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ORIGINAL ARTICLE

Maternal expectations and birth-related experiences: a survey of pregnant women of mixed parity from Calcutta, India

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KEYWORDS
Maternal expectation; Labor pain; Epidural analgesia; Cesarean section; Ethnicity

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ABSTRACT
Background: In India, as in other parts of the world with high birthrates, there is an imbalance between maternal expectations and provision of labor pain services. Maternal experience may have an impact on attitudes toward the mode of future deliveries and on cesarean section rates. Maternal expectations regarding labor and delivery, and attitudes towards cesarean section were assessed in women of mixed parity during an antenatal visit at a charitable non-governmental hospital in Calcutta.
Methods: Structured interviews based on a questionnaire were conducted with 205 women.
Results: The majority of the 205 women were nulliparous (71%); the average previous cesarean section rate among the parous minority (29%) was 38.8%. Expectation of labor pain was very common. In the absence of an idea of its severity (78%), a majority were ready to tolerate it as a natural phenomenon (71%). For most interviewees, information about epidural labor analgesia was new (97%), although they were prepared to ask for effective pain relief (98%) and pay for epidural analgesia, if available (95%). Nearly a quarter (24%) of subjects considered cesarean section as an option to avoid labor pain, while most (99%) perceived cesarean section to be safer for the baby than vaginal delivery.
Conclusions: This study indicates that information on what to expect during labor and delivery, the potential role of epidural labor analgesia, and the impact of cesarean section on neonatal outcome should be the focus of services instituted to improve antenatal and perinatal care.

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Introduction

Despite a trend toward lower annual birthrates,[1] India's population continues to grow rapidly as a result of a better allocation of resources and greater accessibility of community-based health care services in general and obstetric services in particular.[2] Modern-day peripartum maternity care includes epidural labor analgesia as a highly effective option. In many developing countries with high birthrates, however, the epidural analgesia service cannot satisfy actual demand. As a consequence, the discrepancy between maternal hopes and individual birth experiences may affect maternal attitudes towards mode of delivery and thus contribute to a rising proportion of cesarean sections at maternal request. In India mean cesarean section rates of 25% (range 9-54) were found in 30 teaching hospitals across the country in 1998-99[3] and 47% (95% CI 41-52) in private hospitals in Madras in 1997-99.[4] In the authors' institution, the Behala Balananda Brahmachari Hospital and Research Center (BBBHRC) of Calcutta, the cesarean section rate approached 50% in 2001. Obviously, these figures exceed the range of 10-15% defined by the World Health Organization (WHO) as the benchmark above which evidence for a better neonatal outcome is lacking.[5]

The aim of this study was to assess maternal expectations regarding labor and delivery, and attitudes towards vaginal delivery as opposed to cesarean section, in a consecutive sample of nulliparous and parous women during an antenatal visit at a charitable non-governmental hospital in Calcutta, India. We were particularly interested in determining to what level maternal information and previous birth experience were instrumental in asking for epidural analgesia rather than opting for a cesarean section on request.

Methods

In 2002 the Department of Anesthesia of the University Hospital Basel and the BBBHRC in Calcutta started a joint project aimed at improving obstetric care for vaginal delivery by introducing a labor epidural service and by promoting comprehensive antenatal education. With approval by the Board of Directors of the BBBHRC, the current study was performed as a preliminary step to establish the actual state of knowledge, beliefs, and expectations regarding labor and delivery, and attitudes towards vaginal delivery as opposed to cesarean section. There were no exclusion criteria and strict confidentiality and lack of impact on obstetric care were guaranteed. After giving written informed consent, 205 (90%) of 227 consecutive women attending an antenatal clinic at the BBBHRC completed an interview based on a structured questionnaire. This interview was evaluated and minor adaptations were made following a pilot study involving 17 pregnant women.

All women were interviewed by the same multilingual female medical investigator (RMKM) who completed the questionnaires. Participants were asked to indicate whether they agreed with a number of statements by using a five-point-scale in order to determine the level of agreement indicated by scores ranging from 1 (strong agreement) to 5 (strong disagreement); they were also invited to give their opinion or suggestions regarding specific items of perinatal care. Questions on epidural labor analgesia were asked only after full explanation of the procedure. For the purposes of the study, the question of cost was not considered an issue. Socioeconomic status was assessed by surrogate questions (ownership of selected items, such as television or telephone), giving insight into monthly income. There was no follow-up interview.

Statistical methods

Using descriptive statistics, factors that correlated with experiences and expectations of delivery were determined and, where appropriate, divided into subgroups. These factors were analyzed with the StatView 5 program (SAS Institute Inc., Cary, North Carolina) using an analysis of variance for normally distributed numeric data, a Mann-Whitney U test for data that were not normally distributed, and a χ^2 test or a Fisher's exact test for categorical data. Odds ratios and 95% confidence intervals were calculated using Epi Info Version 6.0 Software (COC, Atlanta). A P value of <0.05 was considered significant.

Results

Participants

The subjects participating in this study included 146 nulliparous and 59 parous women. The interviews took place from January to August 2002 during the first (28%) or a subsequent antenatal check-up (72%). Demographic and socioeconomic details are listed in Tables 1 and 2. Data were collected for almost a year, because of the low delivery rate at the BBBHRC (about 500 per year), and because all interviews were conducted by the same trilingual

Table 1 Sociodemographic data of study population

Age (years)	
<20	14 (6.8)
20-25	95 (46.3)
26-30	66 (32.3)
>30	30 (14.6)
Mother tongue	
Bengali	161 (78.5)
Hindi	39 (19.1)
Other	5 (2.4)
Education	
Illiterate	6 (2.9)
Primary school	9 (4.4)
Secondary school	80 (39.0)
Higher secondary school	42 (20.5)
College	60 (29.3)
University	8 (3.9)
Mean monthly income/family member[*]	
INR[‡] ⩽ 1500 (⩽US$ 30)	85 (41.5)
INR[‡] 1500–3000 (=US$ 30-60)	70 (34.1)
INR[‡] > 3000 (>US$ 60)	17 (8.3)

Data are n (%).
[*] Data missing for 33 interviewees (16.1%).
[‡] INR: Indian Rupees.

Table 2 Sociodemographic data for ethnic subgroups

	Bengali (n = 161)	Hindi (n = 39)	*P*
Mean age in years (SD)	26.1 (4.8)	23.3 (3.6)	<0.001
Mean education score (SD)[*]	4.0 (1.0)	3.0 (1.0)	<0.0001
Parity (parous : nulliparous)	37 : 124	22 : 17	<0.0001
Previous cesarean section n (%)	19 (51.3)	4 (18.2)	<0.05

[*] 6-point education score: illiterate (1), primary school (2), secondary school (3), higher secondary school (4), college (5), university (6) One of the five members of other ethnic groups had a cesarean section. Other data for this group are not available.

person to minimize interviewer bias. In this survey, the majority of women were Bengali-speaking (78.5%), in contrast to the more conservative Hindi speaking population (19.1%); the former represent the urban progressive rather than the rural traditional population which differs significantly both in maternal age, educational level, and parity (Table 2). All interviewees were married; only 7 out of 205 couples were mixed in terms of first language or religious affiliation. The vast majority (86%) of women were confined to housework, very few (14%) were employed, irrespective of their level of education. The mean monthly per capita income of Indian Rupees (INR) 1663 (SD 1154) correlated significantly with the ownership of surrogate items assessed as indicators of the socioeconomic status of interviewees, but socioeconomic status had no impact on the readiness to ask and pay for extra services including epidural analgesia.

Maternal expectations and attitudes

Irrespective of income, level of education or working status, the expectations of nulliparous subjects regarding labor and delivery were most often based on non-professional information received from mothers, sisters and friends rather than on professional information provided during antenatal visits (Table 3). The majority expected pain during labor and delivery without having, for the most part, a clear idea of its severity. Nevertheless, a large proportion of interviewees were ready to tolerate labor pain as part of the natural birthing process. Labor epidural analgesia was unknown to 97% of participants. However, after receiving information about epidural analgesia as an effective method of analgesia, the vast majority were willing to ask and pay for such a service (Table 4). Surprisingly, only a minority considered cesarean section on request as an option to avoid labor pain, despite an almost unanimous perception that cesarean section was safer for the baby (Table 4). Their attitudes are mirrored by level of agreement scores (Table 5), which reveal

Table 3 Maternal expectations

Sources of information about labor and delivery	
Mother	198 (96.6)
Sister or other family members	73 (35.6)
Friends	61 (29.8)
Antenatal check-ups	40 (195)
Magazine, book	1 (0.5)
Other sources (more than one source could be mentioned)	10 (4.9)
What is your opinion about the severity of labor pain?	
Very strong	10 (4.9)
Strong	11 (5.4)
Tolerable	19 (9.3)
Mild	4 (2.0)
Very mild	0 (0)
No idea about the severity of labor pain	153 (77.7)
No pain expected	8 (3.9)
Would you tolerate labor pain as part of a natural process?	
Strongly agree	6 (3.0)
Agree	138 (68.0)
Neither agree nor disagree	52 (25.6)
Disagree	7 (3.4)
Strongly disagree	0 (0)

Data are n (%).

Table 4 Maternal attitudes

Would you ask for safe and efficacious analgesic methods if available?	
Strongly agree	142 (69.6)
Agree	57 (27.9)
Neither agree nor disagree	1 (0.5)
Disagree	4 (2.0)
Strongly disagree	0 (0)
Would you be ready to pay for labor pain service?	
Strongly agree	141 (69.5)
Agree	52 (25.5)
Neither agree nor disagree	5 (2.5)
No	3 (1.5)
Strongly disagree	2 (1.0)
Would you consider cesarean section to avoid a painful delivery?	
Strongly agree	5 (2.4)
Agree	44 (21.5)
Neither agree nor disagree	5 (2.4)
Disagree	142 (69.3)
Strongly disagree	9 (4.4)
Do you think that cesarean section is safer for the baby than vaginal delivery?	
Strongly agree	60 (29.3)
Agree	144 (70.2)
Neither agree nor disagree	1 (0.5)
Disagree	0 (0)
Strongly disagree	0 (0)

Data are n (%).

significant differences between those with a history of a vaginal delivery and those with a history of cesarean section.

Experiences during previous deliveries

Among the 59 parous women, 48 had had a single previous delivery, 10 had had two and one had had three; 47 of these 71 previous deliveries were vaginal and 24 cesarean sections. The Hindi speaking minority was overrepresented in the small group of parous women but had had significantly fewer cesarean sections (18% vs. 51%) (Table 2). Higher maternal age and level of education, and (unsurprisingly) history of difficult delivery were all significantly associated with previous cesarean delivery, but type of hospital was not significant. There was no direct correlation between the type of hospital and per capita income; a majority of 60.9% had chosen a private institution. The previous home delivery rate was 9.4% among the multiparous interviewees.

Discussion

In 2002, practice at the BBBHRC included neither administration of analgesics for vaginal delivery nor local infiltration anesthesia for episiotomy. This study, conducted among those planning to deliver at this hospital, revealed a marked ignorance about the severity of labor pain, and a general belief that it could be tolerated as a natural process. The almost complete ignorance of epidural analgesia as an effective means of pain relief was even more striking and may explain why the majority of women included in this study were willing to tolerate pain, believing it to be inevitable.

Lack of data on labor analgesia practice in India does not allow us to put our findings into perspective or to generalize beyond our own institution. Nevertheless, we assume that this cohort of pregnant women were representative of an urban lower- and middle-class population living in an Indian megalopolis of about 20 million inhabitants. The majority of participants were of Bengali descent with Bengali as their first language, while a minority originated from northern provinces of India with Hindi as a first language. Limited financial resources were common; half of the subjects surveyed had a per capita income under the poverty limit of 1 US Dollar (USD) per day, as defined by the WHO. Therefore, they could not afford more costly medical services offered by private hospitals, in some of which epidural analgesia might have been available. Instead, they had to select a charitable non-governmental organization hospital such as the BBBHRC where medical services are available at a lower price. Nevertheless, having

Table 5 Level of agreement[*] among nulliparous women, parous women with previous cesarean section and parous women with previous vaginal delivery

	Nullipara	Multipara		
	(n = 145)	Previous CS (n = 23)	Previous VD (n = 36)	$P^{\ddagger}$
CS instead of VD (to avoid pain)	3.6 (0.9)	2.8 (1.0)	3.9 (0.8)	< 0.001
CS safer for baby	1.7 (0.5)	1.4 (0.5)	1.9 (0.4)	<0.01
Prepared to tolerate labor pain	2.3 (0.5)	2.7 (0.8)	2.1 (4.2)	< 0.01

CS: cesarean section; VD: vaginal delivery.

[*] Scores for the level of agreement ranging from strong agreement (1) to strong disagreement (5) are indicated by mean values (SD).

P values[‡] refer to the groups of multiparous women.

received information about epidural analgesia, many said they would be prepared to pay for it, if available.

A more intriguing finding was the common misconception of cesarean section as a mode of delivery with better neonatal outcome, a belief that was almost as common among nulliparous women as among women who had previously undergone cesarean section. Such a belief may contribute to rising cesarean section rates in response to consumer demand,[6] even though evidence for a better outcome in absence of medical indications is lacking.[7–10] On the contrary, cesarean section without an obstetric or medical indication carries higher risks for both mother and baby.[7] In our study, a cesarean section rate of 34% was found among the parous participants, which is consistent with that reported in other studies from India.[3,4,11] Interestingly, the cesarean section rate among Bengali women was almost threefold higher than among Hindi women (51.3% vs. 18.2%), a difference that, at least in part, may be attributed to differences in ethnic and cultural background. An impact of ethnicity on cesarean section rates was also observed in California where they were 24-40% higher among the black than among the white community, even after adjusting for socioeconomic factors.[12]

In terms of national health economy, obstetric policies encouraging vaginal deliveries by offering up-to-date analgesia should be supported. Even in the absence of complications due to cesarean section, the concomitant increase in cost must be considerable both in developing and developed countries.[13] In countries like India, suffering from an imbalance between limited economic resources and enormous medical needs, any excess cost is particularly burdensome. In the state of Kerala, South India, cesarean deliveries performed at rates of 22% in rural and 35% in urban areas caused an estimated extra cost of USD 540 000 in 2000.[14] Based on such figures, additional cost incurred in India can be extrapolated reflecting its share of about 20% of the global birthrate. Notwithstanding, policy makers should not ignore potential financial incentives for obstetricians recommending cesarean section instead of vaginal delivery. Higher fees for cesarean section may result in additional institutional benefit or personal income.[7] This is exemplified by large differences in cesarean section rates between private and public hospitals,[4,7,11,15,16] and among obstetricians affiliated with these hospitals.[17] Cesarean section rates of 40% and 61% were reported for public and private hospitals in West Bengal, and of 20% and 47% for public and private hospitals in Madras, respectively.[11]

This study suggests that there is a need to provide accurate information on what to expect during labor and delivery, on the potential role of epidural labor analgesia as the most effective means to ease pain, and on the impact of cesarean section on maternal and neonatal outcome. In a population that scarcely ever reads magazines or books about childbirth, this must be achieved orally, by instituting antenatal consultation and birth preparation meetings involving whole families. This could be the starting point for any policy whose goal is to encourage women to assume an active role during childbirth and get involved in decision-making. Maternal autonomy has been shown to contribute to satisfaction with the experience of childbirth,[18–22] as does vaginal delivery.[15,20,23–27] Currently, such services are provided in only a few urban centers in India but not yet in Calcutta.

This study has a number of limitations. There is a possibility of a selection bias since informed consent was the only prerequisite for the selection of pregnant women to take part in the interview. Women were not selected at random and there was a majority of nullipara in one ethnic group and of parous women in the other. Moreover, they were interviewed at a non-specified time of pregnancy. As an incentive, all interviewees were offered free-of-charge access to an epidural labor pain service that was being instituted *de novo* at the BBBHRC. The desire to give everybody information needed for informed consent outweighed concerns regarding study design. Another limitation was the uncertain accuracy of information about previous deliveries provided by interviewees. Nevertheless, this information was included since past subjective experience is more decisive in affecting individual points of view than medical record documentation. A language bias cannot be excluded since the questionnaires used were either in Bengali or Hindi; an English version was used only for the very few women with a different first language. The trilingual interviewer did her best to reduce this bias.

This study indicates that parturients attending antenatal consultations at the BBBHRC lack information on what to expect during labor and delivery. They are not aware of epidural analgesia and its potential role in providing effective pain relief during vaginal delivery. There is a common misconception that cesarean section has a better neonatal outcome than vaginal delivery. Improved patient information needs to go hand in hand with any policy aimed at improving maternal care.

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