Obstetricians' Views for Reasons Decision-Making for Cesarean Section in Iran

Sedigheh Hantoosh Zadeh[1], Mamak Shariat[2], Azam-Sadat Mousavi[3], Leyla Sahebi[2], Raheleh Moradi[4], Nahid Farrokhzad[2]

[1] Vali-e-Asr Reproductive Health Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran

[2] Maternal, Fetal and Neonatal Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran

[3] Department of Gynecology Oncology, Imam Khomeini Hospital Complex, Vali-e-Asr Hospital, Tehran University of Medical Sciences, Tehran, Iran

[4] Breastfeeding Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran

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Abstract- By increasing trend of cesarean sections (c-section) has raised the rate of health implications after c-section analogously. This study aimed to identify the factors influencing the choice of cesarean birth from obstetrician' perspective. Present study was a descriptive-analytical cross-sectional study at three medical centers dependent on Tehran University of Medical Sciences in 2022. The questionnaire included parents' demographic and economic factors, parents 'previous experiences and insistence of relatives, environmental and facilities, cultural and religious, the doctor's personal opinion, and the mother's clinical and psychological factors. In general, 67 gynecologists participated in the study. The average (SD) age and work experience of doctors was 42.95 (7.68), and 11.49 (8.35) years respectively. The most determining factors in the choice of cesarean delivery from the doctor's point of view were the maternal clinical and psychological factors. Other important factors were the culture and personal beliefs of the parents. The factor of fear of litigation and court in case of birth problems and complications was one of the other essential factors in choosing cesarean delivery. In the current study, the age and experience of the specialist doctor showed a positive correlation with the personal opinion of the gynecologists. Obstetricians and gynecologists are the final decision makers in choosing the type of delivery. To select the correct method, there is a need for a specific protocol for choosing the kind of delivery, and providing a suitable platform to resolve legal concerns and lawsuits.

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Introduction

The global cesarean section (c-section) rate continues to rise, with more than 1 in 5 (21%) births being delivered via c-section, and it's predicted to increase to about one-third (29%) by 2030 (1), which amounts to 38 million cesarean births annually. The rates will vary from 7.1% in sub-Saharan Africa to 63.4% in Eastern Asia. In Southern Asia and sub-Saharan Africa, there will be challenges related to morbidity and mortality due to the lack of access to c-sections, the unsafe performance of the procedure, and the excessive use of c-sections, which will strain resources and lead to unnecessary morbidity and mortality (2). Iran ranks fifth in the world for the highest prevalence of c-sections (3).

Maternal morbidity and mortality rates after cesarean delivery are higher compared to vaginal birth (4). Maternal mortality risk after c-section was 21.9 per 100,000 compared to 3.8 per 100,000 after vaginal births in the Netherlands (5). The risk of maternal mortality following c-section is significantly higher in middle-income and developing countries 6 about 100 times higher in developing) countries (6). Common causes of maternal morbidity include hemorrhage, hysterectomy, blood transfusion, uterine rupture, anesthetic complications, and obstetric shock (7). Post-partum hemorrhage is the leading cause of maternal death following a c-section (6).

There is concern about the increasing rate of c-

Corresponding Author: L. Sahebi
Maternal, Fetal and Neonatal Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran
Tel: +98 2166591316, E-mail address: sahebileila@yahoo.com

sections without sufficient medical justification, often related to doctors' comfort or a preference to avoid vaginal delivery. Proper management and attention are necessary due to the significant short-term and long-term complications associated with cesarean delivery (8). Obstetricians must ensure that the health implications are considered when deciding on a c-section, and it's important to identify the factors influencing the choice of cesarean birth from the obstetrician's perspective.

Materials and Methods

This study was a descriptive-analytical cross-sectional study. The criteria for entering the study were obstetricians with at least one year of work experience willing to participate in the survey in 2022. Three medical centers were selected by random clustering method of medical centers affiliated with Tehran University of Medical Sciences.

This questionnaire had 31 questions and the scoring range was between 0 and 10 (zero the minimum score and ten the maximum score). The questionnaire includes options of maternal demographic and economic factors (age, occupation, income and health insurance), previous experiences and the insistence of relatives (any previous experience, previous unpleasant experience of natural childbirth, insistence of parents and relatives), environmental and facilities factors (lack of adequate equipment and medical facilities, lack of ability of the midwifery team, lack of sufficient anesthetic force, type of hospitalization center (private or government)), cultural and religious factors (parents' desire to give birth on a specific date, inappropriate culture in the society and lack of sufficient knowledge), the doctor's personal opinion (belief in the safety of c-section, confidence in reducing less harm to the mother, being worried about complications during childbirth, low tariff of natural birth, shorter cesarean delivery, legal concerns in case of problems in the process childbirth), and the mother's clinical and psychological factors (occurrence of physical complications in the previous birth, pelvic stenosis, height and weight, mental stress and anxiety, mother's underlying diseases, pregnancy with assisted pregnancy methods) were grouped.

The questionnaire was evaluated by content validity by a team of 8 experts. The CVR was calculated to determine the content validity. Also, the internal and external consistency test was performed by Cronbach's alpha, and correlation coefficient was evaluated. Based on this, Cronbach's alpha coefficient equal to 0.83 and inter-correlation coefficient (ICC) equal to 0.91 were obtained, which were approved. The data was analyzed with SPSS-20 software (IBM, Armonk, NY, USA) and a P of ≤ 0.05 was considered significant.

Results

In general, 19 gynecology specialists from Arash Hospital, 21 from Yas Hospital, and 27 from Valiasr Hospital participated in the study. The average age of doctors was 42.95 years with a standard deviation of 7.68 (minimum age 33 years and maximum age 63 years). The average work experience was 11.49 years with a standard deviation of 8.35 years (minimum year two and maximum 30 years).

The frequency distribution of the causes of the caesarian section from the point of view of obstetricians can be observed separately for each question in Table 1.

Questions 6, 18, 19, 21, 22, and 23 were cases where the highest proportion of responses was equal to 10 (scores from 0 to 10) (Table 1). In the case of questions 7 (Mother's previous complication) and 24 (mother's pelvic stenosis), the highest proportion was equal to 8 (out of 10), which was equal to 26.6% (17) and 28.4 (19), respectively (Table 1). But the highest proportion of obtaining the minimum score (zero) was related to questions 1, 2, 3, 4, 5, 10, 11, 12, 14, 15, 16, 17, and 20 (Table 1).

In this study, the most determining factors in the choice of cesarean delivery from the doctor's point of view were the maternal clinical and psychological factors (Including the occurrence of physical complications in the previous birth, pelvic stenosis, height and weight, stress, anxiety, and underlying diseases). Other important factors in the choice of c-section were the culture and personal beliefs of the parents (which include the options of the parent’s desire to give birth on a specific date, inappropriate culture in the society, and the lack of sufficient knowledge of the parents). The relevant information can be seen in figure 1.

Table 1. The frequency distribution of the causes of the caesarian section from the point of view of obstetricians (score of 0 is the lowest and 10 is the highest)

Score/ Question; n (%)	0	1	2	3	4	5	6	7	8	9	10
1. Mother age	25	8	6	2	1	10	4	5	3	0	3
	37.3	11.9	9	3	1.5	14.9	6	7.5	4.5	0	4.5
2. Family income	51	2	6	3	0	1	0	0	0	3	0
	77.3	3	9.1	4.5	0	1.5	0	0	0	4.5	0
3. Maternal job	54	4	3	0	0	2	0	0	3	0	0
	81.8	6.1	4.5	0	0	3	0	0	4.5	0	0
4. health insurance	54	2	3	3	0	4	0	0	0	0	0
	81.8	3	4.5	4.5	0	6.1	0	0	0	0	0
5. Mother's lack of previous experience	36	1	6	1	5	5	3	3	3	0	3
	54.5	1.5	9.1	1.5	7.6	7.6	4.5	4.5	4.5	0	4.5
6. Mother's previous experience	5	0	3	0	2	1	0	2	6	11	37
	7.5	0	4.5	0	3	1.5	0	3	9	16.4	55.2
7. Mother's previous complication	13	0	0	0	0	9	4	6	17	5	10
	20.3	0	0	0	0	14.1	6.3	9.4	26.6	7.8	15.6
8. Mother's bad previous experience	3	3	4	7	6	20	3	1	4	11	5
	4.5	4.5	6	10.4	9	29.9	4.5	1.5	6	16.4	7.5
9. Mother's insistence	0	7	6	0	9	13	3	3	8	7	10
	%	10.6	9.1	0	13.6	19.7	4.5	4.5	12.1	10.6	15.2
10. father's insistence	17	12	2	2	11	11	0	3	5	0	3
	25.8	18.2	3	3	16.7	16.7	0	4.5	7.6	0	4.5
11. Determination of specific date of birth	49	11	0	1	1	4	0	0	0	0	0
	74.2	16.7	0	1.5	1.5	6.1	0	0	0	0	0
12. The safety of cesarean section	32	3	4	0	4	7	3	3	3	0	3
	50	4.7	6.3	0	6.3	10.9	4.7	4.7	4.7	0	4.7
13. Reduction of anogenital injuries	14	3	0	6	3	16	4	3	3	6	9
	20.9	4.5	0	9	4.5	23.9	6	4.5	4.5	9	13.4
14. Worried about dystocia during childbirth	18	9	9	3	3	10	0	1	10	1	2
	27.3	13.6	13.6	4.5	4.5	15.2	0	1.5	15.2	1.5	3
15. Lack of adequate equipment	30	11	9	2	0	6	0	6	3	0	0
	44.8	16.4	13.4	3	0	9	0	9	4.5	0	0
16. Lack of trust in midwives and delivery room personnel	29	14	1	0	8	7	0	3	4	1	0
	43.3	20.9	1.5	0	11.9	10.4	0	4.5	6	1.5	0
17. Non-availability of anesthesia and specialist staff if needed	33	5	12	1	0	9	3	3	1	0	0
	49.3	7.5	17.9	1.5	0	13.4	4.5	4.5	1.5	0	0
18. Type of center (private or public)	14	0	1	0	5	12	0	2	7	8	18
	20.9	0	1.5	0	7.5	17.9	0	3	10.4	11.9	26.9
19. Lack of appropriate tariff	12	0	2	0	3	3	0	1	3	7	36
	17.9	0	3	0	4.5	4.5	0	1.5	4.5	10.4	53.7
20. Shorter cesarean delivery process	27	5	1	1	2	7	3	1	6	5	7
	40.3	7.5	1.5	1.5	3	10.4	4.5	1.5	9	7.5	10.4
21. Legal concerns and litigation in the event of a problem	11	2	4	4	0	7	4	3	12	0	20
	16.4	3	6	6	0	10.4	6	4.5	17.9	0	29.9

Cont. table 1

22. Society's tendency towards cesarean section following the prohibition	8	2	10	5	3	9	4	3	4	5	14
	11.9	3	14.9	7.5	4.5	13.4	6	4.5	6	7.5	20.9
23. Size of fetus	0	0	0	0	3	3	0	3	16	15	27
	0	0	0	0	4.5	4.5	0	4.5	23.9	22.4	40.3
24. Pelvic stenosis	1	0	0	0	4	5	1	15	19	13	9
	1.5	0	0	0	6	7.5	1.5	22.4	28.4	19.4	13.4
25. Height and weight of the mother	8	0	4	1	1	17	8	7	11	5	3
	12.3	0	6.2	1.5	1.5	26.2	12.3	10.8	16.9	7.7	4.6
26. Fear, psychological stress and mother's anxiety	4	1	9	5	3	14	5	3	10	6	7
	6	1.5	13.4	7.5	4.5	20.9	7.5	4.5	14.9	9	10.4
27. underlying disease of mother	11	2	3	2	16	14	0	8	1	0	10
	16.4	3	4.5	3	23.9	20.9	0	11.9	1.5	0	14.9
28. Artificial pregnancy	3	7	0	6	4	10	7	8	7	0	15
	4.5	10.4	0	9	6	14.9	10.4	11.9	10.4	0	22.4
29. Lack of medical facilities (as resuscitation equipment)	28	2	1	9	6	4	6	2	8	0	0
	42.4	3	1.5	13.6	9.1	6.1	9.1	3	12.1	0	0
30. Improper culture	1	3	3	3	2	14	1	0	13	6	17
	1.5	4.5	4.5	4.5	3	20.9	1.5	0	19.4	9	25.4
31. The need for natural childbirth promotion classes	3	0	3	10	6	16	3	1	11	0	14
	4.5	0	4.5	14.9	9	23.9	4.5	1.5	16.4	0	20.9

The highest frequencies are in bold

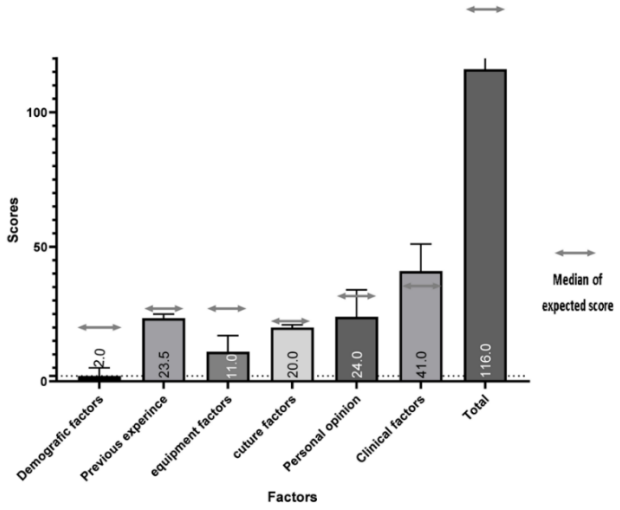

Figure 1. Distribution of different ranges of factors related to the choice of c-section from the point of view of obstetrician-gynecologists

In this chart, the median scores are drawn in each group, and the difference between the observed median from the expected median is calculated. Only the median score of clinical factors (41) was more significant than the expected score (35), the median score of cultural factors was precisely equal to the expected median (20), and the median of the previous experience option was close to the expected median (23.9 versus 25). However, the median of the demographic factors had the most significant distance from the expected median (2 vs. 20). In the case of medical equipment and facilities, the median score compared to the expected median was 11 versus 25, and in the case of doctors 'personal opinions, this comparison was 24 versus 30. Regarding the overall

score, the median score was 116, while the expected median was 155 (Figure1).

In the present study, the correlation between the doctor's age and length of work experience with the scores in each option was evaluated. Based on this, the doctor's age and work experience had a significant correlation with the obstetrician-gynecologists' personal opinion (0.492 and 0.465, respectively (Table 2).

Table 2. Correlation between gynecologist' age and experience work with options decision-making for cesarean section

Variables	R^2 $(P)^*$	Variables	R^2 $(P)^*$
Doctor's age* Demographic factors	0.059(0.633)	Doctor's work experience * Demographic factors	0.076(0.575)
Doctor's age * previous experiences and insistence relatives	0.326(0.013)	Doctor's work experience * Previous experiences and insistence relatives	0.317(0.016)
Doctor's age* environmental and medical facilities	0.2(0.139)	Doctor's work experience * Environmental factors and medical facilities	0.108(0.428)
Doctor's age* Cultural factors and religion	0.144(0.284)	Doctor's work experience * Cultural factors and religion	0.142(0.292)
Doctor's age* Doctor's personal opinion	0.492(0.001>)	Doctor's work experience * Doctor's personal opinion	0.465(0.001>)
Doctor's age* Maternal clinical and psychological factors	0.096(0.487)	Doctor's work experience * Maternal clinical and psychological factors	0.197(0.148)
Doctor's age* All factors	0.399(0.003)	Doctor's work experience * All factors	0.379(0.005)
Demographic factors * Previous experiences and insistence relatives	0.352(0.004)	Previous experiences and insistence relatives* Environmental and medical facilities	0.292(0.018)
Demographic factors* Environmental factors and medical facilities	0.551(0.001>)	Previous experiences and insistence relatives * cultural factors and religion	0.215(0.083)
Demographic factors* Cultural factors and religion	0.226(0.016)	Previous experiences and insistence relatives * doctor's personal point of view	0.355(0.005)
Demographic factors* Doctor's personal opinion	0.415(0.001>)		
Demographic factors* clinical and psychological factors of the mother	0.711(0.001>)	Previous experiences and pushing people around* all factors	0.603(0.001>)
Demographic factors* All factors	0.733(0.001>)	Cultural factors and religion* Doctor's personal point of view	0.231(0.07)
Environmental factors and medical facilities* cultural factors and religion	0.115(.362)	Cultural and religious factors* clinical and psychological factors	0.224(0.083)
Environmental factors and medical facilities* doctor's personal point of view	0.657(0.001>)	Cultural factors and religion* all factors	0.409(0.001>)
Environmental factors and medical facilities* clinical and psychological factors of the mother	0.638(0.001>)	The personal opinion of the doctor*maternal clinical and psychological factors r	0.608(0.001>)
Environmental factors and medical facilities* All factors	0.736(>0.001)	Doctor's personal opinion* All factors	0.846(>0.001)
Clinical and psychological factors of the mother* All factors	0.842(>0.001)	Median of expected score	

Discussion

Various clinical, psychological, social, and economic factors influence the delivery type. However, there are uncertainties regarding the effect of each of the factors on the kind of delivery. From various determining factors in the kind of delivery, some of these factors have no scientific justification, and following them can harm the health of the mother and the fetus or increase its economic and social burden.

In recent decades, the cesarean delivery has been a growing trend (from 6.7% in 1990 to 19.1% in 2014), and its prevalence has increased from 16% in 1985 to 60% in 2013 in Iran (9). In a meta-analysis study conducted in 2017, the prevalence of c-section in Iran was estimated at 48% (9). Although the upward trend of cesarean delivery is global, this prevalence in Iran is much higher (more than three times) than the worldwide estimate. One of the most influential determinants in the selection of the type of delivery is the gynecologist, who always accompanies the mother during the pregnancy process; therefore, the evaluation of the opinion of the specialist doctors can resolve the ambiguities in the field of rooting and the power of various factors in determining the type of cesarean delivery, and then help in choosing the safest kind of birth by providing suggestions and scientific policies.

In this study, the most determining factors in the choice of cesarean delivery were the maternal clinical and psychological factors (including the occurrence of physical complications in the previous birth, pelvic stenosis, height and weight, stress and anxiety, the presence of underlying diseases, and pregnancy by artificial insemination). The median score of this option was 41, while the expected median score was 35. In many studies, the absence of a clear protocol or guideline is considered one of the factors of confusion among doctors in choosing the type of delivery (10-14).

The culture and personal beliefs of the parents' option (including parents' desire to give birth on a specific date, inappropriate culture in the society, and lack of sufficient knowledge of the parents) were of the other essential factors in the choice of cesarean delivery, the median score of this option was 20 (the expected median score equals to 20 too). Therefore, it is necessary to create a culture and suitable platform to accept that factors such as giving birth on a particular calendar date are not rational in choosing the type of delivery, and can potentially be associated with physical risks for the mother and the fetus. By reviewing the studies conducted, it was found reasons such as social-cultural factors and social media were the main levers to request cesarean delivery globally (15-17).

The previous unpleasant experience with a median of 23.5 and the difference of its score of only 1.5 points from the expected median showed that this factor is also decisive among different elements to a significant extent. This option included the factors of having previous experiences, unpleasant experiences of natural delivery, and the insistence of parents and relatives. The need for preparation and psychological counseling before childbirth for both parents is evident. In agreement with this result, in previous studies, the mother's previous experience was an essential factor in choosing the type of delivery (15-17).

By examining the factors independently (31 factors), the large size of the fetus, history of maternal complications, maternal pelvic stenosis, pregnancy by artificial methods, previous experience of cesarean delivery, legal concerns followed by problems in childbirth, and the inappropriateness of the natural childbirth tariff, the type of medical center (private or public) inappropriate culture had obtained the maximum score.

In the studies conducted, although several factors have been involved in the decision of doctors in choosing the type of delivery, the mother's insistence, the doctor's fear of litigation, disagreement between experts in selecting the type of delivery, the type of private or public center, were common determining factors (18). It is interesting to note that in a review study, the factor of fear of litigation and court in case of problems and complications of childbirth was included as a key role in the choice of cesarean delivery both in developed countries and in third world countries (19).

In the current study, the age and experience of the specialist showed a positive correlation with the personal opinion of the doctor (belief in the safety of c-section, reducing less harm to the mother, being worried about complications during childbirth, low tariff of natural delivery, shorter cesarean delivery, and legal concerns in case of problems in the process childbirth). In other words, with the increasing age of the doctor, the caution in choosing natural delivery increased.

Obstetricians and gynecologists are the final decision -makers in the selection of the type of delivery. To choose the correct method, there is a need for a specific protocol for selecting the kind of delivery; also, the need to create a suitable platform for the preparation and correct and logical choice of parents, with the

cooperation of psychological consultants in the delivery team, is strongly observed.

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