

# Investigation of factors affecting the tendency to choose the type of delivery in pregnant women referring to hospitals of Ardabil Province in 2016

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## ABSTRACT

**Background and Purpose:** Childbirth is one of the most challenging events in a married woman's life and it has important emotional consequences for each woman. It is also a multidimensional process that has physical, physiological, psychological, emotional, cultural, and social dimensions. The aim of this study was to investigate the factors affecting the tendency to choose the type of delivery in pregnant mothers in hospitals of Ardabil Province in 2016. **Methodology:** This study is a cross-sectional research that was conducted on 300 pregnant women who were referred to the hospitals for delivery during 3 months in 2016. Data collection tools was a five-part questionnaire including demographic, awareness, attitude, abstract norm questionnaires (other's role) in choosing delivery method, and Behavioral Intention Questionnaire was used in choosing the type of delivery. **Results:** Statistically, there was not any significant relationship between level of awareness and type of delivery in pregnant mothers ( $P = 0.07$ ). The mean scores of attitude in mothers with a tendency to natural delivery were  $35.75 \pm 14.43$ , and in mothers with a tendency to cesarean was  $46.3 \pm 10.96$ . ANOVA test showed statistically a significant relationship between attitude toward cesarean and type of delivery ( $P < 0.05$ ). Chi-square test showed statistically a meaningful relationship between the recommendations of acquaintances, mothers, husbands, and doctors with choosing a type of delivery ( $P < 0.05$ ). **Conclusion:** Regarding the results of research, especially the positive attitude and high level of awareness in the choice of natural delivery, the promotion of natural delivery will be possible with education.

**Keywords:** Cesarean, natural delivery, reasons of choosing

## Introduction

Childbirth is one of the most challenging events in a married woman's life that considers important consequences from biological, mental, and social aspects.<sup>[1]</sup> Pregnancy, childbirth, and motherhood have important emotional consequences for any woman,<sup>[2]</sup> and it is a multidimensional process with

physical, psychological, psychological, emotional, cultural, and social dimensions.<sup>[3]</sup> Natural delivery is a physiological process that starts with pain and gradually with increase of severity and decrease of intervals, leads to the outflow of fetus from the birth canal.<sup>[4]</sup> Natural childbirth, economically is affordable, the length of hospitalization after delivery in the hospital is shorter than cesarean, there is no need for anesthesia and there is less chance of infection and bleeding afterward.<sup>[5]</sup>

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Cesarean is another method of delivery in which the placenta, embryo, and membranes are removed through the incision in the abdominal wall and the uterus<sup>[6]</sup> and is one of the most commonly used surgeries in the world that aims to reduce maternal and fetal birth complications. Although cesarean, in special circumstances, saves the mother and the baby's life, it has significant side effects.<sup>[7]</sup> In most cases, natural delivery is the best method of delivery for mothers and cesarean section is limited to cases where delivery is not possible naturally and is associated with serious risks to the mother or the fetus.<sup>[8]</sup> Cesarean surgery is associated with complications such as fever, infection, bleeding, bowel obstruction, increased risk of hysterectomy, and possibility of damage to the bladder and urethra, emotional and psychological complications,<sup>[8]</sup> venous thrombosis, anesthetic complications, risk of placental previa in later pregnancies, increase of infertility, and ectopic pregnancy.<sup>[6]</sup> Cesarean complications in infants may also be associated with asphyxia, respiratory distress, and other respiratory disorders.<sup>[9]</sup> The maternal mortality rate in selective cesarean delivery is 2–3 times higher than natural delivery<sup>[10]</sup> and despite the beneficial results and safety of baby and mother, it can lead to increased mortality in mothers and infants.<sup>[11]</sup> Furthermore, the number of lost years due to premature death and resulting disability from cesarean section is 20.6 years and for natural delivery is 8.8 years/1000 births.<sup>[7]</sup> On the other hand, the financial burden imposed by choice of cesarean is significant for the health service delivery system. The predicted cost of cesarean section in the whole world was \$432 million in 2008, while in the same year, spending cost on cesarean surgery was \$2.32 billion. It was estimated that a decrease in cesarean by 15%, economically saved \$108495217 for Iran.<sup>[7]</sup> Despite the numerous complications of cesarean, excessive expectations to cesarean as a delivery method during the past two decades has challenged the initial goal of cesarean.<sup>[6]</sup> Cesarean is increasing throughout the world, which will place financial and practical burden on the health-care system. On the other hand, technological advances and increased medical services have also led to an increase in cesarean.<sup>[12]</sup>

Across the world, cesarean rates have increased from 7.7% in 1990 to 19.1% in 2014, representing an increase of 12.4%. The growth rate of cesarean in developing countries was 14.6% and in developed countries was 12.7%.<sup>[13]</sup> While the World Health Organization (WHO) states in 1985, the prevalence of cesarean in excess of 15% cannot be justified for any region of the world.<sup>[14]</sup> Since early 1985, selective cesarean has been discussed and according to International Organization for the Study of Gynecology, Obstetrics and Gynecology in 1999, the choice of cesarean section due to unmedical reasons cannot be justified behaviorally.<sup>[15]</sup>

Currently, the cesarean in Iran has increased from 16% in 1985 to 60% in 2013.<sup>[16]</sup> Some studies have estimated this level about 50% to 60%, which is three to four times more than the recommended level by the WHO.<sup>[17]</sup> Meanwhile, there is a significant difference between the international cesarean statistics (10%–20%) and Iran (50%–60%).<sup>[13]</sup> Therefore, in Iran, nearly half of women

give birth to their children through surgery and cesarean,<sup>[16]</sup> and according to the WHO, 13% to 20% of cesarean are due to medical problems in Iran<sup>[18]</sup> and about 75% of deliveries by cesarean are unnecessary and selective.<sup>[13]</sup>

Researches done in Ardebil province (one of the provinces of the Northwest region of Iran) and also the present study; indicate an increase in the rate of cesarean, the monitoring and evaluation system of fertility services in the Ministry of Health and Medical Education of Iran in 2005 reported the rate of cesarean in Ardebil from 43.1% in 2005 to 52.7% in 2009.<sup>[13]</sup> Considering the consequences of cesarean, it is important to pay attention to its effective factors. One of the factors contributing to the increase in cesarean is the choice of mother,<sup>[19]</sup> also, mothers' fear from natural delivery, negative attitude, attribution of false complications to it, and wrong beliefs about superiority of cesarean section are other factors.<sup>[20]</sup> Studies in women with the first pregnancy experience in Iran have shown that the existence of degrees of fear, inappropriate informing methods, and social factors, motivation to obey the physician and health-care personnel are the most important factors in choosing the type of delivery.<sup>[8]</sup> Furthermore, the pain of childbirth, infant health, emotional aspects and doctor's recommendation,<sup>[12,21]</sup> mothers' high age, obesity, the relationship between mother and doctor, and mother's request can increase the rate of cesarean.<sup>[11]</sup> A gynecologist's opinion is another important factor in choosing cesarean because most of the gynecologist believe that the pain and length of delivery in cesarean are much lower and pregnant mothers have the right to choose their delivery type, therefore, vaginal delivery is not the best method for termination of pregnancy.<sup>[18]</sup> However, due to the complications of cesarean, physicians should always be careful about childbirth method.<sup>[11]</sup> The unexplained and irregular increase of cesarean has led to the increase of financial burden on the health system of communities, and share of health care has increased significantly from national production per capita. For this reason, in countries where the incidence of cesarean is 20% to 30%, many attempts are being made to reduce it.<sup>[17]</sup> In recent years, international organizations, including the WHO, have emphasized that cesarean delivery is based on its indications.<sup>[22]</sup>

Since one of the strategies to reduce the rate of cesarean is to study the causes and factors involved in this issue, pregnant mothers' selection is one of the intervening variables in this regard. In the conducted studies in Ardebil, this variable was ignored most of the time, so the aim of this study is to investigate the effective factors in the choice of type of delivery in mothers. So that, more attention should be paid to the reasons for the choice of delivery by the mothers and if possible, effective factors can be adjusted for choosing the right kind of childbirth.

## Methodology

This study is a cross-sectional research that was conducted on 300 pregnant women who were referred to the hospitals of Ardebil University of Medical Sciences for delivery during 3 months in

2016. Sample of study included all the women who referred to the treatment centers for one of the delivery methods (cesarean section or natural delivery) in their 3<sup>rd</sup> month of pregnancy, and they were satisfied to participate in the study. The women who were unsatisfied, excluded from study. There was not any age limit to participate in the study.

At 95% confidence level, absolute error of 20%,  $P = q = 0.5$ , and volume of 1500 people in the community in 2016, 300 people were determined as sample of the study using the Cochran sample size formula (with specific size of society). The distribution of samples in the medical centers of the cities was as follows: 50 women from Germe, 100 women from Parsabad, and 150 women from Ardebil. For data collection, after explaining the aim of the study to participants, the questionnaire was completed by them and returned to the researcher. If the participant was not able to do so, the questionnaire was completed by the trained samplers.

The tool for collecting data was a five-part questionnaire. For data collection, the demographic form (age, education, occupation, and place of residence, birth rank, abortion history, and history of giving birth a dead infant, history of infertility, and reason of referral) was used. The second part contained ten questions with four answers regarding the level of awareness about delivery methods and related complications. The score for correct answer was 1, and for wrong answer was zero, and a higher score indicates higher awareness. Based on the obtained scores, pregnant mothers are classified into three classes: with low awareness (0–4), with moderate awareness (4–8), and with good awareness (8–10). The instrument for measuring attitude toward doing cesarean also included 16 items, in which people's attitudes based on Likert scale (totally agree, agree, impartial, disagree, and totally disagree) were adjusted from one to five, respectively. Moreover, higher scores represented a positive attitude toward cesarean section and lower scores indicated a tendency to natural delivery. The fourth part of the questionnaire included seven questions related to abstract norms (role of others) in choosing the delivery method. Finally, the fifth part was related to the question of behavioral intention in choosing the type of delivery including a question with four options, either a definite or probable choice of natural delivery or cesarean section, the second question was open-ended about the cause of finalization. The validity of the tool was assessed through content validity by two midwives and five faculty members and applying their views. Reliability was 96% by Cronbach's alpha method.

Ethical considerations included freedom to participate in the study, satisfaction of participants, anonymity, and freedom of samples to leave the study. The study was also approved by the Medical Ethics Committee of Medical Sciences University of Ardebil on July 15, 2016 with code number of IR.arums.rec.2016.38. SPSS 21 (Chicago, IL, USA) software version 18 was used to analyze the data. The descriptive statistics of mean, standard deviation, and Chi-square (to investigate the relationship

between qualitative variables) and one-way ANOVA were used.  $P < 0.05$  was considered statistically significant.

## Results

In this study, 300 pregnant women (Ardabil = 150, Germe = 50, and Parsabad = 100) before delivery were evaluated for their desire to choose the type of delivery.

The average age of pregnant mothers was  $26.91 \pm 6.1$ , and their age range was 16–46. One-way ANOVA did not show a meaningful statistical relationship between the average age of pregnant mothers and the choice of delivery type ( $P = 0.82$ ). The majority of pregnant mothers were (35%) graduate students and (93%) were homemakers. Chi-square test results showed that there is a meaningful relationship between the level of education in mothers and type of delivery. Hence, natural delivery was higher among mothers with elementary and guidance education and homemakers ( $P < 0.05$ ). The majority of pregnant mothers were (65%) urbanized, and there was no significant relationship between the place of life in pregnant women and the choice of delivery method ( $P = 0.45$ ), [Table 1]. In examining the history of pregnancy, 150 pregnant women (50%) had the first birth rank and 86 women (28.7%) had the second birth rank. The result of Chi-square test showed a meaningful relationship between birth rank and type of delivery so that, among pregnant mothers with a birth rate of more than four, normal delivery was common, and in women with the first birth rate of delivery, cesarean section was more than other pregnant mothers ( $P = 0.04$ ).

The range and average age of pregnancy were 16–42 and  $37.63 \pm 2.63$  weeks, respectively. Regarding the history of previous pregnancy, 45 women (18%) had abortion history, 4 women (1.3%) had a history of giving birth a dead baby, and 22 women (7.3%) had a history of infertility. The majority of patients (33.7%) referred to the hospital due to delivery pain. Chi-square test showed no significant relationship between pregnancy age, abortion history, history of stillbirth, infertility, and the reason for referring to the hospital by choosing a type of delivery ( $P > 0.05$ ) [Table 2].

One-hundred and sixty-seven infants were boys (55.7%) and 133 infants were (44.3%) girls, but there was no statistically significant relationship between the sex of infant and type of delivery ( $P = 0.29$ ).

The mean score of awareness in pregnant mothers with a tendency to natural delivery was  $5.97 \pm 1.82$  and in women with a tendency to cesarean section was  $6.14 \pm 1.57$ . Regarding awareness about delivery methods and its complications, 125 (41.8%) pregnant women had good awareness and 112 women (36.7%) had moderate awareness. There was no statistically significant relationship between level of awareness and type of delivery in pregnant mothers ( $P = 0.07$ ) [Table 3].

**Table 1: Relationship between demographic characteristics of pregnant mothers and the choice of delivery type in mothers referring to educational hospitals of Ardabil Province in 2016**

Demographic characteristics	Choosing the type of delivery				P
	Probably natural, n (%)	Probably cesarean section, n (%)	Certainly natural, n (%)	Certainly cesarean section, n (%)	
Age					
<20	0	4 (13)	19 (63.3)	7 (23.3)	0.09*
20-29	15 (8.8)	14 (8.2)	87 (51.2)	54 (31.8)	
30-39	3 (3.8)	5 (6.4)	48 (61.5)	22 (28.2)	
≥40	0	2 (40)	3 (60.0)	0	
Education					
Elementary	3 (5)	2 (3.3)	36 (60.0)	19 (31.7)	0.007**
Guidance	4 (5.6)	4 (5.6)	49 (68.1)	15 (20.8)	
Diploma	7 (6.7)	8 (7.6)	50 (47.6)	40 (38.1)	
Occupation					
Practitioner	18 (6.5)	21 (7.5)	156 (55.9)	84 (30.1)	0.028**
Homemaker	3 (14.3)	5 (23.8)	8 (38.1)	5 (23.8)	
Location					
City	15 (7.7)	18 (9.2)	100 (51.3)	62 (31.8)	0.45**
Village	6 (5.7)	8 (7.6)	64 (61)	27 (25.7)	

\*One-way ANOVA, \*\*Chi-square test

**Table 2: Relationship between previous history of pregnancy and the reason for referral to hospital in mothers who were admitted to educational hospitals of Ardabil in 2016**

Previous history	Choosing the type of delivery				P
	Probably natural, n (%)	Probably cesarean section, n (%)	Certainly natural, n (%)	Certainly cesarean section, n (%)	
Birth rating					
First	10 (6.7)	17 (11.3)	(45.368)	55 (36.7)	0.04*
Second	9 (10.5)	2 (2.3)		22 (25.6)	
Third	1 (1.9)	6 (11.5)	36 (69.2)	9 (17.3)	
Fourth	1 (12.5)	1 (12.5)	4 (50.0)	2 (25.0)	
More	0	0	3 (75.0)	1 (25.0)	
Abortion history					
Yes	3 (5.6)	3 (5.6)	35 (64.8)	13 (24.1)	0.41*
No	18 (7.3)	23 (9.3)	129 (52.4)	76 (30.9)	
History of stillborn baby					
Yes	1 (25)	0	3 (75.0)	0	0.29*
No	20 (6.8)	26 (8.8)	161 (54.4)	89 (30.1)	
Infertility history					
Yes	4 (18.2)	0	12 (54.5)	6 (27.3)	0.09*
No	17 (6.1)	26 (9.4)	152 (54.7)	83 (29.9)	
Cause of referral					
Delivery pain	10 (9.9)	10 (9.9)	57 (56.4)	24 (23.8)	0.07*
Rupture of Membranes	1 (4.2)	1 (4.2)	16 (66.7)	6 (25.0)	
Bleeding	3 (9.4)	0	19 (59.4)	10 (31.2)	
Doctor suggestion	2 (2.6)	12 (15.8)	41 (53.9)	21 (27.6)	
Others	5 (7.5)	3 (4.5)	31 (46.3)	28 (41.8)	

\*Chi-square test

The mean scores of attitude in mothers who had a tendency to natural delivery were  $35.75 \pm 14.43$ , and in mothers with cesarean tendency, it was  $46.3 \pm 10.96$ . One-way ANOVA test showed a statistically significant relationship between attitude toward cesarean and delivery type ( $P < 0.05$ ) [Table 4].

In examining the results of abstract norms (role of others) among those who had chosen natural delivery, the suggestion

of pregnancy termination was offered to 195 (65%) people of pregnant mothers, friends, and relatives; 128 (42.7%) husbands; 195 (65%) mothers; and 196 (65.3%) doctors. Regarding the choice of cesarean section as a delivery method, the suggestion of pregnancy termination was offered to 69 friends and relatives (21%), 72 husbands (24.3%), 63 mothers (21%), and 84 physicians (28%). Chi-square test showed statistically a meaningful relationship between the suggestion of acquaintances, mothers,

husbands, and doctors by choosing a type of delivery ( $P < 0.05$ ), [Table 5]. The source of information about delivery methods and complications was in 207 (69%) doctors and 72 (57.3%) health staff. Considering the importance of the proposers, physicians (59.7%) and health workers (17.7%) devoted the highest level of importance to themselves.

In the investigation of behavioral intention in pregnant mothers, natural delivery with 185 women (61.7%) was the most preferred delivery method among pregnant mothers. The reason for choosing natural delivery was its lower complications (49.7%), followed by doctor's opinion (27.8%); 115 women (38.3%)

have selected cesarean section and the most common reason for choosing cesarean in mothers was fear from pain (56.6%) followed by doctors' suggestion (28.3%).

## Discussion

A total of 300 pregnant women were evaluated to analyze the factors affecting the choice of delivery. In the present study, the average age of pregnant mothers was about 26, similar to the study of Shahbazzadegan, Lerner (Liat Lerner-Geva) and Ghadimi *et al.*<sup>[23,24]</sup> Fathian *et al.* also reported similar results in their study. In general, in these studies, the average age of pregnant mothers was about 26 that refers to the appropriateness of pregnancy age in women.<sup>[25]</sup>

There was not any significant relationship between the age of pregnant mothers and the type of delivery. According to Vafae *et al.* and Shahbazzadegan *et al.*, there was not statistically any significant relationship between age and type of delivery. On the other hand, some studies such as the researches by Ghadimi *et al.* and Mohammad Beygi *et al.* found that there is statistically a significant relationship between pregnancy age and choice of delivery type. This difference can be due to differences in the number of studied participants, studied communities, cultural differences, and the impact of other factors on the choice of delivery type.<sup>[23,24,26,27]</sup>

The majority of pregnant women had a high school diploma, and there was a significant relationship between the level of education in mothers and type of delivery; mothers with low level of education tend to natural delivery and women with higher level of education tend to cesarean section. Results of studies by Vafae *et al.* and Shahbazzadegan *et al.* were consistent with the results of the present study. Therefore, more information should be given to educated mothers about the benefits of natural

**Table 3: Relationship between awareness of pregnant mothers and the choice of delivery type in mothers referring to educational hospitals of Ardabil Province in 2016**

Choosing the type of delivery	Mean score of awareness	Standard deviation	P
Probably natural	6.04	1.82	0.07*
Probably cesarean section	6.65	1.35	
Certainly natural	5.97	1.82	
Certainly cesarean section	5.62	1.79	

\*Chi-square test

**Table 4: Relationship between attitude of pregnant mothers and the choice of delivery method in educational hospitals of Ardabil Province in 2016**

Choosing the type of delivery	Mean score of attitude	Standard deviation	P
Probably natural	35.90	9.92	0.000*
Probably cesarean section	44.23	10.24	
Certainly natural	35.60	18.94	
Certainly cesarean section	48.37	11.67	

\* Chi-square test

**Table 5: Relationship between abstract norms (others' suggestion) and the choice of delivery method in educational hospitals of Ardabil Province in 2016**

Suggestion of others	Choosing the type of delivery				P
	Probably natural	Probably cesarean section	Certainly natural	Certainly cesarean section	
Acquaintance					
Cesarean	3 (4.3)	13 (18)	20 (29.0)	33 (47.8)	0.000*
Natural delivery	14 (7.2)	10 (5.1)	125 (64.1)	46 (23.6)	
Indifferent	4 (11.1)	3 (8.3)	19 (52.8)	10 (27.8)	
Husband					
Cesarean	4 (5.6)	10 (13.9)	20 (27.8)	38 (52.8)	0.000*
Natural delivery	12 (9.4)	9 (7.0)	85 (66.4)	22 (17.2)	
Indifferent	5 (5.1)	7 (7.1)	58 (58.6)	29 (29.3)	
Mother					
Cesarean	5 (7.9)	11 (17.5)	13 (20.6)	34 (54.0)	0.000*
Natural delivery	11 (5.6)	10 (5.1)	134 (68.7)	40 (20.5)	
Indifferent	5 (11.9)	5 (11.9)	17 (40.5)	15 (35.7)	
Doctor					
Cesarean	8 (9.5)	7 (8.3)	31 (36.9)	38 (45.2)	0.001*
Natural delivery	13 (6.6)	18 (9.2)	123 (62.8)	42 (21.4)	
Indifferent	0	1 (5.0)	10 (50.0)	9 (45.0)	

\*Chi-square test

birth and more studies are needed in this regard. However, some studies by Negahban *et al.* and Lerner *et al.* indicated that there is no significant relationship between the level of education in mothers and the choice of delivery type which indicates that in the communities of these studies, level of education in these mothers does not have impact on the choice of delivery type, and cultural differences and the small number of samples may be effective in this case.<sup>[12,23,26,28]</sup>

The majority of pregnant mothers were homemakers and a few of them were employed, and there was no meaningful relationship between pregnant mother's job and type of delivery. These findings are consistent with the results of studies by Lerner *et al.* and Vafaee *et al.*, and is inconsistent with the results of studies by Gadimi *et al.* and Mohammad Beygi *et al.*, that could be due to the cultural differences of the studied communities, the type of occupation, and their income. Since the participants refuse to answer the question about income levels, further investigation regarding this issue is considered necessary.<sup>[12,24,26,27]</sup>

The majority of pregnant mothers were urban, and there was no meaningful relationship between the place of life in pregnant mothers and the type of delivery. Studies by Vafaee *et al.* and Negahban *et al.* were inconsistent with the results of present study, and in their studies, the rate of cesarean delivery among urban women was higher.<sup>[26,28]</sup> This difference may be due to the difference in the number of examined samples.

There was a significant relationship between the birth rate and the type of delivery. Thus, in mothers with a birthrate of more than four, normal delivery and in mothers with the first birthrate, cesarean delivery was higher than other mothers. The studies by Alimohamadian *et al.* and Ghadimi *et al.*<sup>[24,29]</sup> were consistent with the results of the present study, but they are inconsistent with the results of studies by Vafaee *et al.* and Negahban *et al.*<sup>[26,28]</sup> The difference after second-rate deliveries can be the previous experience of delivery and its impact on the choice of delivery type in mothers. So that if a mother had less pain in her previous natural delivery and without a special problem, she will prefer the same kind of delivery for the second time and vice versa. Furthermore, mothers who have already had cesarean section will force to choose cesarean section again. In first-rate deliveries, the choice of delivery type and more tendency to choose cesarean can be the effect of different factors such as fear from pain, recommendations of friends and acquaintances, physicians, and health-care providers.

There was not any meaningful relationship between the sex of fetus and the type of delivery. In a study by Vafaee *et al.*, there was no meaningful relationship between the sex of infant and the choice of delivery method,<sup>[26]</sup> which means that the sex of infant does not affect the choice of delivery method by the pregnant mother. There was not any study with different results in this case.

Mother's awareness about the cesarean section and natural delivery was good and desirable; however, the results of

statistical analysis showed that there was no significant relationship between level of awareness and type of delivery. The study by Sharghi *et al.* showed that the level of awareness in women who tended to have cesarean section was more likely than who tended to have a natural delivery, but overall awareness was moderate. In the study of Ghadimi *et al.*, awareness of the majority of women about the complications of cesarean section was less than average and in studies by Fathian *et al.*, they had moderate awareness.<sup>[22,24,25]</sup> Biglarifar *et al.* showed that there is a meaningful statistical relationship between level of awareness and attitude with the type of delivery; by increasing the level of knowledge in mothers, positive attitude toward natural delivery increases.<sup>[8]</sup> Ghaffari *et al.* also found in their study that the higher the level of education in mothers, awareness of delivery methods is greater.<sup>[30]</sup> Although the results of the study showed that there was no significant relationship between awareness and choice of delivery method; but according to the studies, it can be stated that the higher the awareness of the mothers, there is a better chance of choosing the type of delivery, and more effort should be made to raise the awareness of mothers.

There was a meaningful relationship between attitude and choice of the type of delivery, so that, when mother's attitude is more positive about a delivery method, it is preferable to choose that kind of delivery. In the study of Ghadimi *et al.*, the attitude of mothers toward normal delivery was above average, while the attitude of mothers toward cesarean section was less than average. There was a significant relationship between type of delivery and attitude. In the studies of Fathian *et al.*, the majority of mothers had a positive attitude toward natural delivery.<sup>[25,24]</sup> Ghaffari *et al.* in their studies showed that the majority of mothers were indifferent and about 30% had a positive attitude toward normal delivery.<sup>[30]</sup> Since attitude can be effective in choosing the type of delivery, the attitude of pregnant mothers should be more positive regarding natural delivery, and this requires effective education about the advantages and disadvantages of both methods of delivery.

The results of abstract norms (others suggestion) showed that there was a significant relationship between the others suggestion and the type of delivery. Sharghi *et al.* in their study showed that the most influential people on the choice of delivery method in both groups of cesarean section and normal delivery were physicians and in the second rank health staff.<sup>[22]</sup> Folsom *et al.* stated that the most important factor in choosing a natural delivery after the history of previous cesarean section is the choice of patient, physicians, spouse, and family members' opinion.<sup>[21]</sup> Other studies also indicated that physicians have the greatest impact on the choice of delivery.<sup>[23,26]</sup> Advice and suggestions of acquaintances, especially physicians, have a great influence on the choice of delivery. Therefore, with proper guidance of mothers and identifying the advantages and disadvantages of both methods of delivery, they can be effective on the correct choice of delivery method and they should take a step to reduce the excessive growth of cesarean section.

Investigation of behavioral intention in pregnant women showed that the majority of pregnant women had the intention of choosing natural vaginal delivery, and the most common cause for choosing natural delivery was lower complications of normal delivery compared to cesarean section. Among the women who chose cesarean section, the most common cause was fear from vaginal delivery pain. The results of the studies indicate that fear from natural delivery pain is the main cause of choosing cesarean section, especially Etghaei *et al.* in their studies indicated that, negative perception of natural delivery pain reduces the choice of natural delivery.<sup>[31]</sup> Lerner-Geva *et al.*, in their study, declared the main cause of cesarean selection as delivery pain.<sup>[12]</sup> Bagheri *et al.* also expressed fear from delivery pain as the main cause of cesarean selection.<sup>[32]</sup> The results of this study and the majority of studies showed that the majority of pregnant mothers prefer natural vaginal delivery but the most common cause of cesarean tendency is fear from natural delivery pain, which necessitates the need for more training. Training in different ways such as speech according to behavioral planning model, and other methods can have a significant impact on the correct choice of delivery type.<sup>[32,33]</sup> Natural delivery without pain can also be used in various ways to replace traditional natural delivery with pain which requires major changes in the policy of the Ministry of Health and the performance of specialists and midwives.

## Conclusion

Regarding the effect of positive attitude and high awareness on the choice of natural delivery, efforts should be made to give mothers more positive and better attitude toward natural delivery by training them. According to the high impact of gynecologist's opinion on the choice of delivery, physicians can promote natural delivery in the province with effective guidance. However, the main reason for the choice of natural delivery was fewer complications and the reason for choosing cesarean delivery was painless delivery. Hence, it should be tried to promote painless delivery with different ways in the community.

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## Conflicts of interest

There are no conflicts of interest.

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