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Original Research Article

Prevalence and determinants of caesarean section in a rural community of Nalgonda District, Telangana

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ABSTRACT

Background: The rapid increase of caesarean section rates globally is a public health concern because rates higher than those recommended by WHO do not contribute to improved maternal health and pregnancy outcome. This study aims to estimate the prevalence of caesarean section, establish relationship of relevant variables with caesarean section, and identify temporal trends of c-sec rates in rural populace of Nalgonda.
Methods: A community-based cross-sectional analytic study was undertaken in rural field practice area of Kamineni Institute of Medical Sciences. Data were collected on structured questionnaire from selected and consenting women in reproductive age group who had delivered since 01 January 2000.
Results: Our study included 224 study subjects who have undergone 389 deliveries. Of these 54% were by caesarean section and 46% were normal deliveries. Age of mother, type of family, educational status of mother, height of mother and place of delivery were identified as relevant variables. Their association with C-sec rates and time trend of c-sec rates are presented.
Conclusions: Multi centre, large-sampled and 'in depth' studies are needed to analyze the problem of very high caesarean section rates. These would provide qualitative and quantitative data to plan strategies to reduce the prevalence of a surgical procedure that if carried out on 'non-medical grounds' has the potential to cause obstetrical and neonatal complications, and significant economical and health-planning implications.

Keywords: Caesarean section rates, Nalgonda, Rural, Time-trend

INTRODUCTION

Caesarean section (CS or C-section) is a surgical procedure in which fetus is delivered through an incision in the mother's abdomen and uterus.[1] The intervention is undertaken to ensure safety of baby or mother or both. When medically justified, CS can effectively prevent maternal and perinatal mortality and morbidity.[2] As with any surgery, caesarean sections are associated with short and long term risk which can extend many years beyond the current delivery and affect the health of the woman, her child, and future pregnancies. These risks are higher in women with limited access to comprehensive obstetric care. [3-5] The proportion of CS at the population level is a measure of the level of access to and use of this intervention. It can serve as a guideline for policy-makers and health planners in assessing progress in maternal and infant health and in monitoring emergency obstetric care and resource use.[6] Based on the WHO systematic review, increases in CS rates up to 10-15% at the population level are associated with decreases in maternal, neonatal and infant mortality.[7] Above this level, increasing the rate of caesarean section is no longer associated with favorable maternal and pregnancy outcomes.[8]

The rates of CS deliveries are increasing, both in developed and developing countries.[9-18] District Level Household and Facility Survey-4 (2012-13) data for the state of Telangana published by Ministry of Health and Family Welfare reveals that the CS rates are more than 4-times in private health institutions (42.3%) as compared to 10% in government health institutions.[19] The present study is an attempt to study the CS rates among rural populace in Nalgonda district of Telangana state.

Objectives

1. To estimate the prevalence of caesarean section in a rural community of Nalgonda district.
2. To study various social demographic, anthropometric and health-care utilization factors associated with caesarean section.
3. To study temporal trends of CS in the study population.

METHODS

Study setting

The study was conducted in 11 villages in the jurisdiction of Rural Health Training Centre (RHTC) of Kamineni Institute of Medical Sciences (KIMS), Narketpally, district Nalgonda. The RHTC serves a population of 33,769 (15,228 males and 18,541 females) residing in 10,280 households. The centre maintains a well-established medical record system, having updated socio-demographic and health profile of all families.

Study design

Cross sectional analytical study

Study duration

01 July to 31 August 2014.

Inclusion criteria

All women, aged 15-44 years and permanent residents of the villages who had delivered on or after 01 January 2000, and consented to join the study were eligible for inclusion in the study.

Exclusion criteria

Women who were not available for face to face interview during home visits on three different days including at least one visit on a Sunday/holiday.

Pilot study

Pilot study was conducted on 30 women, primarily to calculate the sample size, and to refine study instrument.

Sample size

Based on estimated prevalence of 30% (pilot study), level of significance of 95%, and relative allowable error of 20% of estimated prevalence a minimum sample of 224 was calculated.

Sampling technique

Multi stage sampling technique as described below was utilized to identify the study participants:-

Stage I: Enlisting all villages under rural field practice area with their population. All the 11 villages are selected.

Stage II: Enlisting of households with eligible mothers i.e. those having delivered on or after 01 January 2000.

Stage III: Number of subjects to be drawn from the villages was calculated by probability proportionate to population size (PPPs) method.

Stage IV: Selection of required number of subjects by simple random method

Data collection and analysis

A pre-tested structured questionnaire was used to collect data. Data was collected by interviewing the sampled women by door to door survey. Medical records (discharge summaries) were perused to triangulate the responses from the mothers. The data was compiled and analyzed using SPSS statistical package version 19. Chi-square test was used to establish associations of study with CS. Data are presented numerically in tables, and diagrammatically as pie- and line-diagram.

Ethical considerations

Approval from Institutional Ethical Committee was obtained. Informed written consent was obtained from the study subjects after explaining the purpose, nature and objectives of the study in their own language. Confidentiality of data has been ensured.

RESULTS

The present study included 224 eligible women who had 389 deliveries, out of which 178 (45.75%) were vaginal deliveries and 211 (54.24%) were CS. The proportion of CS and vaginal deliveries is shown in Figure 1.

In the present study, women of age group ≥25 years had significantly higher CS rates as compared to women delivering at younger ages ($p<0.05$). However, type of family and educational status of the women were not associated with type of delivery (Table 1).

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Table 1: Association of socio demographic variables with mode of delivery.

Characteristics	Grouping	Vaginal n=178 (%)	Caesarean section n=211 (%)	P value (Chi-square test)
Age (in years)	16-20	61 (44.2)	77 (55.8)	<0.05*
	21-25	105 (53.3)	92 (46.70)	
	Above 25	12 (22.3)	42 (77.7)	
Type of family	Nuclear	95 (42.3)	130 (57.7)	>0.05
	Joint family	83 (50.7)	81 (49.3)	
Educational status of the mother	Illiterate	27 (42.9)	36 (57.1)	>0.05
	Primary	47 (46.1)	55 (53.9)	
	Secondary	88 (47.6)	97 (52.4)	
	Graduate and above	16 (41.1)	23 (58.9)	

*Statistically significant.

Table 2: Association of place of delivery and mothers' height with mode of delivery.

Characteristics	Grouping	Vaginal (n=178)	Caesarean section (n=211)	P value (Chi-square test)
Place of delivery	Home$	20 (100)	0 (0)	<0.001*
	Government	105 (54.2%)	89 (45.8%)	
	Private	53 (30.3%)	122 (69.7%)	
Height of women (cms)	≤ 150	105 (40%)	152 (60%)	<0.05*
	>150	73 (55.3%)	59 (44.7%)	

Statistically significant; $ Row 1 has been excluded from the analysis as CS are not feasible at homes.

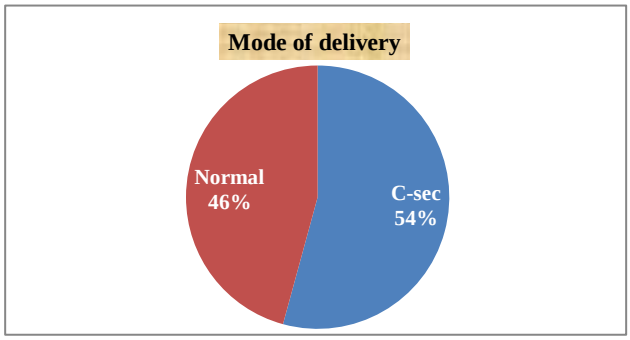

Figure 1: Proportion of CS among study subjects.

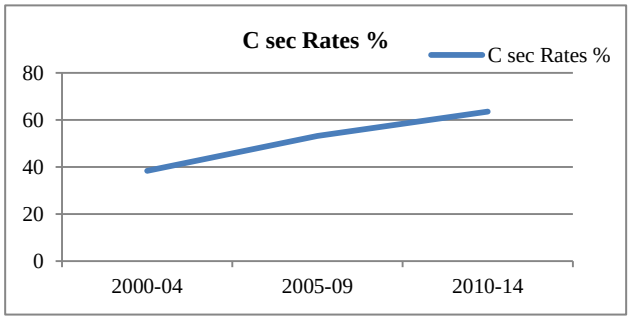

Figure 2: Time trend of CS rates (p<0.001).

Table 2 shows that CS rates in private nursing homes (69.7%) were significantly higher as compared to rates in public health care facilities (45.8%). Similarly being of short stature (height less than equal to 150 cms) was an independent risk-factor for delivery by CS.

One of the objectives of the study was to study the time-trend of CS since 2000. The results are mentioned in Figure 2. Study of time trends of caesarean section delivery rates revealed a northward trend since 2000. While 38.72 of all deliveries were C-section during 2000-04, the rates increased to 53.19% during 2005-09, and further to 63.58% during 2010-14. Analysis revealed that the rising time-trend is statistically significant (p<0.001).

DISCUSSION

Our study demonstrates that 54% of women residing in rural areas of Nalgonda district and in reproductive age group (15-44 years) had delivered through CS. The rates are unbelievably high, more so if more recent rates (2010-14) of 63.6% are contemplated. National Family Health Survey-4 (2015-16) reported that the CS rates in public and private health facilities as 42.2% and 74.8% in the state of Telangana.[20] As mentioned above DLHS-4 for the state of Telangana reported that CS rates as 10% and 42.3% in public and private health facilities, respectively.[19] It is difficult to explain such high rates on the basis of obstetric/ fetal factors alone. Some increase in the caesarean section rates over the recent years can be explained by rising demand (too posh to push, delivery at auspicious time-date). However, biological, environmental, nutritional factors, and role of obstetricians "playing safe" (i.e., conducting caesarean for even minor complications to avoid litigations) or even for economical gains deserve 'in-depth' analysis through multicentre qualitative and qualitative studies. This recommendation is also justified not only because of temporal trends, but

also that CS rates are significantly higher in private (for profit sector) than in public sector.

Limitations of the study

The study has been carried out in 11 villages of the district and generalization of study findings to whole district is premature. In addition, because of non-availability of discharge summaries with women, indication(s) for CS could not be elicited. The authors recommend that both public and private health institutions should provide discharge summary to the women depicting indications for CS for future references.

CONCLUSION

The study places on record a very high prevalence of CS deliveries among rural population in Nalgonda district of Telangana state. It also shows that the CS rate is showing a northward trend. Statistically significant difference of CS rates between public and private health facilities is an important finding of the study.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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