

Original Paper

Pregnant Women's Views on the Type of Delivery: Determinants and Relationships



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Citation Jalali N, Hadavand Sh, Jafari F, Rabiee M, Khajavi Shojaie K. Pregnant Women's Views on the Type of Delivery: Determinants and Relationships. *J Holist Nurs Midwifery*. 2019; 29(3):167-175. <https://doi.org/10.32598/JHNM.29.3.167>

Running Title Pregnant Women's Views on the Type of Delivery

doi <https://doi.org/10.32598/JHNM.29.3.167>



Article info:

Received: 25/11/2018

Accepted: 07/02/2019

Available Online: 01/07/2019

ABSTRACT

Introduction: In recent years, the rate of delivery by Cesarean Section (CS) has increased in many countries. Many factors are responsible for this trend which are beyond the clinical practice of gynecologists.

Objective: The purpose of this study is to investigate factors related to the preference for delivery type in pregnant women referred to a hospital in Tehran City, Iran.

Materials and Methods: This analytical cross-sectional study was conducted on 400 pregnant women referred to one of the hospitals in Tehran, in 2016. A questionnaire for determining the women's perspective about the factors associated with the choice of delivery mode was used for data collection. It had two parts; the first part surveyed demographic and obstetric characteristics, and the second part evaluated the preference of pregnant women for delivery type. For analyzing data, the Pearson correlation, the Chi-squared test, and t-test were carried out.

Results: The Mean±SD age of the participants was 30.43±4.93 years; 65.8% of them were housewives, and 55.2% had a university education. About 63.5% had not participated in any childbirth education classes. The preferred delivery in 59.28% of the participants was a normal delivery. The correlation test results reported a negative correlation between the scores obtained by pregnant women and their preferred delivery mode (P=0.001, r=-0.6). Furthermore, the t-test results showed a significant difference between the two groups (group in favor of normal delivery and the group in favor of Cesarean Section); those with lower scores (negative views towards normal delivery) preferred CS (P<0.001). The Chi-squared test results reported that women's preference for delivery mode had a significant correlation with their occupation (P=0.042), education (P=0.033), number of children (P=0.001), their first delivery method (P=0.001), and participation in childbirth education classes (P=0.001). In other words, the employed and university student women, those with higher educational level, women with a history of normal delivery and participation in childbirth education classes had a greater tendency toward the normal delivery.

Conclusion: The pregnant women's views on the mode of delivery are related to the choice of delivery mode. Education, training, recommendations of physician and midwife, Spouse, friends, relatives, and maternity preparation classes are directly related to their choice of delivery mode.

Keywords:

Cesarean section, View, Vaginal delivery, Pregnancy

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Highlights

- This study aimed to determine pregnant women's views on the choice of delivery mode and its determinants.
- Based on the study results, women's views on the delivery mode affect their choice of delivery type.
- More than half of the study participants preferred normal delivery.
- The t-test showed different scores in the two groups, so that those who had less score or had a negative view of normal delivery had a preference for Cesarean Section.
- The Chi-square test results showed a significant relationship between the preference of delivery type and the variables of job, education, children number, first delivery method, and attending childbirth classes.
- Female employees and female college students, as well as women with higher education, and those with a natural birth history and, who attending training courses, showed a greater tendency for normal delivery.

Plain Language Summary

Maternity delivery is one of the most important healthcare services and a rise in unnecessary Cesarean Section (without medical reasons) is an unhealthy indicator for countries' health care systems. In recent years, the Cesarean Section rate has increased in all countries. But this increase does not reduce mother and infant morbidity and mortality. Cesarean Section, like any operation, has complications. Maternal and neonatal mortality and morbidity are higher in this delivery compared to the normal delivery. Studies also show that financial costs, hospital stay and admission rates, drug use, and possible side effects of medications in cesarean delivery are significantly higher than normal vaginal delivery. Women's lack of knowledge about the natural ways of giving birth and fear of labor pain are the main reasons to refuse normal vaginal delivery. Unfortunately, Cesarean Section delivery is today not only used in emergencies to save the lives of the mother and the baby but also has turned into a luxury gesture in some societies. Therefore, knowing women's views about the preference of delivery and its determinants can help the health system to reduce the amount of unnecessary Cesarean Section. This study aimed to determine pregnant women's views on the choice of delivery type and its related factors. The results showed that more than half of the participants preferred the normal delivery. Women, who had a negative view of normal delivery, preferred delivery by Cesarean Section. The results showed that preference for the delivery type was related to job, education, the number of children, type of previous delivery, and attending childbirth classes.

Introduction

Maternity delivery is one of the most important health care services in all countries [1], and the increase in unnecessary or elective Cesarean Section (CS) is not a good indicator for countries' health care systems. The World Health Organization (WHO) recommended a maximum CS of 15% with good indication up to 2010 [1-5]. In recent years, CS rates have risen rapidly in all countries, reaching from 20.7% in 1996 to 31.1% in 2006 in the US; while in 2004, the CS rate was 37% in Italy, 35% in Korea, and 25% in Canada [6].

According to 2010 WHO report, the rate of CS in Iran was 41.9% of the total number of deliveries in 2008, which is the second highest growth rate in the world after Brazil [7]. In 2009, the CS rate in Iran was 47.9% [8, 9] and in 2013 it reached 52-54% (second in the world) which indicates its unfavorable situation [10, 11]. Evidence has shown that the CS rate increase greater than 15% have not led to a reduction in the mortality of the mother and the baby [12]. Previous studies have highlighted potential causes for the increasing CS rate, including mother's request [12, 13], legal and ethical issues [13-15], obesity [16, 17], and increased maternal age [18-20].

Elective CS has advantages such as decreased still-birth, reduced cerebral palsy, reduced bone fractures, delivery schedules, and shorter labor. However, like any

operation it has complications such as wound site infection, pelvic infections, pulmonary infection, urinary tract infection, pulmonary embolism, vein thrombosis, and some complications of anesthesia; so maternal and neonatal mortality and morbidity in CS is more than in normal delivery [21, 22]. Studies also show that financial costs, length of hospital stay, drug use, and possible side effects of drugs are significantly higher in CS than in normal delivery [23-25]. Furthermore, recent studies have shown that CS has an adverse effect on fertility, weight of the neonates, and early neonatal injuries. It also causes postpartum depression [26-28].

The lack of knowledge of women about the complementary ways of normal delivery and the fear of labor pain are the main reasons women refuse to have a normal delivery. Today CS is not used only in emergencies and for saving the lives of the mother and the baby, but in some societies, it is gradually becoming a luxury gesture [25, 29, 30]. According to the theory of reasoned action, the intention is the main determinant of behavior which is a combination of mental attitudes and norms toward behavior. Each person's attitude to personal experiences is created by different situations which determine the person's perspective on the world and him/herself. It also determines the type of person's behavior in different situations, which can be changed from negative to positive by study, knowledge, and practice [31, 32].

Considering what was discussed, we aimed to determine the factors associated with the preference for the delivery mode in pregnant women referred to prenatal care clinic of a hospital in Tehran towards the type of delivery.

Materials and Methods

This study was an analytical cross-sectional study conducted in one of the hospitals in Tehran City, Iran. The study population consisted of all pregnant women referred to the prenatal care clinic of the hospital. Of them, 400 samples including nulliparous and multiparous pregnant women in their third trimester without any obstetric diseases were selected using convenience sampling method. According to sample size formula at 95% confidence interval ($z^{1-\alpha/2}=1.96$, $\alpha=0.05$) and considering error (d)=0.05 and the variance of the mean score for the viewpoints of pregnant women about the type of delivery ($s^2=0.25$) obtained based on the preliminary study on 30 subjects, the sample size was determined as 385. To be on the safe side, the number increased to 400.

The study data were collected in 2016 using a questionnaire based on the one designed by Mohammadpourasl et al. [5]. This questionnaire has been used in other studies, too [33]. It has questions about demographic and obstetric characteristics and the preference of pregnant women for delivery mode. The preference part has been rated based on a 5-point Likert-type scale ranged from "completely agree" to "completely disagree". In positive questions, the scoring is as following: "completely agree" +2, "agree" +1, "disagree" -1, "completely disagree" -2, and "no idea" 0. For negative questions, reverse scoring was used. The total score ranged from +44 to -44.

To determine the validity of the questionnaire, it was sent to the faculty members of the School of Social Medicine, and necessary corrections were made based on their opinions in terms of face and content validity. For its internal consistency, a Cronbach alpha of 0.7 was obtained. For estimating the reliability of the questionnaire, test-retest reliability was performed on 20 samples, and a correlation coefficient of 0.82 was obtained. To analyze the scores, the total score obtained from the participants was divided into four levels of very good, good, fair, and unfavorable based on a mean and Standard Deviation (SD) of ± 2 . Two SDs higher than the mean denoted very good level, one SD greater than the mean referred to good level, equal to the mean was moderate level, and less than the mean was unfavorable level. It should be mentioned that, before collecting data, verbal consent was obtained from the participants. The collected data were analyzed in SPSS V. 16 using the Pearson correlation, the Chi-squared test and t-test. The ethical code for this study was obtained from the Research Ethics Committee (IR.shahed.REC.1394.104).

Results

The Mean \pm SD age of the women was 30.43 \pm 4.93 years ranging between 18 and 43 years. Regarding occupation, 17.2% were employee, 65.8% housewives, 7.8% students, and 9% other occupations. Regarding education, 55.2% had a university education, 43.2% high school education; 1% middle school education, and 0.2% elementary education. Regarding income, 17.2% earned over \$600 monthly, 61.8% between \$300 and \$600 monthly, and 17.5% less than \$300. Table 1 presents descriptive data about the obstetric history of the study participants. The collected data showed that 59% ($n=198$) preferred normal delivery and 41% ($n=136$) CS. In 77.1% of samples, the medical staff recommended natural childbirth, and the most recommendations for CS (40.6%) was from friends.

Table 1. Descriptive data about the obstetric history of the study participants

| Variables | N (%) | |
|--------------------------|--------------------------|------------|
| Number of children | 0 | 176(44.9) |
| | 1 | 174(44.4) |
| | 2 | 38(9.7) |
| | >2 | 4(1) |
| | Total | 392(100)* |
| History of infertility | Yes | 22(5.7) |
| | No | 361(94.3) |
| | Total | 383(100)* |
| History of stillbirth | Yes | 17(4.5) |
| | No | 357(95.5) |
| | Total | 374(100)* |
| Gestational age | 28-32 weeks | 99(25) |
| | 32-36 weeks | 112(28.3) |
| | >36 weeks | 185(46.7) |
| | Total | 396(100)* |
| Planned pregnancy | Wanted | 330(83.1) |
| | Unwanted | 67(16.9) |
| | Total | 397(100)* |
| Birth method of women | Normal delivery | 339(86) |
| | CS | 55(14) |
| | Total | 394(100)** |
| First delivery (normal) | 69(33) | |
| First delivery (CS) | 140(67) | |
| History of delivery mode | Total | 209(100)* |
| | Second delivery (normal) | 14(27.5) |
| | Second delivery (CS) | 37(72.5) |
| | Total | 51(100)* |

* The difference in total number was because some questions remained unanswered.

Table 2 presents information about the recommendations for the choice of delivery mode. Only 13.5% of participants completed childbirth education classes; 22.8% had incomplete participation, and 63.5% had not participated in these classes. Of those who took part in these classes, 40.2% considered these training effective, and 59.8% considered it useless. In response to the question: "if there was a better method to reduce or eliminate normal labor pain, would you prefer this method to CS?" 67.5% answered "yes", and 28.5% said

"no". **Table 3** presents the frequency of responses to the questions about the preference for delivery mode.

The mean score of the pregnant women participated in this study was 9.7 ± 1.2 with a maximum score of 34 and a minimum of -19. The Kolmogorov-Smirnov test results showed that the scores had a normal distribution. By using the Pearson correlation test, a negative correlation was observed between the mothers' scores ($P=0.001$, $r=-0.6$) and delivery mode, i.e. those with higher scores did not prefer CS. The t-test results showed a difference

Table 2. Frequency of recommendations for the choice of delivery mode

| Recommender | Delivery Mode | N (%) |
|---------------|---------------|-----------|
| Medical staff | Normal | 270(77.1) |
| | CS | 80(22.9) |
| | Total | 350(100) |
| Spouse | Normal | 233(62.1) |
| | CS | 142(37.9) |
| | Total | 375(100) |
| Friends | Normal | 230(59.4) |
| | CS | 157(40.6) |
| | Total | 387(100) |

between the two groups with a tendency towards normal delivery and CS ($P < 0.05$).

The history of infertility, the wanted or unwanted pregnancy, and the history of stillbirth had no relationship with the preference of delivery mode in the participants. However, the mother's preference for delivery

mode had a significant correlation with their occupation, education, number of children, method of their birth, first delivery method, second delivery method, participation in childbirth education classes, training effect, medical staff recommendation, Spouse's recommendation, and advice of friends and relatives (Table 4).

Table 3. Frequency of responses to the questions about the preference for delivery mode

| Statements | N (%) | | | | |
|---|------------------|-----------|-----------|----------|---------------------|
| | Completely Agree | Agree | No Idea | Disagree | Completely Disagree |
| Normal delivery is a natural and appropriate method compared to CS | 203(50.8) | 105(26.2) | 55(13.8) | 22(5.5) | 8(2) |
| Because of the fear of normal delivery pain, I prefer CS. | 100(25) | 51(12.8) | 45(11.2) | 87(21.8) | 108(27) |
| After a normal delivery, the mother has less pain than after CS. | 237(59.2) | 83(20.8) | 44(11) | 19(4.8) | 12(3) |
| Because of repeated examinations in the labor room, normal delivery is the second preferred mode of delivery compared to CS. | 79(19.8) | 79(19.8) | 99(24.8) | 82(20.5) | 45(11.2) |
| Postpartum hemorrhage after normal delivery is less than after CS. | 79(19.8) | 106(26.5) | 178(44.5) | 25(6.2) | 4(1) |
| Because of the fear of vaginal tears and stitches after normal delivery, CS is preferable. | 66(16.5) | 72(18) | 95(23.8) | 97(24.2) | 59(14.8) |
| Mothers with normal delivery return to normal state faster than those with CS. | 247(61.8) | 95(23.8) | 35(8.8) | 20(5) | 1(0.2) |
| Mothers with normal delivery have better communication with the baby after birth, and their lactation is more successful compared to those with CS. | 209(52.2) | 75(18.8) | 52(13) | 38(9.5) | 24(6) |
| There is a risk of urinary and fecal incontinence in normal delivery compared to CS. | 93(23.2) | 74(18.5) | 192(48) | 21(5.2) | 14(3.5) |
| There are no risks of surgery and anesthesia in normal delivery. | 169(42.2) | 149(37.2) | 68(17) | 8(2) | 4(1) |

| Statements | N (%) | | | | |
|---|------------------|-----------|-----------|----------|---------------------|
| | Completely Agree | Agree | No Idea | Disagree | Completely Disagree |
| Natural birth is better for baby's health compared to CS. | 137(34.2) | 78(19.5) | 109(27.2) | 35(8.8) | 24(6) |
| The pregnant mother and her Spouse have the right to decide on the delivery mode, and their decision should be respected. | 245(61.2) | 89(22.2) | 51(12.8) | 2(0.5) | 7(1.8) |
| The length of stay in hospital after normal delivery is shorter than after CS. | 183(45.8) | 104(26) | 82(20.5) | 17(4.2) | 6(1.5) |
| The threat to baby's health delivered normally is less compared to those delivered by CS. | 84(21) | 54(13.5) | 179(44.8) | 72(18) | 7(1.8) |
| Normal delivery is an important and enjoyable experience in a woman's life. Those giving birth by CS will miss this pleasure. | 95(23.8) | 104(26) | 106(26.5) | 48(12) | 42(10.5) |
| Friends and relatives who have had CS are more satisfied with their delivery. | 76(19) | 126(31.5) | 110(27.5) | 67(16.8) | 15(3.8) |
| Normal delivery compared to CS reduces baby's intelligence. | 19(4.8) | 24(6) | 196(49) | 60(15) | 94(23.5) |
| For women who request tubal ligation, CS is better. | 74(18.5) | 81(20.2) | 208(52) | 4(1) | 9(2.2) |
| If the first delivery is performed by CS, the subsequent deliveries should also be carried out by CS. | 82(20.5) | 111(27.8) | 110(27.5) | 65(16.2) | 28(7) |
| After normal delivery, the risk of infection of the wound, uterus, etc., is lower than after CS. | 95(23.8) | 104(26) | 159(39.8) | 14(3.5) | 19(4.8) |
| In normal delivery, the risk of bladder and uterine prolapse is higher than in CS. | 110(27.5) | 123(30.8) | 138(34.8) | 15(3.8) | 9(2.2) |
| Since the time of normal delivery cannot be planned, this method is less preferred than CS. | 66(16.5) | 105(26.2) | 110(27.5) | 73(18.2) | 40(10) |

Discussion

Based on the findings of this study, the CS preference rate in this study was about 41% which is relatively high. In the study of Pourheydari et al., and Fathollahi et al. these rates were reported 63.2% and 47%, respectively [34, 35]. The lower rate reported in our study can be due to changes in the health policies of the country and planning to reduce the rate of CS. According to Leone et al. study, social interaction and exchanging reproductive health information can reduce the rate of CS [36]. This result is impressive concerning the theory of social propagation about accepting peers behaviors. Our study showed that the majority of pregnant women had a positive attitude towards normal delivery and earned higher scores and thus preferred normal delivery which is consistent with the findings of Pourheydari et al. [34], but different from the results of Shahraki-Sanavi et al. [4]. This difference can be attributed to the time interval between two studies, cultural differences, or the experiences of samples from their previous delivery.

Pregnant women who were employees or university students preferred normal delivery compared to those who were housewives. Moreover, this study showed that occupation could determine the choice of delivery mode. Results of Safari-Moradabadi et al. confirmed this result and concluded that employed women preferred normal delivery more than unemployed women [11]. However, in some studies, employed women requested CS more [4-6, 37].

The study found that women with primary education and less than high school education preferred CS, while those with high school diploma as well as college-educated women preferred to have normal delivery. Safari-Moradabadi et al. also found similar results and showed that with the increase in educational level, the preference for normal delivery has also increased [11]. Many studies contradict this conclusion and have reported that women with higher education prefer CS [1, 4-6, 25, 38]. Considering the date of many studies carried out in Iran, it can be argued that the results of the present study contradict

Table 4. The relationship between effective factors and the preference for delivery mode

| Variables | Preference for Delivery Mode N (%) | | Sig.* | |
|---|------------------------------------|-----------|----------|-------|
| | Normal Delivery | CS | | |
| Occupation | Employee | 47(68) | 22(32) | 0.008 |
| | Housewife | 166(64.4) | 84(33.6) | |
| | Students | 29(93.5) | 2(6.5) | |
| | Other | 29(80.6) | 7(19.4) | |
| Number of children | No child | 130(75) | 43(25) | 0.001 |
| | 1 | 74(44) | 94(56) | |
| | 2 or more | 26(62) | 16(38) | |
| The way mothers were born | Normal delivery | 208(63) | 122(37) | 0.002 |
| | CS | 22(40) | 33(60) | |
| The first delivery mode | Normal delivery | 57(84) | 11(16) | 0.001 |
| | CS | 36(27) | 99(73) | |
| The second delivery mode | Normal delivery | 12(86) | 2(14) | 0.008 |
| | CS | 16(44) | 20(56) | |
| Participation in childbirth education classes | Yes, all of them | 46(87) | 7(13) | 0.001 |
| | Yes, some of them | 67(75) | 22(24) | |
| | None of them | 121(49) | 127(51) | |
| Training effect | Yes | 84(87) | 13(13) | 0.001 |
| | No | 13(35) | 24(65) | |
| Medical staff recommendation | Normal delivery | 196(73) | 71(27) | 0.001 |
| | CS | 21(26) | 59(74) | |

*The Chi-squared test

some of the previous studies due to change in the country's policies in promoting normal delivery.

Our study results indicate a significant relationship between the preference of the delivery mode and the previous delivery method, where pregnant women preferred to give birth by the same method they used for their previous delivery. This result has also been reported in other studies [33, 39]. Preference for the delivery mode in this study was also correlated to the method by which the participants themselves were born which can be attributed to the influence of their mothers, although a similar study was not found for comparison. The findings of this study showed that

the preference for delivery mode could be influenced by the inductions and claims of people around such as doctors, mothers, friends and relatives, social media, and national plans. This finding is consistent with the results of Kashfi et al. study [32].

These inductions and claims can be right or wrong, but what's important is that national policies and comprehensive plans in this area can affect all these inductions. For this reason, further studies should be conducted to examine the impact of a national comprehensive plan to reduce the rate of CS and promote normal delivery in different cities.

The limitation of the present study was using a questionnaire to determine the views of pregnant mothers about their preferred type of delivery, which may have failed to unravel all the facts in this issue.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Shahed University (Code: IR.shahed.REC.1394.104).

Funding

The present paper was extracted from the MSN thesis of the first author, in Department of Obstetric and Gynecologic, School of Medicine, Shahed University and has received support from the Deputy of Research of this university.

Authors' contributions

Conceptualization, funding acquisition: Shahrzad Hadavand, Maryam Rabiee; Data collection, preparing the draft: Nooshin Jalali; Data analysis: Farhad Jafari; and Reviewing and editing: Kobra Khajavi Shojaie.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgements

Authors would like to thank the Deputy of Research and staff of Mostafa Khomeini Hospital for their valuable cooperation.

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