Subsequently appropriate test of significance (Chi square test) were applied to delineate the predictors for deliveries.

**RESULTS**

Total household surveyed were 1576. Total population covered was 6489. Total eligible couples found in rural area were 853. Total 370 deliveries were found in last 3 years in surveyed area. Out of them 24 (6.5%) were Caesarean section and remaining 346 (93.5%) were normal.

**Table 1: Distribution of study population according to the place of deliveries in study area.**

Place of delivery	No. (%)	No. (%)
1. Institutional		138 (37.3)
GOVT.HOSPITAL	2 (0.5)	
PHC	48 (13)	
CHC	9 (2.4)	
Private hospital	79 (21.4)	
2.Home	231 (62.4)	232 (62.7)
Others <sup>©</sup>	1 (0.3)	
Total	370 (100)	370 (100)

© includes delivery on the road in rickshaw.

**Table 2: Distribution of deliveries according to type of institution.**

Institutional facility		
	Total No.	Caesarean section No. (%)
Govt. facilities	59	0
Private facilities	79	24 (30.3)
Total	138	24 (17.4)

**Table 3: Distribution of job status and education and outcome of delivery**

Job status	Caesarean No.	Vaginal No.	X <sup>2</sup>	df
Working women	1	142	11.36	1
House wife	23	204		
Total	24	346		

  

Education	Caesarean No.	Vaginal No.	X <sup>2</sup>	df
Illiterate	1	143	11.52	1
literate	23	203		
Total	24	346		

X<sup>2</sup> = Chi square, df = Degree of freedom.

**Table 4: Relation of Socio economic class and outcome of pregnancy**

Socio economic class*	Total No. / Caesarean section No. (%)	
	Total No.	Caesarean section No. (%)
1	12	3 (25)
2	51	9 (17.6)
3	33	2 (6.1)
4	142	7 (4.9)
5	132	3 (2.3)
Total	370	24

\*as per Modified Prasad's Classification<sup>4</sup>

**Table 5: Distribution of indication of CS narrated by doctors**

Indication of caesarean by doctors	No. (%)
CPD (Cephalo pelvic disproportion)	8 (33.3)
Hypertension during pregnancy	1 (4.2)
IUGR (intrauterine growth retardation)	1 (4.2)
PROM (premature rupture of membrane)	1 (4.2)
Malpresentation	5 (20.8)
Oligohydramnios	1 (4.2)
Post maturity	2 (8.3)
Previous caesarean section	4 (16.6)
Without reason	1 (4.2)
Total	24 (100)

Table 1 results: On comparing delivery pattern of that area majority of deliveries were conducted at home (62.7%), only 138 (37.3%) delivery occurred in institutions. Among institutional delivery also majority was done in private sector only. (79 out of 138)

Table 2 results: On comparing deliveries distribution in institutions, it was found that in study community all Caesarean section done in private institutions showing overall percentage of Caesarean section of 30.3 in private sector and 17.4 in institutional deliveries in that area. This result indirectly indicates private practitioners are more involved in doing Caesarean section as compared to doing normal delivery.

Table 3 results: On comparing relation between working status of women and mode of delivery, it was found that in study area only 1 out of 142 working women has done Caesarean section, On applying chi – square test (with Yates correction) for study area a p value of less than 0.0001 was obtained, indicative of highly significant difference for job status and mode of deliveries in study area.

On comparing educational status of women, majority of Caesarean section occurred in literate women only, On applying chi – square test (with Yates correction) a p value of less than 0.001 was obtained, indicative of highly significant difference for education and type of deliveries in study area.

Table 4 results: On comparing socio economic status of family, majority of Caesarean section occurred in higher socioeconomic class ( 1& 2) and less in lower grade of class, in contrast to that if we see normal delivery ratio then it is more in number in lower socioeconomic class (3,4 & 5) as compared to higher one.

Table 5 results: On comparing various indications for Caesarean section as narrated by doctors it was found that in study area most common indication was CPD (33.3%) followed by malpresentation (20.8%) and previous Caesarean section (16.6%). Other reasons given by doctors included post maturity (8.3%), IUGR (4.2%), Hypertension during pregnancy (4.2%) and PROM (4.2%). In 4.2 percent of deliveries caesarean section was done without any reason.

## DISCUSSION

In NFHS (National Family Health Survey) 3, percentage distribution of deliveries by Caesarean section in rural area was 5.6. [5]

In present study it was found to be normal (6.5%), much similar to NFHS 3

data. The hazards (cost, morbidity etc.) outweigh the benefits of Caesarean section once its rates increase beyond 15 percent. [1]

In present study in rural area 37.3 percent deliveries were institutional based, which was much lower than that found in study by Kannan, [6] where it was 87.8 percent in rural area, as well as percentage of Caesarean section was also 24.7 percent, which was much higher than present study (6.5%). In this study done by Kannan [6] 60 percent deliveries were in private sector whereas in present study private sector deliveries were only 21.4 percent.

On comparing Caesarean section distribution in institutions, it was found that in rural community all Caesarean section were done in private institutions showing overall percentage of Caesarean section of 30.3 in private sector and 17.4 in institutional deliveries.

In study area majority of deliveries occurred at home (62.4%) and among them majority were done by dai.

On comparing relation between working status of women and Caesarean section it was found that in study area only 1 out of 142 working women has undergone Caesarean section. On comparing relationship between job status and mode of deliveries, the difference was found to be statistically significant.

On comparing women's education and type of delivery it was observed that with an increase in the level of education, deliveries by Caesarean section increased and the relation was found to be statistically significant ( $p < 0.001$ ).

In present study unit of the study was maternity exposure and not a particular women. It happened in many cases where 1 woman had more than 1 maternity experience in the identified period, accordingly the experiences were considered.

On comparing socio economic status in women who underwent Caesarean section in study areas, it was found that 50 percent CS occurred in class I and II, which accounted for only 27 percent of total families. On comparing mode of delivery to socio economic classification [4] it was found that in study area more Caesarean section occurred as compared to normal deliveries in upper class, as level of socioeconomic class decreases Caesarean section proportion also decreases. It indicates that purchasing power has much role in decision to delivery by Caesarean section.

As caesarean section rates rise, the assumption that the majority are done for maternal reasons is no longer valid. As coverage of services increases there is a broadening of the indications to include fetal problems and possibly unnecessary caesarean sections. Even where caesarean rates are extremely low, a substantial proportion may not have clear cut maternal indications. An assessment of the patterns and trends over time in caesarean section rates and maternal-perinatal mortality rates might be useful to analyze the past, current and future caesarean section scenario, which may help in advising healthcare providers about optimal caesarean section rates.

Kambo I at el from ICMR done a study in various hospital of New Delhi to know various indications of caesarean, Major indications for cesarean section included dystocia (37.5%), fetal distress with or without Meconium aspiration (33.4%), repeat section (29.0%), malpresentation (14.5%) and PIH (12.5%). [7]

But in our study most common indication was CPD (33.3%) followed by malpresentation (20.8%) and previous Caesarean section (16.6%). Other reasons given by doctors included post maturity (8.3%), IUGR (4.2%), Hypertension during pregnancy (4.2%) and PROM (4.2%). In 4.2

percent of deliveries, caesarean section was done without any reason.

A previous Caesarean section has now emerged as the most frequent indication for undergoing Caesarean section again in developed and developing countries. The other indications included foetal distress, breech presentation, multiple pregnancy, and pregnancy resulting from assisted reproductive techniques. The number of Caesarean section has also increased tremendously with the use electronic foetal monitoring. Women today embark on a pregnancy at a late age and their chances of undergoing Caesarean section are high. <sup>[8]</sup>

## CONCLUSIONS

Majority of Caesarean section in present study were conducted in private sector, which suggest some commercial interest may be at work as there is a large difference of expenditure involved in a Caesarean section and vaginal deliveries.

Job status, social class (based on per capita monthly income) and education of respondents all show increase in Caesarean section rates in accordance to the improvement in any one/two/all characteristics. All three characteristics are confounders and so much interdependent on each other that it is practically difficult to identify role of any one of the three characteristics.

### **Recommendations:**

Maternal antenatal high risk factors contribute to Caesarean section should be identified earlier by adequate antenatal care so that timely medical intervention can be done to minimize its occurrence as any surgical procedure has its own disadvantages.

Training of medical and other health personnel at PHC level in identifying high risk mothers for Caesarean section and their timely referral to institutions is required to increase institutional deliveries.

Rejuvenation of the public health system in India to make essential care affordable to the poor is essential, as a large proportion of the population cannot afford medical care. A medical and financial system, which favours midwife and general practitioner involvement in the care of low risk women, could be beneficial.

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