

## Original Research Article

# Prevalence of caesarean section and womens' attitude towards caesarean section in Manipur, North-Eastern India

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**Received:** 05 December 2019

**Revised:** 10 January 2020

**Accepted:** 13 January 2020

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## ABSTRACT

**Background:** The rapid increase of caesarean section (CS) rate throughout the world has become a serious public health issue since the level of CS is well above the WHO (1985) recommended 15% and it is increasing over time. Objectives of the study was to determine the prevalence of caesarean section and women's attitudes towards CS, to investigate rural-urban differences and any associated factors between attitude with socio-demographic factors.

**Methods:** A cross-sectional study was conducted in urban and rural areas of three districts of Manipur from 2015 to 2017 among 600 eligible married women aged 18-35 years selected by simple random sampling. Household was taken as sampling unit and electoral roll (2013) as sampling frame. An interview schedule was used for data collection. Descriptive statistics like mean, SD, proportion and inferential statistics like  $\chi^2$  test was used. p-value 0.05 was considered as statistically significant.

**Results:** Mean age of the participants was 29.7±4.6 years. The overall prevalence of CS rate was 18.5% and the first child CS rate was 19.9% and majority of them belongs to 30-35 age groups. Majority of the women (84.2%) have neutral attitude and only 7.6% have favorable attitude towards CS. Favorable attitude towards CS was more among women who married at ≥30 years, whose husband was >30 years and was a government employee and who ever had CS.

**Conclusions:** Although the prevalence of CS is well above the WHO (1985) recommendation. Majority still preferred vaginal delivery and the demand for CS is low in the present setting.

**Keywords:** Attitude, Caesarean section, Manipur, Prevalence

## INTRODUCTION

The WHO guidelines regarding caesarean rates in 1985, which was revised in 1994, states that the proportion of caesarean births should range between 5-15%. It is mentioned in the guideline that no additional benefit accrues to the mothers or the perinates when the rates exceeds the level.<sup>1</sup> At the all-India level, the Caesarean Section (CS) rate has increased from 2.9% of all childbirth in NFHS - I to 7.1% in NFHS - II and further to

10.2% in NFHS - III. But there is vast variation across states and even in rural and urban areas it ranges from 2-30%. Again there is large difference between births in public and private health facilities averaging almost 30%.<sup>2</sup> A study by Kambo I et al to examine the escalating rates of caesarean sections in teaching hospitals in India compared the rates between 1993-94 and 1998-99, with data from 30 medical colleges/teaching hospitals. The overall rate showed an increase from 21.8% in 1993-94 to 25.4% in 1998-99. What was alarming was that 42.4% were primigravidas and 31% had come from rural areas.

Because of the rise in primary CS, there is a proportionate rise in repeat CS as well.<sup>3</sup>

Among the northeastern states of India CS rate ranges from 3% to 14.5%. Manipur showed an overall CS rate of 10.1% according to NFHS - III with rural areas accounting for only 6.2% against the urban rate of 16.3%.<sup>2</sup> At Regional Institute of Medical Sciences, a teaching hospital in Imphal west, Manipur, which is conducting around 11,000-13,000 deliveries annually (MRD, RIMS), the CS rate ranges from 27% to 30% in 2011-2013. Although increasing trends in CS rate is there in Manipur, there has, not been any data published to highlight the knowledge and attitudes of women of childbearing age towards CS. The objective of this study is 1) to determine the prevalence of caesarean section 2) To assess women's attitude towards caesarean section, 3) to investigate rural - urban differences and 4) to determine any associated factors between attitudes with selected socio-demographic characteristics.

## METHODS

### *Design and setting*

A community-based cross-sectional study was conducted from Sept 2015 to Aug 2017 in urban and rural area of Manipur, a state in Northeastern India. Using simple random sampling three districts among the nine districts of Manipur namely, Imphal East, Imphal West and Bishnupur districts were selected. For urban, Imphal East and Imphal West districts were selected and for rural, Bishnupur district was selected.

### *Study participants*

The study was conducted among married women belonging to the age group of 18 to 35 years and those who were critically ill, undergoing infertility treatment, undergone permanent sterilization for family planning, cannot be met at home even after two successive visits and those that did not consent were excluded.

### *Sample size and sampling*

Sample size was calculated using the formula for single proportion method (objective 1) and two proportion method (objective 3), the calculated sample sizes comes to 295 in urban, 162 in rural for objective 1 and 160 for objective 3, using a prevalence of 26% at urban area from a previous study and an estimated prevalence of 12% in rural with an absolute precision of 5% and level of significance 0.05.<sup>4</sup> Out of the three calculated sample sizes, the biggest sample size 295 was considered. Therefore 300 women were studied per group giving a total sample size of 600. In order to have equal representation from all the localities, sample size was divided equally among the localities in each of rural and urban area. Household was taken as the sampling unit and electoral roll (2013) for each locality as the sampling

frame. For rural, the study area comprised of four localities and 100 households were surveyed from each locality and for urban, six localities were selected, and 67 households was surveyed from each locality by simple random sampling by using Random Number Table. If any household identified was found to be not eligible for the study, another random number was drawn till the required sample size was met.

### *Study tool and data collection*

A pre-tested structured interview schedule was used for data collection. The questionnaire consists of background characteristics, regarding previous pregnancy, delivery history and questions on attitude towards CS. The validity of the questionnaire was established through face and content validity criteria in consultation with the faculty members of the Obstetrics and Gynecology and Community Medicine Department and their inputs was further used to improve the questionnaire. A pilot survey was further conducted among an eligible sample of 30 women who were not part of the study for pretesting the questionnaire for sensitivity of questions, comprehensibility, and appropriateness of language and necessary modifications were made.

### *Operational definition*

Per capita income of the respondent was based on revised Prasad's Socio-economic classification (2014). There are 21 statements related to attitude towards CS and the responses were scored on a 5-point Likert- scale. Total attitude score ranges from 21- 105. Taking 40-60% of the total score as having neutral attitude and <40% as having unfavorable and >60% as having favorable attitude towards CS.

### *Statistical analysis*

Data were analyzed using SPSS (IBM) version 21. Descriptive statistics such as Mean, SD, proportions and percentages were used and inferential statistics such as Chi square test was used to test the level of significance. Statistical significance was said to be achieved when p value was <0.05.

### *Ethical consideration*

The study proposal was approved by the Institutional Ethics Committee, RIMS, Imphal and written informed consent was obtained from the participant and confidentiality was maintained.

## RESULTS

Mean age of the participants was 29.7±4.6 years. Almost half of the women married at the age of 18-23 years and majority of them (76%) were homemaker. Around one-fifth respondents (18.5%) had CS.

**Table 1: Socio-demographic characteristics of the study participants.**

Socio-demographic characteristics		Urban	Rural	Total
		N (%)	N (%)	N (%)
Age (in years)	Mean±SD	29.40±4.9	30.03±4.2	29.71±4.6
	18-23	43 (14.3)	26 (8.7)	69 (11.5)
	24-29	90 (30.0)	94 (31.3)	184 (30.7)
	30-35	167 (55.7)	180 (60.0)	347 (57.8)
Age in years at marriage	<18	68 (22.7)	48 (16.0)	33 (5.5)
	18-23	116 (38.7)	136 (45.3)	298 (49.6)
	24-29	85 (28.3)	95 (31.7)	217 (36.2)
	30-35	31 (10.3)	19 (6.3)	52 (8.7)
	<18	68 (22.7)	48 (16.0)	33 (5.5)
Age of husband (in years)	<20	3 (1.0)	1 (0.3)	4 (0.7)
	21-25	18 (6.0)	10 (3.3)	53 (8.8)
	26-31	52 (17.3)	46 (15.3)	152 (25.3)
	32-37	85 (28.3)	103 (34.3)	217 (36.2)
	>37	74 (24.7)	82 (27.3)	174 (29.0)
Pregnancy status at time of interview	Yes	35 (11.7)	50 (16.7)	85 (14.2)
	No	265 (88.3)	250 (83.3)	515 (85.8)
Educational status of participants	Illiterate	0	16 (5.3)	16 (2.7)
	Primary	12 (4.0)	45 (15.0)	57 (9.5)
	Middle	63 (21.0)	85 (28.3)	148 (24.5)
	Secondary	130 (43.3)	104 (34.7)	234 (39.0)
	Graduate and above	95 (31.7)	50 (16.7)	145 (24.2)
Educational status of husband	Illiterate	0	1 (0.3)	1 (0.2)
	Primary	6 (2.0)	22 (7.3)	28 (4.7)
	Middle	38 (12.7)	60 (20.0)	98 (16.3)
	Secondary	130 (43.3)	121 (40.3)	251 (41.8)
	Graduate and above	126 (42.0)	96 (32.0)	222 (37.0)
Occupation of the participants	Homemaker	222 (74.0)	234 (78.0)	456 (76.0)
	Self employed	15 (5.0)	13 (4.3)	83 (13.8)
	Private employed	32 (10.7)	51 (17.0)	28 (4.7)
	Govt employed	31 (10.3)	2 (0.7)	33 (5.5)
Occupation of the husband	Unemployed	53 (17.7)	37 (12.3)	46 (7.7)
	Self employed	28 (9.3)	52 (17.3)	384 (64.0)
	Private employed	178 (59.3)	206 (68.7)	80 (13.3)
	Govt employed	41 (13.7)	5 (1.7)	90 (15.0)
Socio-economic status	Class I	57 (19.0)	22 (7.3)	79 (13.2)
	Class II	123 (41.0)	40 (13.3)	163 (27.2)
	Class III	64 (21.3)	61 (20.3)	125 (20.8)
	Class IV	52 (17.3)	125 (41.7)	177 (29.5)
	Class V	4 (1.3)	52 (17.3)	56 (9.3)
Had at least one child	Yes	277 (92.3)	292 (97.3)	569 (94.8)
	No	23 (7.7)	8 (2.7)	31 (5.2)
Mode of delivery	Ever had CS	62 (59.0)	43 (41.0)	105 (18.5)
	Vaginal delivery	215 (46.3)	249 (53.7)	464 (81.5)
Place of delivery	Government Hospital	53 (42.4)	21 (16.8)	74 (59.2)
	Private Hospital	23 (18.4)	28 (22.4)	51 (40.8)
Indications	CPD	28 (22.4)	7 (5.6)	35 (28.0)
	Previous CS	10 (8.0)	5 (4.0)	15 (12.0)
	Breech	8 (6.4)	5 (4.0)	13 (10.4)
	CDMR	7 (5.6)	2 (1.6)	9 (7.2)
	Fetal distress	11 (8.8)	11 (8.8)	22 (17.6)
	Maternal weakness	-	16 (12.8)	16 (12.8)
	PROM	5 (4.0)	-	5 (4.0)
	Others*	7 (9.2)	3 (2.4)	10 (11.6)

\*Others- big baby, low lying placenta, done along with cholecystectomy, pile case, not engaged, doctor's advice

**Table 2: Distribution of responses to the individual attitude statements.**

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
<b>VD is a natural and acceptable mode of delivery than CS*</b>	1 (0.2)	68 (11.3)	38 (6.3)	170 (28.3)	323 (53.8)
<b>VD creates a more affectionate mother-baby relationship than CS*</b>	44 (7.3)	67 (11.2)	119 (19.8)	115 (19.2)	255 (42.5)
<b>Following a CS, trial of VD should be considered unless there is contraindication*</b>	2 (0.3)	10 (1.7)	41 (6.8)	273 (45.5)	274 (45.7)
<b>Doctors were deliberately opting for CS instead of VD*</b>	11 (1.8)	64 (10.7)	145 (24.5)	219 (36.5)	161 (26.8)
<b>CS leads to more blood loss than VD*</b>	10 (1.7)	103 (17.2)	129 (21.5)	218 (36.3)	140 (23.3)
<b>Women who deliver by CS are missing an important life experience*</b>	1 (0.2)	55 (9.2)	192 (32.0)	240 (40.0)	112 (18.7)
<b>CS should not be performed unless indicated*</b>	1 (0.2)	14 (2.3)	6 (1.0)	263 (43.8)	316 (52.7)
<b>Expenditure for CS is NOT reasonable in private hospital/clinic*</b>	15 (2.5)	52 (8.7)	127 (21.2)	304 (50.7)	102 (17.0)
<b>Mother regains her health status sooner in VD than CS*</b>	2 (0.3)	92 (15.3)	156 (26.0)	230 (38.3)	119 (19.8)
<b>Women at ANC visits should be educated about CS*</b>	2 (0.3)	29 (4.8)	34 (5.7)	297 (49.5)	238 (39.7)
<b>Pre-operative information on indication for CS should be provided to the woman*</b>	1 (0.2)	4 (0.7)	25 (4.2)	341 (56.8)	229 (38.2)
<b>Elective CS is the best choice for a woman with fear of VD as pain is unpleasant</b>	27 (4.5)	59 (9.8)	83 (13.8)	251 (41.8)	180 (30.0)
<b>Babies born by CS are healthier than those delivered by VD</b>	15 (2.5)	159 (26.5)	256 (42.7)	132 (22.0)	38 (6.3)
<b>CS is preferable in absence of economic problem.</b>	46 (7.7)	267 (44.5)	98 (16.3)	155 (25.8)	34 (5.7)
<b>CS is safer for the mother than VD</b>	16 (2.7)	245 (40.8)	169 (28.2)	139 (23.2)	31 (5.2)
<b>CS is safer for the baby than VD</b>	15 (2.5)	124 (20.7)	167 (27.8)	261 (43.5)	33 (5.5)
<b>CS, by scheduling a particular birth date and time is great for the baby</b>	60 (10.0)	196 (32.7)	88 (14.7)	228 (38.0)	28 (4.7)
<b>Sexual satisfaction is better after CS than after VD</b>	7 (1.2)	46 (7.7)	235 (39.2)	263 (43.8)	49 (8.2)
<b>Compared with vaginal birth, CS prevents bladder problems (urinary frequency, urgency or loss of urine) in the future</b>	5 (0.8)	88 (14.7)	368 (61.3)	125 (20.8)	14 (2.3)
<b>It is a woman's right to choose a CS for herself, even if there are no medical reasons for it (CDMR)</b>	33 (5.5)	201 (33.5)	50 (8.3)	299 (49.8)	17 (2.8)
<b>Women are now opting for CS more often than VD</b>	4 (0.7)	200 (33.3)	82 (13.7)	283 (47.2)	31 (5.2)

\*reverse scored items

Most common indication for CS was CPD (22.4%) and maternal weakness (12.8%) among urban and rural respectively. Six respondents said undergoing CS was not justified and four had rated their CS as a bad experience. The socio-demographic and previous delivery characteristics were summarized in Table 1.

Majority of the women (88.7%) preferred vaginal delivery as their mode of childbirth. Urban women

preferred CS more when compared to rural (10.0% vs 4.07%) (Figure 1).

Only 8.2% and 7.6% of the women have unfavorable and favorable attitude towards CS respectively. However, significantly more women from rural have favorable attitude as compared to urban (8.7% vs 6.3%) (Figure 2 and Table 3).

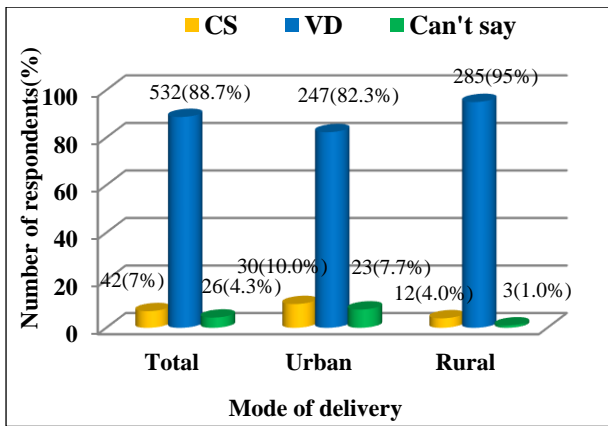


Figure 1: Mode of delivery the samples preferred.

Favorable attitude towards CS was significantly more among women who married at  $\geq 30$  years, whose husband was government employed and who ever had CS.

An increasing trend was noted that with the increase in socio economic status more women are having CS ( $p=0.00$ ) and it was found to be statistically significant (Table 4).

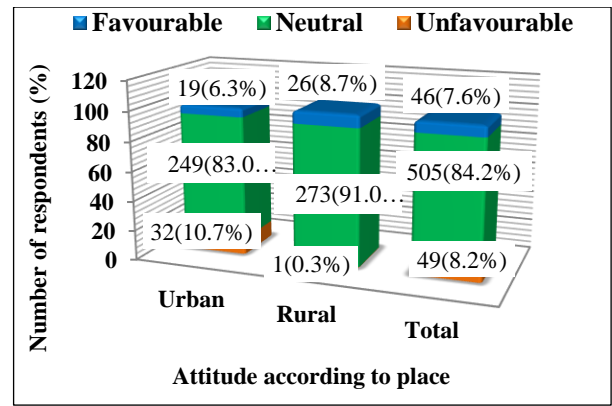


Figure 2: Distribution of participants by attitude towards caesarean section.

Table 3: Urban-rural difference in overall attitude towards CS.

Place of residence	Attitude			P value
	Favourable N (%)	Neutral N (%)	Unfavorable N (%)	
Urban	19 (6.3)	249 (83.0)	32 (10.7)	<0.001
Rural	26 (8.7)	273 (91.0)	1 (0.3)	

Table 4: Relationship between attitude and socio-demographic characteristics.

Socio-demographic characteristics	Attitude N (%)			P value*	
	Favourable	Neutral	Unfavourable		
Age at marriage (years)	<30	35 (6.4)	468 (85.4)	45 (8.2)	0.01
	$\geq 30$	11 (21.2)	37 (71.2)	4 (7.7)	
Occupation of the husband	Government	8 (8.8)	77 (85.6)	5 (5.6)	0.01
	Private or self	37 (8.0)	394 (84.9)	33 (7.1)	
	Unemployed	1 (2.2)	34 (73.9)	11 (23.9)	
Ever CS	Yes	13 (14.4)	70 (77.8)	7 (7.8)	0.03
	No	31 (6.5)	410 (85.6)	38 (7.9)	

\*Chi square test

## DISCUSSION

In the present study, 18.5% of women had previous CS. The finding was higher as compared to the study conducted at Nagpur where only 16.5% had previous CS but lower than study at Madras, where 32.6% of women had CS.<sup>4,5</sup> This difference may be because of the differences in time gap and socio-cultural difference in these settings. However, in all the settings, the proportion of caesarean births is well above the WHO (1985) recommended 15%.

Though majority of women show a preference for a VD and unfavorable attitude towards CS, majority of their attitude changes favoring CS, which indicates that their preferred mode of delivery is flexible, they would agree to CS if it was necessary to protect their baby's health.

None of the women in the present study reported that they had CS because of fear/pain of vaginal delivery as compared to past studies conducted in different settings viz Nagpur (68.5%), Turkey (44.4%) and Ghana (43.6%).<sup>4,6,7</sup> More than three-fifth of the women (69.7%) had undergone caesarean section at government hospitals and remaining at private hospitals/clinics (30.3%). The finding was inconsistent with other studies where more than two thirds of CS was conducted at private hospitals/clinics.<sup>4,5</sup> This difference may be because of majority of women belongs to lower socioeconomic class as compared to those studies. Majority of the participants also show an unfavorable attitude towards the expenditure of CS in private hospitals therefore they might prefer for government hospital for their delivery. Some of the other factors such as less waiting time in case of CS, fear of litigation from complications, lack of experience to do trial of labour in case of post CS etc., apart from those complicated/medical conditions which maybe needing



elective or emergency CS may be the contributing factors of increasing caesarean birth rates in Manipur.

In the present study, the first child CS rate was 19.9% and majority of them belongs to 30-35 age groups. This was found consistent with a study conducted by Dey N and Hatai SK.<sup>8</sup> This shows that age is also a contributing factor in deciding CS. A study done by Roberts et al has concluded that rising first birth caesarean rate had drove the overall increase in CS rate.<sup>9</sup> This was supported by the present study findings where post CS was the second most common indication for subsequent CS.

Around 82% participants preferred vaginal delivery against CS (10%), when asked for their preferred mode of delivery in the present study. Similar findings was noted in other studies conducted at Thailand (87.5%), Nagpur (91.7%) and Nigeria (93.1%).<sup>4,6,10</sup> This study reveals that minority of women has favourable attitude for CS (7.6%) and very few of them said CS as a preferred mode of delivery (10%).

Majority of the women had neutral attitude towards CS (84.2%) and only 8.2% of have unfavorable attitude towards CS. This finding was much lower as compared to a study conducted at Iran where 40.5% of women had negative attitudes towards CS.<sup>11</sup>

Majority of the women strongly agreed to attitude statement that VD is a natural and acceptable mode of delivery while they also agreed to the statement that Elective CS is best choice for women with fear of VD as pain of VD is unpleasant. These findings were similar to other studies.<sup>12,13</sup> Such finding shows that unpleasant VD pain maybe one of the hindrances of accepting VD by the women especially nulliparous. Therefore, adapting policies to make vaginal delivery a less painful experience could also reduce cesarean section rate.

In the present study, none of the women who had CS reported that they had CS to deliver the baby in an auspicious day and time. However, more than two-fifth agreed to the attitude statement that CS, by scheduling a particular birth date and time is great for the baby. Therefore, factors such as socio-cultural beliefs may also be influencing the increase in CS rates in future.

More than half of the women have favorable attitude towards Caesarean Delivery on Maternal Request (CDMR) statement on attitude scale. The finding was similar with a study conducted at Nigeria (64.0%).<sup>10</sup> This may be because they believed CS to be a safer mode of delivery and associated with fewer risks than vaginal delivery. This maybe also one of the contributing factors of increase CS rate, which can be seen in the present setting that around 9.2% of women have actually practiced CDMR.

Many study participants also agreed that women are now opting for CS more than VD. The study finding highlights

the importance of educating women about the risks associated with CS. Women should allow taking their own decision for CDMR only after discussion with the caregivers, at the same time respecting their autonomy. Thus, it may help to reduce the rising rate of primary elective CS in the present setting.

The present study provides some insight into delivery preference in Manipur. It can be concluded that vaginal delivery is the preferred mode of delivery even among women who have delivered by caesarean section.

Therefore, government should adopt guidelines to check into the rising of unwanted CS rate in Manipur. A sound reporting system should be made to report detailed data regarding CS and risk factors in a timely and regular manner from all the government and private hospitals/clinics to know the current trend and predisposing factors. An audit should be held on regular basis and must be perceived as necessary. Another important recommendation is to form a case review committee to review all CS conducted in the state to make sure the reasons for this major operation is well documented and the obstetricians used good clinical judgment. Therefore, young doctors can always consult with these experts in case of second opinion before undergoing CS. Almost all women (89.2%) wanted CS to be a part of antenatal clinic educational topics. This is consistent with other study.<sup>4</sup> Therefore, every government/private hospital should include educational program regarding different modes of delivery with special reference to CS to antenatal mothers as a component of antenatal care package to those attending antenatal clinic.

## CONCLUSION

The study implies that despite increase rate of CS is there in Manipur, majority of them still preferred vaginal delivery and the demand for CS was low. Thus, women's preferences are unlikely to be the most significant factor driving the high CS in Manipur.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee of RIMS, Imphal*

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**Cite this article as:** Oinam J, Konjengbam S, Singh YN. Prevalence of caesarean section and womens' attitude towards caesarean section in Manipur, North-Eastern India. *Int J Community Med Public Health* 2020;7:694-700.