Factors influencing women's choice of mode of delivery in rural Bangalore, India

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Abstract

Introduction: World medical community has raised concerns over the rising caesarian rates.

Materials and Methods: This was a prospective, cross-sectional, hospital-based study to determine factors responsible for a woman's choice of delivery, that is, caesarian delivery (CD) or vaginal delivery (VD). Pregnant women attending antenatal clinics, were interviewed with a structured questionnaire, and data was analyzed.

Results and Discussion: 266 responses were analyzed, wherein, 186 women preferred VD and 80 women preferred CD. The characteristics of women who chose CD as their preferred mode of delivery, were compared with the women who chose VD as their preferred mode of delivery. Age, religion, occupation, and economic status did not influence a women's choice of delivery. Factors strongly related included educational status, wherein, more educated women were likely to prefer CD. Contrary to popular perception gravida, para, number of miscarriages or living children did not influence the choice of delivery. 90% of women who had previous CD, preferred CD for this delivery, they were not aware of the option for trial of labour after caesarian. 49% (n = 45) of the 91 patients delivering in private hospitals underwent CD, as compared to only 13% (n = 11) of the 85 patients delivering in government hospitals. The high caesarian rates in private hospitals is partly driven by caesarian delivery on maternal request.

Conclusion: Counsel the pregnant women regarding the process and benefits of normal VD, as well as the risks of unnecessary CD can influence patient decision-making and decrease CD rates.

Keywords: Caesarian, Vaginal delivery, Preference, Mode of delivery.

Introduction

Caesarian delivery (CD) rates are on the rise world over and are reaching epidemic proportions. Latin America and the Caribbean region have the highest CD rates (40.5%), followed by Northern America (32.3%).[1] India is no exception to the meteoritic increase in caesarian section rates. Analysis from the four consecutive National Family Health Survey (NFHS), highlight the changing trends in CD rates from 1992 to 2015 in India. The NFHS-4 shows that 7 states have CD rates more than 30% (Highest is Telangana at 58% followed closely by Andhra Pradesh at 40%), and only nine states have less than 10 percent CD rates (Nagaland has the least CD rate of 5.8% and Bihar has a CD rate of 6.2%). At all India level, the CD rate has increased from 2.9 percent of the childbirth in 1992-93 to 7.1 percent in 1998-99 and to 8.5 percent in 2005-06. Currently the average rate of CD in India is 17.2 percent.[2]

The medical community worldwide have raised concern about this global epidemic. In 1985, World Health Organization (WHO) stated that CD rates higher than 15 percent could hardly be justified from a medical standpoint, as it is not associated with reductions in maternal and newborn mortality rates.[3]

A substantial proportion of this increase CD rate has been attributed to unnecessary operations attributable to non-evidence-based indications, professional convenience, maternal request and monetary considerations.[4] Over the years there has been a shift in the attitude of women towards childbirth and the mode of delivery. Instead of having a positive attitude towards vaginal delivery (VD), many more women are opting for 'Caesarian Delivery on Maternal Request' (CDMR), for non-medical reasons, and this is an unhealthy trend.

Efforts of the world medical community to bring down the CD rates will be in vain, unless we can influence the decision that women make regarding their mode of delivery. Childbirth is an important life event, and many compounding social and psychological factors play an important role in the decision-making process, for example, influence of family members, her own expectations, her previous birth experience, her knowledge of potential complications, etc.

The aim of this study was to identify the factors that influence the preference of a women for CD or VD. This knowledge will help us to understand the decision-making process and identify variables that can be modified to bring about a paradigm shift in overall CD rates.

Materials and Methods

This was a prospective, descriptive cross-sectional, hospital-based study. A structured self-administered questionnaire was used to collect information from pregnant women attending antenatal care in a tertiary care hospital in rural Bangalore. We adopted a convenient sampling strategy to enroll the participants, based on their willingness to participate in the study. Besides sociodemographic data, the questionnaire contained items regarding the preference for mode of delivery and the factors that influenced this choice.

Previous studies discussing the influencing factors and attitudes toward VD and CD, formed the basis for the questionnaire items.[5-7] The sample size was determined based

on the general rule that 5–10 subjects need to be recruited for each item in a questionnaire.[8] As the questionnaire contains 24 items (excluding demographic questions), a total of 120–240 subjects were needed to be recruited.

Ethical Considerations

Ethical approval was obtained from the Ethics committee for this study.

Statistical Analysis

The data was sub-grouped into two groups. Those women who chose CD as their preferred mode of delivery constituted the 'CD' group. The characteristics of this test group were compared with the 'VD' group of women, who chose VD as their preferred mode of delivery.

Descriptive statistics and Chi square test were used to identify and compare the demographic information and influencing factors between the two preference groups. The significance level (α) was set at 0.05.

Results

A total of 308 women consented to take part in the study. 35 women were undecided and chose both modes of delivery, that is, either CD or VD was 'OK'. This group of women received counselling and positive reinforcement for motivating them for VD. However, this group of women were excluded from the study analysis. 7 returned questionnaires were incomplete and excluded from the study, leaving 266 valid questionnaires for analysis. 186 of these 266 women preferred VD, and 80 women chose CD as their preferred mode of delivery.

The demographic characteristics of the women who participated in this study is shown in Table 1.

This table depicts that the age, religion, address, occupation and monthly income of our study population was not associated with their choice of VD or CD. The educational status of these women was a significant factor in their choice of VD or CD.

Table 2 shows the obstetric scores of our study population and it was not a significant factor.

The experience of previous child birth is a significant contributor to the women's preference for VD or CS, as shown in Table 3. In the group preferring VD, there were 50 primigravidae and 13 nulliparas with previous abortions, hence, data from 123 multigravidae was analyzed from this group. In the group preferring CD there were 15 primigravidae and 5 nulliparas with previous abortions, hence, data from 60 multigravidae was analyzed from this group.

Table 4 depicts some factors associated with the current pregnancy that influence a women's choice of VD or CD. Women opting for CD were more likely to attend regular antenatal care (ANC), compared to women opting for VD.

Table 1. Demographic Data

Characteristics	Grouping	VD (n = 186)	CD (n = 80)	P Value
Age	18 – 25	139 (75%)	57 (71%)	0.554
	25	47 (25%)	23 (29%)	
Religion	Hindu	148 (80%)	69 (86%)	0.224
	Muslim	33 (18%)	11 (14%)	
	Others	5 (2%)	0	
Address	Urban	26 (14%)	9 (11%)	0.54
	Rural	160 (86%)	71(89%)	
Occupation	Homemaker	159 (85%)	67 (83%)	0.401
	Farmer	11 (6%)	4 (5%)	
	Laborer	7 (4%)	3 (3%)	
	Shop / Office	3 (1.6%)	1 (1%)	
	Student	3 (1.6%)	4 (5%)	
	Others	3 (1.6%)	1 (1%)	
Monthly Income (in Rupees per month)	Less Than 5000	16 (8%)	7 (9%)	0.752
	5000-10000	123 (66%)	49 (61%)	
	10001-50000	45 (24%)	22 (27%)	
	>50001	2 (1%)	2 (3%)	
Education	Nil	28 (15%)	3 (2%)	0.035
	School	60 (32%)	32 (40%)	
	High School	82 (44%)	32 (40%)	
	Graduate	15 (8%)	12 (15%)	
	Post Graduate	1 (1%)	1 (1%)	

Table 2: Obstetric score

Characteristics	Grouping	VD (n = 186)	CD (n = 80)	P Value
Gravida	1	50 (27%)	15 (19%)	0.859
	2	88 (47%)	43 (54%)	
	3	32 (17%)	15 (19%)	
	4	11 (6%)	6 (7%)	
	5	3 (2%)	0	
	6	2 (1%)	1 (1%)	
Para	0	63 (34%)	20 (25%)	0.262
	1	95 (51%)	48 (60%)	
	2	22 (12%)	12 (15%)	
	3	5 (2%)	0	
	4	1 (1%)	0	
Living	0	67 (36%)	22 (28%)	0.249
	1	95 (51%)	49 (61%)	
	2	21 (11%)	9 (11%)	
	3	3 (2%)	0	
Miscarriages	0	145(78%)	63(79%)	0.679
	1	32(17%)	10(13%)	
	2	7(4%)	5(6%)	
	3	1(0.5%)	1(1%)	
	4	1(0.5%)	1(1%)	

Table 3: Past obstetric history

Characteristics	Grouping	VD (n = 123)	CD (n = 60)	P Value
Previous delivery	Previous VD	86 (70%)	5 (10%)	0.0001
	Previous CD	37 (30%)	55 (90%)	
Place of delivery	Home	6 (5%)	1 (2%) Neonate had hyperbilirubinemia. She expressed fear of repeated vaginal examination & labour pains	0.0001
	PHC*	12 (10%)	0	
	Government	59 (48%)	14 (23%) VD: 3 Elective CD: 4 Emergency CD: 7	
	Private Hosp	46 (37%)	45 (75%) VD: 1 Elective CD: 35 Emergency CD: 9	
Postpartum Hemorrhage	Yes	1 (1%)	1 (2%)	0.602
	No	122 (99%)	59 (98%)	
Received Blood Transfusion	Yes	2 (2%)	2 (3%)	0.458
	No	121 (98%)	58 (97%)	
NICU Admission	Yes	17 (14%)	7 (12%)	0.685
	No	106 (86%)	53 (88%)	
Hyperbilirubinemia	Yes	26 (21%)	13 (22%)	0.935
	No	97 (79%)	47 (78%)	
Preterm / SGA	Yes	13 (11%)	2 (3%)	0.094
	No	110 (89%)	58 (97%)	
Neonatal death or disability	Yes	5 (4%)	0	0.113
	No	118 (96%)	60 (100%)	
* Primary Health Centre				

Table 4: Current pregnancy

Characteristics	Grouping	VD (n = 186)	CD (n = 80)	P Value
Conceived	Spontaneously	182 (98%)	77 (96%)	0.455
	After infertility treatment	4 (2%) Primary: 1 Secondary: 3	3 (4%) Primary: 0 Secondary: 3	
Regular ANC checkup	Attending	158 (85%)	77 (96%)	0.008
	Not attending	28 (15%)	3 (4%)	
Main source of information about VD	Nil	11	5	Many participants chose more than one option
	Friends	50	30	
	Family	143	53	
	Books/TV	1	0	
	Nurse/ Doctor	21	21	
Main source of information about CD	Nil	32	6	Many participants chose more than one option
	Friends	20	8	
	Family	55	18	
	Books/TV	1	0	
	Nurse/ Doctor	115	62	

Discussion

Factors Influencing Mode of Delivery

Age

74% (n = 196) of our study population belonged to the age group of 18-25 years. The young, as well as, the elderly women did not show any specific preference for VD or CD. Similar finding was reported by Ajeet et al from Nagpur.[7] Karna found that women ≥25 years had significantly higher CD rates compared to women delivering at younger ages.[9] Yilmaz et al. also reported women > 30 years, preferred CD.[10] Kamal from Bangladesh also stated that women aged 19-34 years were more likely to undergo caesarean delivery compared to younger women.[11] However, Kathrin Stoll et al studied fear of childbirth amongst university students and concluded that young adults prefer CD over vaginal births.[12]

Religion

Our study had 82% (n = 217) Hindu women, and 17% (n = 44) Muslim women. Religious background of the women did not have any effect on their preference for VD or CD.

Sarker et al explored the religious views of pregnant women in Bangladesh. They concluded that village people believed in religious restrictions and strict rules of maintaining the Islamic principle of purdah, hence, prefer home delivery by trained birth attendants.[13] The preference for institutional delivery was higher among the non-Muslim women and that non-Muslim women were more likely to undergo caesarean delivery.[11]

Address (Rural or Urban) & Economical Background

87% (n = 231) women had rural background with 73% (n = 195) earning less than Rs 10000/- per month. There was no significant difference in the preference for VD or CD, whether they came from urban or rural background. The economic status of our population did not affect their preference for VD or CD. Varghese et al from Punjab, and Poojan Dogra from Himachal Pradesh, India, also reported similar findings.[6, 14]

Educational Status

The educational status of the women showed a statistically important difference, with lesser educated women preferring VD, and more educated women preferring CD as their mode of delivery. The lesser educated women were influenced by the opinion of senior ladies in the family, who would have experienced VD. The preference for CD by 'more educated' women represents their 'independent thinking'. These women would benefit from detailed discussion about risks and benefits of CD and VD, so that they could make an informed choice.

Illiterate pregnant women constituted 12% (n = 31) of our study population, and most (n = 28) preferred VD. Only three multiparous women preferred CD. Two of these women had undergone previous CD and one respondent had a previous VD, but she stated that she was scared of labour pains and repeated vaginal examinations in this pregnancy. Varghese et al found that illiterate pregnant women constituted only 4% of their hospital-based study population, and they inferred that in India, traditional views in illiterate societies prefer to have deliveries by traditional birth attendants on the grounds of privacy.[6] Ajeet et al found no difference in education levels between women who desired caesarean, versus women who desired VD.[7]

Obstetric Score

Primigravidas constituted 24% (n = 65) of our study group. Primigravida or multigravida did not differ in their choice of VD or CD. 67% (n = 177) of our study population were multigravidas with one or more living children and 22% (n = 58) of our respondents had one or more miscarriages. The number of previous living children or miscarriages did not influence their choice of VD or CD. Amongst the

multigravidas in our study, there were 9% (n = 24) women with no living issues. 17 of these women opted for VD and only 7 opted for CD as their preference for mode of delivery. The reasons for these 7 women wanting CD, one woman was gravida 4, para 1, with 2 miscarriages and previous caesarian delivery and had been advised CD for the current delivery. The other 6 said CD was what their family desired, in view of previous pregnancy loss. These women would definitely benefit from counselling by doctors or nurses about the benefits of VD and risks of CD.

6% (n = 15) of primigravidae chose CD as preferred mode of delivery. There reasons were primarily the fear of labour pains, fear of vaginal examination and injury to vagina. This group would certainly benefit from targeted counselling and discussion of pain management during labour. 12 of these women mentioned that their choice for CD was partly influenced by family influence. Counselling by a medical professional regarding drawbacks of CD vis-à-vis VD will help to change their mind.

Ajeet et al from Nagpur, reported in 2010, that 91.5% of their study population preferred VD. They inferred that such findings provide strong evidence that patient's preference is unlikely to be the most significant factor driving the increasing CS rate.[7] In our study 70% (n = 186) women preferred VD and 30% preferred CD. Similar figures were also reported by Varghese et al from CMC, Ludhiana, Punjab in 2016.[6] These figures may represent a changing trend towards patient preference for CS.

Past Obstetric History

When deciding regarding VD or CD, all parous women are significantly influenced by their experience of previous pregnancy and child birth. The type of previous delivery, VD or CD, was an important determinant influencing the women's preferences. In our study, 90% of women who had previous CD, preferred CD for this delivery, and 70% of those having previous VD, preferred the same method of delivery. Similar findings have also been reported by Yilmaz, Varghese and Ajeet.[6,7,10] Women with previous CD should be counselled and given the option for trial of labour after caesarian (TOLAC). Many of them are not aware of the option of TOLAC, and unfortunately many hospitals and private practitioners do not offer these services. TOLAC results in successful vaginal births in 80% of cases. Counseling by the treating doctor can significantly influence her decision to undergo TOLAC and successful VD.

3% (n = 5) women, in our study population, had previous vaginal delivery, but opted for CD as their preferred mode of delivery. All of them stated that they were afraid of labour pains and had not received any form of pain relief during their previous VD. Three of these women had delivered in government hospitals, whereas, one woman had delivered in a private hospital. Counselling regarding availability of epidural analgesia in government and private hospitals, will motivate them to opt for VD. Apprehension of labour pains was a major factor for preferring CD over VD in many studies.[5,7,10,11,14,15] One study by Varghese et al reported that women disagreed with the opinion that CD is preferred due to unpleasant pain of vaginal delivery.[6]

Women who had delivered previously by CD, and now desired VD, constituted 20% (n = 37) of our study population. 29 of these women expected a faster recovery and felt they could take better care of the baby after VD. These views need to be reinforced during counselling for every antenatal woman, and hopefully more and more women will demand and opt for TOLAC.

Place of Delivery

13% (n = 11) of the 85 patients delivering in PHCs or government hospitals underwent CD. Whereas, 49% (n = 45) of the 91 patients delivering in private hospitals underwent CD. A high rate of CD in private hospitals has become the norm with Telangana reporting 10% and 42.3% CD rates in public and private health facilities respectively.[9] Another Indian study reported CD rates three times more in private hospitals compared to public hospitals and recommend examination of incentive structures of private hospitals to identify strategies to rationalize CD rates.[16-18]

This stark difference in CD rates in private and government institutions can be attributed to the two different treatment models followed by these institutions. In the 'private' model, most patients are managed throughout their pregnancy by a single, busy obstetrician. The visiting doctor has to visit three to four different hospitals, and she spends only an hour or two, in each hospital. This time-strapped obstetrician cannot afford to spend eight to ten hours of her time with the laboring patient and prefers to counsel them for elective CD, at her convenient time, thereby shooting up the CD rates. CD is monetarily more fruitful for the doctor, and the private hospital. In the 'government' model, the pregnant lady is managed by a multitude of obstetricians, and there is no monetary incentive for doing CD. Government doctors are duty bound to spend their 'working hours' in the hospital, and thereafter hand over the cases to the next duty doctor. This ensures that CD is performed for a valid indication, and low CD rates. If the private hospitals can follow the 'government' model, then the CD rates can be brought down. This has been demonstrated by a private hospital in Delhi which was able to bring down its CD rates from 78% in 2002, to 18% in 2017. As reported in a leading national newspaper, they changed from single consultant-based practice to a group of consultants caring for the patient. They employed full-time dedicated consultants in the hospital and introduced counselling sessions to educate women on the risks and benefits of vaginal birth. Women who were scared of VD were encouraged to interact with women who have had normal deliveries to alleviate their fears. They introduced audit of indication for CD in each case. Emulating this new model of health care, by more private institutions, has the potential for drastically reducing the CD rates.

The high caesarian rates in private hospitals is partly driven by caesarian delivery on maternal request (CDMR) due to family influences, and families requesting delivery at an auspicious time. CDMR is defined as a primary prelabour CD on maternal request, in the absence of any maternal or fetal indications. This is an unhealthy growing trend in the medical practice. In our study 51% (n = 41) of 80 women, who opted for CD, had consulted their religious leaders

regarding the auspicious time of birth of the baby, compared with only 10% (n = 18) of 186 women who opted for VD. This difference was statistically significant. Time of delivery was dictated by the religious leaders in 60% (n = 21) of the 35 women, who underwent CD in private hospitals. Giving importance to astrological calendar, and the demand for a baby to be born at an auspicious time by CD, has also been reported in other studies.[7,19] Counselling every antenatal woman, and her family will hopefully avoid unnecessary CD.

Other postnatal and neonatal outcomes like postpartum hemorrhage, blood transfusion, NICU admission, hyperbilirubinemia, SGA or preterm neonate or neonatal death or disability, did not play any part in the women's preference for VD or CD. In our study 5 women had neonatal death or disability. All were second gravidae and had VD in government hospital. They all preferred VD for this pregnancy as well.

Factors Associated with Current Pregnancy

Yilmaz and Varghese reported that a higher number of women choose CD after an infertility treatment.[6,10] 3% (n = 7) of our study participants had conceived after infertility treatment. 4 patients opted for VD and 3 for CD, this difference was statistically not significant.

A significant difference was found between the two groups of women attending regular antenatal checkup (ANC). 96% (n = 77) of women opting for CD attended ANC more often than women opting for VD. For women who underwent CD, their familiarity with the hospital setup, and awareness of the importance of ANC and institutional delivery could account for this difference. Women who opted for VD and who did not attend regular ANC, included seven nulliparous women, and five women who had previous home deliveries. These women were not aware of the importance of ANC and institutional delivery. Our study did not collect data regarding the specific reasons for not attending regular ANC but based on the occupation (homemakers) and rural background of these women, one can safely assume that either they were not aware of the importance of ANC, or the transportation to the nearest medical facility was not convenient. This underscores the importance of counselling the spouse along with the antenatal patients, to stress on the need for regular ANC and plan for institutional delivery. The spouse could be motivated to accompany the pregnant lady to the distant medical facility for ANC and delivery.

The most frequently mentioned source of information about VD, was relatives and friends. Whereas, the most frequently mentioned source of information about CD were nurses and doctors. These findings underscore the need for effective doctor– patient communication. If we wish to lower the CD rates, then we must reverse this trend. Nurses and doctors should counsel their patients more often about the process of normal VD, and the benefits of normal VD. Ajeet et al and Deber et al observed that most women do not participate in the decision making process and would accept the decision of their attending doctor regarding the mode of delivery.[7,20] The nurses and doctors must dedicate more time in counseling their patients about VD. It would be unfair to 'just assume' that the patient 'knows everything' about normal vaginal delivery. It is evident that once women are well informed, they would be willing to set aside their preferences and make an informed decision to have VD or CD.

Conclusions

The rising caesarean birth rates in India is a disturbing trend, and it is fueled by intense fear of labour pains, CDMR, previous obstetric experience and ignorance. The results of this study provide a better understanding of the factors influencing the choice of mode of delivery among childbearing women. This study also highlights the role of health professionals, who must actively participate to counsel the patients and their spouses about the benefits and the process of normal vaginal delivery.

Limitations

The limitation of this study is that it is a hospital-based study, conducted in a tertiary care center. The background and preferences of women attending smaller government hospitals or private hospitals may be different.

Conflict of Interest: None.

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