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MATERNAL-FETAL MEDICINE

A study on personal mode of delivery among Chinese obstetrician-gynecologists, midwives and nurses

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Abstract
Background Medical staff, especially those working in the Department of Gynecology and Obstetrics, have been considered to mostly influence pregnant women on the decision making of delivery mode.
Objective To investigate mode of delivery among Chinese female obstetrician-gynecologists, midwives and nurses and to explore reasons why they choose cesarean section (CS) for themselves and their advice on mode of delivery.
Methods Questionnaires including demographic characteristics, their mode of delivery and the reason as well as their suggestion when consulted by pregnant women were administered to 293 participants.
Results 69.7 % was the overall CS rate and 49.0 % without any medical indications. The main reasons for CS were safety for both fetus and mother, easier and quicker labor, fear of injury to the fetus in vaginal delivery (VD), worrying about various unpredicted risk problems in VD and disbelief of VD skills. Those who had experienced CS were more likely to agree with the maternal request for CS or even gave a suggestion straightly for CS.
Conclusions There is a high rate of CS among Chinese medical staff working in the Department of Gynecology and Obstetrics. Future efforts to reduce the national CS rate would focus on the delivery practice of medical staff, modification of national policies including the one-child policy and promotion of VD skills.

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Keywords Medical staff · Mode of delivery · Cesarean section · Questionnaire

Introduction

The increasing cesarean section (CS) rate has been observed worldwide; however, in China an alarmingly high level of 46.5 % [1], even up to 80 % in some hospitals [2], far beyond the WHO recommended tipping point of 15 % [3], has drawn more and more attention and reasons are much debated. So far, medical staff, especially those working in the Department of Gynecology and Obstetrics, have been thought to mostly influence pregnant women on the decision making of delivery mode [4–6]. It was believed that the ratio of obstetrician-gynecologists choosing CS for themselves may lead to an increase in national CS rate as the attitudes and the advice of obstetrician-gynecologists were important for pregnant women to make a final decision on the mode of delivery [5, 6]. Thus, it is important to explore the personal preference of delivery mode among Chinese medical staff working in the Department of Gynecology and Obstetrics and their advice when asked about CS by pregnant women.

Materials and methods

The cohort for the current study consisted of 293 medical staff working in the Department of Gynecology and Obstetrics in thirteen randomly selected hospitals in Hubei province, central China, from December 2010 to July 2011. Inclusion criteria were female working in the Department of Gynecology and Obstetrics, having delivered once with infants born alive, aged 21 years or older and voluntarily

participating in the study. Female medical staff without a history of delivery was excluded. The study protocol as well as the questionnaire was approved by the Wuhan University Ethics Committee. The medical director and the nursing head of each hospital received a letter with the description of the survey and then addressed a letter to all obstetrician-gynecologists, midwives and nurses working in the Department of Gynecology and Obstetrics to explain the enrollment and the purpose of the survey, assuring that response was completely voluntary, and that the information provided would be used solely for fulfilling the research aims. A self-administered anonymous questionnaire comprised three categories of questions: (1) demographic characteristics including maternal age, profession, household income, education level, number of child, mode of delivery; (2) those having experienced CS were then asked to indicate their reasons from a checklist, from which more than one reason could be chosen and (3) which advice or suggestion to be given to other pregnant women. The questionnaire was a modification based on the literature [7, 8]. Descriptive statistics and multivariate analysis were used to assess the data using Statistic Package for the Social Sciences (SPSS) version 12.0 software [9]. Statistical differences were based on a significance level of <0.05.

Table 1 Demographic characteristics of the participants

Demographic characteristics ($N = 208$)	*n* (%)
Age (years)	
21–29	79 (38.0)
30–39	81 (38.9)
40–49	36 (17.3)
≥50	12 (5.8)
Profession	
Gynecologist-obstetricians	77 (37.0)
Midwives	78 (37.5)
Nurses	53 (25.5)
Education level	
Below graduate	68 (32.7)
Above graduate	140 (67.3)
Income of family (RMB per year)	
<50,000	38 (18.3)
≥50,000	170 (81.7)
Number of child	
1	196 (94.2)
2 or more	12 (5.8)
Type of birth	
VD	63 (30.3)
CS	145 (69.7)

CS cesarean section, *VD* vaginal delivery

Results

There were 293 participants who met the inclusion criteria during the study period, a total of 208 obstetrician-gynecologists, midwives and nurses answered, giving a response rate of 71 % in this study. The characteristics of the study population are listed in Table 1.

The overall CS rate was 69.7 %, with no difference among obstetrician-gynecologists, midwives and nurses (68.8, 75.6 and 62.3 %, respectively). And a total of 49.0 % chose elective CS in the absence of any clinical indication. Similarly, there were no significant differences (53.2 % in obstetrician-gynecologists, 47.4 % in midwives and 45.3 % in nurses).

The reasons among those having experienced CS are ranked in Table 2. Of those who chose CS, 89.7 % considered CS as safer for fetus and mother. The perception of safety, desire to delivery more easily and quickly, and disbelief of vaginal delivery (VD) skills were the main reasons for elective CS. The statement *safer for both fetus and mother* was ranked the first reason for elective CS. 89.7 % of participants considered CS as safer to both fetus and mother. The statement *easier and quicker labor, fear of injury to the fetus in VD*, *worrying about various unpredicted risk problems of VD* ranked next and *disbelief of VD skills or no confidence in VD* followed. Only 18 (12.4 %) indicated selectively timed delivery as a reason and none claimed their economic motivation.

Table 2 Reasons for participants selecting CS

Items	*n* (%)
Safer for both fetus and mother	130 (89.7)
Easier and quicker labor	122 (84.1)
Fear of injury to the fetus in VD	120 (82.8)
Worrying about various unpredicted risk problems in VD	120 (82.8)
Disbelief of VD skills or no confidence in VD	107 (73.8)
Fear of pain in VD	88 (60.7)
Choosing a good birthday	18 (12.4)
Fear of injury to the mother in VD	16 (11.0)
Older maternal age	9 (6.2)
Economic consideration	0 (0.0)

CS cesarean section, *VD* vaginal delivery

Of the participants who had received a cesarean delivery, 86.9 % (126/145) claimed that they were satisfied with their own delivery experience and would advice the same mode of delivery to other pregnant women when asked for their advice. On the other hand, only 55.6 % (35/63) of participants with prior experience of VD said they were

satisfied with their mode of delivery and would advice the same mode of delivery to other pregnant women. Significantly those participants having received CS are more likely to give suggestions for CS than those having not received CS (86.9 vs. 55.6 %, $p < 0.001$).

Discussion

It is of importance that, unlike numerous researches from other countries claiming low CS rate among obstetrician-gynecologists and midwives [4, 10–12], the current study showed high CS rates among Chinese obstetrician-gynecologists, midwives and nurses. Moreover, the present study found that there is an elective CS rate as high as 49.0 % among the targetted Chinese professional group. In the current study there was no substantial difference in the profession distribution in agreement with a previous study reported by McGurgan et al. [4], who found that there was a consistent trend for CS among female or younger obstetrician-gynecologists. However, a similarly designed research from Italy in 2008 reported a different finding that the midwives' attitudes toward CS differed from those of the obstetrician-gynecologists and midwives were also less inclined to believe that CS provides benefits to the mother [13].

In China, increasing CS rate is expected in the near future, and many nonmedical causes including social and economic factors might have played an important role in the rapid rise of CS rates [14, 15]. Importantly, our results found that the fear of damage to fetus and disbelief of skills of VD were the most commonly stated reasons by participants for personal CS without any medical indications, which may be the main contributors to the high CS rate in our country. Fear for themselves or their baby appeared to be major factors behind women's requests for CS, coupled with the belief that CS was the safest for the fetus [8, 16]. It was reported that obstetrician-gynecologists were more likely to perform a CS because they believed that CS would be safer [17]. In fact, the participants were much aware of their own and colleagues' skills of VD because of less frequently used vaginal delivery-aided technique [2, 18]. In agreement with Waldenstrom et al. [19], the majority of the participants experiencing CS in the absence of any clinical indication stated that due to fear of pain and worrying about the safety of baby they finally abandoned the VD after hours of ongoing delivery. In agreement with Walker et al. [20], in this study, 77 % of participants thought that CS was an easy, convenient way of giving birth and preferable to VD even in the most optimal of circumstances. Although increasing CS rates worldwide may be explained partly by improved obstetric procedures [5], obstetrician-gynecologists and midwives must be encouraged and educated to improve the skills of VD to reduce the national cesarean deliveries [18].

In the present study a large majority of participants stated that due to the one-child policy only one baby was born in their life so they must chose CS because they considered CS as the safest mode of delivery for their baby. Then, the one-child policy, a potential contributing factor, leading to highly caring for safety of the infant must be taken into consideration.

We wondered what was the most influential parameter for the Chinese medical staff while choosing the mode of delivery for themselves and, what is more, the relationship between their personal delivery experience and their advice given to other pregnant women. In agreement with a previous study [21], in the current study the overwhelming majority of participants who had ever given birth by CS claimed that they were satisfied with their own delivery experience and they would advice the same mode of delivery to other pregnant women when asked for their suggestion about mode of delivery. On the other hand, only a small proportion of participants with prior experience of VD said they were satisfied with their mode of delivery and would advice the same mode of delivery to other pregnant women [18, 22]. It seemed that the personal experience of delivery was important regarding the question about CS on maternal request and negative birth experience seemed to play a crucial role demonstrated in a meta-analysis by Gamble [23]. There was a correlation between the suggested and the preferred mode of delivery, meaning that the effect of medical staff as experienced women who gave advice on mode of delivery could not be underestimated. Obstetrician-gynecologists generally suggested their preferred delivery mode to their patients as the safe mode of delivery, so those who had had a personal experience of VD were less likely to agree with a maternal request for CS, whereas personal experience of CS did affect their agreement when asked for their advice [24]. With the safety and convenience of CS improving greatly, those medical staff working in the Department of Gynecology and Obstetrics and having experienced CS for themselves might give positive overall evaluations to other women and, therefore, their role might mostly influence other pregnant women leading to the national rising of CS.

It must be mentioned that in the present study, in contrast to previous studies [4, 25] that economic consideration might motivate hospitals and medical staff to perform surgical deliveries, none claimed the choice was motivated by economic consideration. The economic motivation of interest has been widely suspected to be the culprit of high Chinese CS rate by the society and the public [2]. Perhaps the healthy welfare that medical staff was free from the charge of delivering could give a reasonable explanation. Then, it was of most importance for us to find that without

economic motivation the CS rate was still high even though there was no medical indication. Thus, it could be concluded that socio-medical factors but not economics played the pivotal role in the rising CS rate in China.

Limitations

This study was conducted in a specific region and therefore represented a selected group, rather than being a national representation. And this does not necessarily imply that we can generalize the results to the whole population of Chinese medical staff working in the Department of Gynecology and Obstetrics. In order to ensure a high response rate, we deliberately omitted asking personal information about marital status. As this was a questionnaire survey, it was not possible to ensure what the participants stated was true.

Conclusions

Socio-medical factors played a major role in the increasing CS rate in China. Firstly, Chinese one-child policy leading to the outweighed safety of the infant might play a major role. Secondly, skills of vaginal obstetric procedures should be improved and pain-free delivery should be implemented. Thirdly, the high rate of CS among Chinese medical staff working in the Department of Gynecology and Obstetrics, which was due to greater prevalence of unnecessary CS, might influence the national CS rate. In short, it is implied that future efforts to reduce the overall CS rate in China should focus on adjustment of national policies including one-child policy and promotion of obstetrician-gynecologists' skills of VD. This study may provide a new and different explanation for the increasing national CS rate in China. Further studies on the mode of delivery among this special professional population nationwide are needed.

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Conflict of interest None.

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