

# The Impact of an Educational Intervention Based on Theory Of Planned Behavior on Selecting Mode of Delivery in Primigravidae Women With Intention of Elective Cesarean Section

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p><b>Background &amp; aim:</b> Reducing cesarean section (CS) rate in order to improve maternal and neonatal health indicators is considered as one of the goals of Iran's health system transformation plan. This study aimed to examine the effect of an educational intervention based on the theory of planned behavior on selecting mode of delivery in primigravidae women with intention of elective CS.</p> <p><b>Methods:</b> This experimental study was conducted on 130 primigravidae women referred to health centers in Neyshabour, Iran, in 2018. Multistage sampling was performed and the subjects were randomly assigned into two groups. In the intervention group, the designed educational package was implemented in four-90-minute sessions and the control group received routine care. The theory of planned behavior constructs were measured by a self-structured tool before and after the intervention. The data were analyzed by SPSS software (version 19) using t-test, Mann-Whitney, and Chi-square tests.</p> <p><b>Results:</b> The results showed that there was no significant difference between the mean score of attitude, subjective norm, perceived behavioral control and intention of primigravide women in two groups. However, after the educational intervention a significant difference was found between the control and intervention groups in terms of attitude (<math>p &lt; 0.001</math>), subjective norm (<math>p &lt; 0.001</math>), perceived behavioral control (<math>p &lt; 0.001</math>) and intention (<math>p &lt; 0.001</math>) towards elective CS.</p> <p><b>Conclusion:</b> Designing educational intervention based on the theory of planned behavior can be an effective strategy to change the positive perceptions of primigravidae women about CS and ultimately decrease the intention to elective CS.</p>
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## Introduction

Birth of a baby is the most amazing event in his/her life and how he/she steps into this world influences physical, psychological, and social dimensions of his/her life. Delivery is a spontaneous process without intervention and begins with a series of regular, automatic, non-intervention changes and ends with birth of the baby. In cases where delivery is not possible

through birth canal or there are risks threatening the mother or baby, C-section is recommended (1). The unprecedented increase in C-section rate over the past decade has led to the increased research in this area as well as debate among professionals, health care providers, governments and policy-makers, and physicians (2).

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Despite increasing demand for C-section, this procedure is riskier than normal delivery due to complications, such as bleeding, infection, endometritis, pulmonary embolism, aspiration, atelectasis, and thrombophlebitis. Moreover, financial costs, maternal hospitalization, medications, and possible side effects of medications in C-section are significantly higher than normal delivery (2). In C-section, mortality rate is 2-3 times and disability rate is 5-10 times more than normal delivery. Babies born by Cesarean delivery are 4 times more likely to die than those born through normal delivery. Rate of respiratory problems in neonates after normal delivery is also lower than those born by C-section (3, 8).

According to the results of studies, the main reasons for prevalence of medical C-section in Iran include the history of C-section delivery and fetal distress. Fear of childbirth, fear of pelvic injury, maternal higher education, maternal employment, and physician's advice are also the most important causes of performing non-medical C-section delivery (5,7). Long in a study (2018) conducted in China showed that the most important reasons for elective C-section were fear of labor pain, risk of natural childbirth, and belief in greater maternal and neonatal health during C-section (9). In many cases, medical reasons alone do not determine delivery type; however, knowledge, beliefs, behaviors, and misconceptions about normal delivery are also crucial (3). Perceived behavioral control and undesirable mental norms of women in pregnancy are among causes for selection of C-section delivery (10, 11). Since, behavior selection is a complex phenomenon and various factors including personal, social, and cultural factors are involved in its development, identifying the factors influencing behavior can help to better understand this phenomenon (12). The results of studies indicated the positive effect of education on increasing awareness and tendency of women to natural delivery (3, 10). Education helps pregnant women to overcome their fears of natural delivery. Moreover, increasing women's awareness of benefits and disadvantages of childbirth type and their involvement in decision-making process of

childbirth lead to a decrease in women's tendency to C-section delivery (4).

One of the most important theories of predicting and understanding behavior is the theory of planned behavior (TPB). According to this theory, the most important determinant of one's behavior is behavioral intention. In this theory, there are three determinants of behavioral intention including attitude (one's belief in the results of behavior and his or her evaluation of those outcomes leading to one's attitudes), abstract norms (influenced by one's beliefs about the others' expectations, as well as one's motivation to meet these expectations), and perceived behavioral control (including the degree to which a person feels that whether or not one's behavior is voluntarily controlled, which is described by two factors of control beliefs and perceived empowerment) (3, 4).

Despite conducting similar studies in other provinces, considering different cultural context of each region and the influence of different factors in choosing type of delivery, this study was conducted to investigate choice of delivery type by pregnant women in Neishabour City (Khorasan Razavi Province, Iran). Another innovation of this study was its conduction on the women with intention of choosing cesarean delivery in order to measure the real effect of education in choosing natural childbirth.

Given that this theory is one of the few models focusing on individual and social factors of behaviors, it can be applied to reproduction attitudes and behaviors. Studies based on this theory have also shown that educational interventions have been effective in optimal behavior (11, 12). Moradi (2019) suggested that an educational program based on the TPB for pregnant women is effective in choosing normal delivery rather than C-section (3). Qasemi (2017) in a study on 87 pregnant women in Shiraz City (Fars Province, Iran) demonstrated the positive effect of education based on the TPB on attitude, perceived behavioral control, and behavioral beliefs in choosing type of delivery (12).

Given high rate of C-section in the country on the one hand and changing population policies on the other hand, special measures should be taken to control C-section rate. Increasing C-section rate, in addition to imposing high costs

on health system of the country, raises many problems in the fields of maternal and neonatal health. Therefore, this study was done to determine the effect of education based on the TPB on selecting delivery type in primigravidae pregnant women with intention of elective C-section in 2018.

## Materials and Methods

This experimental study was performed on 130 primigravidae pregnant women who had referred to Neishabour's comprehensive health service centers from the beginning to 30th week of pregnancy. Sample size was calculated based on the formula.

Considering the possible attrition in sample size, 70 subjects in each group and in total 140 subjects were considered. Finally, 10 people in both groups were excluded from the study due to their unwillingness to participate in the study, irregular participation in educational sessions, and preterm delivery.

The inclusion criteria included being primigravidae, signing an informed written consent, having age between 18-35 years old, gestational age up to 30<sup>th</sup> week, lack of any medical indication of C-section, having non-risky pregnancy, having definite intention for elective C-section, and being literate. The exclusion criteria included unwillingness to cooperate, not attending 2 educational sessions, and imperfect completion of questionnaires.

In this multi-stage sampling study, Neishabour city was divided into 3 socioeconomic regions and 2 centers were randomly selected from each region and each center was randomly assigned to control or intervention groups. Then, available sampling proportional to the size was done among primigravidae pregnant women up to 30<sup>th</sup> week of gestation referring to these centers. First, after checking the cases, pregnant women with intention of C-section meeting the inclusion criteria were selected and then, they were divided into experimental and control groups. A total of 3 centers were identified as the control group and 3 centers as the experimental group and then, the study was started.

Data collection tools included a demographic and midwifery questionnaire and a researcher-made questionnaire on direct constructs of the TPB. The questionnaire consisted of 5 questions

for awareness (minimum of 5 points and maximum of 35 points), 2 questions for behavioral intention (minimum of 2 points and maximum of 14 points), 9 questions for attitude (minimum of 9 points and maximum of 63 points), 5 questions for abstract norm (minimum of 5 points and maximum of 35 points), and 4 questions for perceived behavioral control (minimum of 4 points and maximum of 28 points). Responses to the theory constructs were scored using a 7-point Likert scale (ranging from strongly disagree to strongly agree) with a score of 1-7.

Then, 15 pregnant women with similar conditions to those of the target group were asked to evaluate face validity of the questionnaire. Mistakes of the sentences were investigated. Items, such as level of difficulty in understanding the words and phrases, the degree of appropriateness, appropriate relationship of phrases with dimensions of the questionnaire, and ambiguity regarding misinterpretations of the utterances were also studied. Finally, items with an impact score greater than 1.5 were retained. Lawshe method was also used to evaluate content validity. To this end, 10 experts were asked to comment on importance and necessity of the questionnaire questions. The minimum acceptable content validity ratio (CVR) was equal to 0.62, according to the Lawshe's Table. If the calculated ratio is higher than acceptable value of 0.62, the question will be retained in the questionnaire. Thus, in the questionnaire used in the present study, in the behavioral intention construct, one question was omitted and 2 other questions were edited. Cronbach's alpha method was used to determine reliability of this questionnaire. Cronbach's alpha score was equal to 0.82 in a sample containing 25 pregnant women.

Educational intervention was designed based on cross-sectional study and initial needs assessment for the intervention group. Then, the subjects were informed about the research purpose, the way to complete the questionnaire, and confidentiality of their information. Questionnaires were completed using self-report method by all research units. Then, in the intervention group, educational program was done based on the TPB during four-90 minute sessions with 1 week interval by lecturing,

question and answer, group discussion, film screening, and pamphlet distribution. A pamphlet, film, and educational booklet on advantages and disadvantages of normal delivery and C-section as well as types of painless delivery methods were developed under supervision of experts.

The first session was about awareness of pregnant mothers regarding normal delivery and C-section and their benefits and complications. The second session was about mothers' attitudes to normal delivery and C-section accompanied with talking about their views and discussions. At this session, mothers were asked to share pleasant or unpleasant experiences of each type of delivery related to their family members or close friends. Then, with guidance of the instructor, learners were allowed to discuss using critical thinking regarding their tendency, preference, and beliefs about safe delivery. Then, mothers were educated about different methods of relief and coping with labor pain and then, an educational booklet was prepared for them. Then, pregnant women became familiar with new methods and facilities available at normal delivery-promoter hospitals by screening a film on painless and physiological delivery. The fourth session was

about abstract norms. At this session, the subjects' husbands were invited as one of important people in decision-making and intentions to choose a delivery type. Then, the husbands were asked to express their views on benefits and complications of normal delivery and C-section. After that, a pamphlet was distributed about supportive husbands' strategies for choosing delivery type and reducing stress before delivery. The control group received only routine pregnancy training by midwives of the centers. Questionnaires were completed by both groups after educational sessions.

The data were analyzed by SPSS software (version 19) using descriptive statistics and Kolmogorov-Smirnov test, Independent-Samples and Paired-Samples t-test, Chi-Square test, and Mann-Whitney U test. *P*- Value less than 0.05 was considered as statistically significant.

## Results

In this study, 35 (53.8%) pregnant women in the intervention group and 33 (50.7%) pregnant women in the control group had a gestational age between 20 -30<sup>th</sup> weeks.

**Table 1.** Content of training sessions

Session	Training titles	Structure
1	<b>process of</b> normal childbirth and cesarean section, Medical indications for cesarean section, Benefits of normal childbirth, Complications of cesarean delivery	Awareness
2	Maternal and neonatal outcomes and complications of cesarean delivery, benefits of normal delivery	Awareness Attitude
3	Ways to relieve pain before and during childbirth, Painless delivery methods, Gain the ability to accept a normal delivery, Dealing with labor pains	Awareness Attitude perceived behavioral control
4	Familiarity of spouses with the benefits and complications of normal delivery and cesarean section, How the spouse helps and supports the pregnant woman to choose the type of delivery	abstract norms

Forty-two subjects of the intervention group (64.6%) and 45 subjects of the control group (69.2%) had moderate socioeconomic status. Fifty-six subjects in the intervention group

(86.1%) and 57 subjects in the control group (87.6%) had wanted pregnancy. The two groups were matched in terms of demographic and social characteristics ( $p \geq 0.05$ ). Some characteristics of the studied pregnant women are shown in Table 1.

**Table 2.** Some Personal and Social Characteristics of Pregnant Women in the Control and Intervention Groups

Variable	Intervention	Control	Significance level
<b>Age</b>			
Mean±SD	24.44(4.02)	24.67(4.72)	*0/56
<b>Occupation</b>			
Housewife	53(81.53)	54(83.1)	
Employee	9(13.84)	9(13.8)	**0/79
Self-employed	2(3.1)	2(3.1)	
Worker	1(1.53)	0(0)	
<b>Husband's Occupation</b>			
Unemployed	0	1(1.53)	
Employee	14(21.54)	15(23.07)	**0.89
Self-employed	37(56.92)	36(55.4)	
Worker	14(21.54)	13(20)	
<b>Education</b>			
High school	8(12.3)	9(13.8)	
Diploma	18(27.8)	19(29.23)	
Associate Degree	9(13/8)	8(12.3)	**0.72
Bachelor	24(36.9)	24(36.2)	
Higher	6(9.2)	5(8.47)	

\* Mann-Whitney \*\* Chi-Square

Based on the results of Independent-Samples t-test, there was no significant difference in mean score of awareness, attitude, individual norms, perceived behavioral control, and

intention of pregnant women at the beginning of the study between the intervention and control groups ( $p \geq 0.05$ ).

**Table 3.** Comparison of mean scores of awareness before and after the intervention in the control and intervention groups

awareness	Intervention	Control	Significance level*
	Mean±SD	Mean±SD	
At the beginning of the study	7.06±24.92	5.72±24.78	0.65
After the intervention	4.37±29.55	6.01±24.63	0/001<
Significance level**	0/001<	0.46	

\*\* Independent t \*\* Paired t

However, after administration of educational intervention, in all fields, there was a significant

difference between the control and intervention groups ( $p < 0.001$ ).

**Table 4.** Comparison of mean scores of attitude before and after the intervention in the control and intervention groups

Attitude	Intervention	Control	* Significance level
	Mean±SD	Mean±SD	
At the beginning of the study	38.35±8.01	37.35±7.59	0.46
After the intervention	51.50±6.58	37.49±8.11	<0/001
** Significance level	<0/001	0.67	

\*\* Independent t \*\* Paired

Results of Paired-Samples t-test also showed a significant difference in the intervention group in all fields before and after the intervention ( $p < 0.001$ ).

However, in the control group, there was no significant difference in all fields at the beginning and end of the study ( $p \geq 0.05$ ) (Tables 2-6).

**Table 5.** Comparison of mean scores of behavioral intention before and after the intervention in the control and intervention groups

Behavioral intention	Intervention	Control	* Significance level
	Mean±SD	Mean±SD	
At the beginning of the study	7.40± 2.56	8.06±2.32	0.14
After the intervention	12.00± 1.96	8.16±2.47	<0/001
** Significance level	<0/001	0.71	

\*\* Independent t \*\* Paired t

**Table 6.** Comparison of mean scores of perceived behavioral control before and after the intervention in the control and intervention groups

Perceived behavioral	Intervention	Control	* Significance level
	Mean±SD	Mean±SD	
At the beginning of the study	15.56±5.15	15.63±4.57	0.92
After the intervention	24.29±3.32	15.83±4.75	<0/001
** Significance level	<0/001	0.61	

\*\* Independent t \*\* Paired t

**Table 7.** Comparison of mean scores of abstract norms before and after the intervention in the control and intervention groups

Abstract norm	Intervention	Control	* Significance level
	Mean±SD	Mean±SD	
At the beginning of the study	24.92±7.06	24.78±5.72	0.65
After the intervention	29.55± 4.37	24.63±6.01	<0/001
Significance level **	<0/001	0.46	

\*\* Independent t \*\* Paired t

## Discussion

This study was done to determine the effect of education based on the TPB on selecting delivery type in primigravidae pregnant women with intention of elective C-section. The results showed that mean score of attitude was increased significantly in the intervention group after the educational plan, which is in line with the results of the studies by Keshavarz (2016), Shahraki Sanavi (2013), and Moradi (2019) (3,7,13). Ghasemi (2017) in a study on 87 pregnant women in Shiraz City regarding investigating the effect of educational intervention based on TPB on choosing type of delivery reported that after intervention there was a significant difference in attitude score between the intervention and control groups. These results are consistent with the present study (12). Besharati in a study aimed at

investigating the effect of an educational plan based on TPB on choice of delivery method in Rasht City (Gilan Province, Iran) on 72 pregnant women reported that after the educational plan, attitude score was increased in the intervention group. The results showed the positive effect of education on changing attitude of pregnant women towards type of delivery (14).

Moeini et al., (2011) showed that low awareness and attitude about normal delivery are the main causes of elective C-section (15). In fact, it can be concluded that women's attitude towards type of delivery will determine their delivery method and negative attitude towards normal delivery can be one of reasons for choosing C-section (16).

In this study, after the educational plan, mean score of abstract norm was significantly increased in the intervention group, which is in

accordance with the results of the studies by Besharati (2011), Shahraki (2013), and Rasooli (2019) (4,14, 13). Abdul Karimi (2016) in his study on 200 pregnant women in Orumiyeh City (West Azerbaijan Province, Iran) aimed at predicting type of delivery based on the TPB showed that abstract norm was the most effective factor in predicting delivery method. In this study, it was noted that women whose mental norms support normal delivery are more likely to choose this type of delivery (17). Rahmati Najjar et al., (2014) in their study on 392 pregnant women in Tehran City (Tehran Province, Iran) showed that among the factors of the TPB, abstract norm mostly predicts conscious choice of delivery method in pregnant women (16).

In the present study, abstract norms included husbands, physicians, family members, and community conditions, respectively. It should be noted that in this study, husbands were directly educated due to their influential effect on decision -making about type of delivery.

Based on the results of the present study, there was a significant difference in mean score of perceived behavioral control after the intervention between the control and intervention groups, indicating the positive effect of the educational plan implemented in the intervention group. Moradi et al., (2019) in their study aimed at determining the effect of educational intervention based on the TPB on choice of delivery type in pregnant women in Tehran City showed that after the intervention, perceived behavior control score was significantly higher than the control group ,which is consistent with the results of the present study (3).

Keshavarz (2016), in a study conducted on 90 primigravidae pregnant women aimed at evaluating the effect of educational intervention based on the TPB on choice of delivery method in Yazd City (Yazd Province, Iran) reported that mean score of perceived behavioral control was significantly higher after the intervention in the intervention group compared to the control group, which is consistent with the results of the present study (7).

Beiky et al., (1986) found that perceived behavioral control is the best predictor of delivery type (18). Shahraki (2011) in a study

conducted in Zahedan City (Sistan and Baluchestan Province, Iran) showed that pregnant women who had intention of C-section had poor to moderate perceived behavioral control. In this study, women stated that they were not capable of labor and normal delivery; therefore, they chose C-section (19).

Perceived behavioral control includes perceived barriers and problems preventing pregnant women from making suitable choice regarding type of delivery (7). In fact, women who have low perceived behavioral control do not believe in their ability to cope with delivery pain, and are unable to bear burden of delivery due to their low self-esteem. (17).

Based on the results of the present study, mean score of behavioral intention was increased in the intervention group compared to the control group after the educational plan, which was in line with the results of the research by Keshavarz (2016), Qasemi (2017), and Moradi (2019). Rasouli et al., (2019) conducted a study on 223 pregnant women in their 28-32<sup>th</sup> weeks of pregnancy in Behshahr City (Mazandaran Province, Iran). After implementing the educational intervention based on the TPB, behavioral intention score was found to be higher in the intervention group than the control group, which is consistent with the results of the present study (4).

However, this result is not in line with the results of the study by Ghaffari (2016), which was conducted on 52 pregnant women about application of an intervention based on the TPB in encouraging pregnant women to choose normal delivery in Dena City (Kohgiluyeh and Boyer-Ahmad Province, Iran) as no significant difference was reported in behavioral intention scores before and after performing the educational intervention (20). It may be due to low sample size and the difference in time of implementing the intervention in pregnancy. Education in this study was conducted in the final months of pregnancy, when the participants may have made their choice of delivery from a long time ago. However, in the present study, the educational intervention was performed from the beginning to 30<sup>th</sup> weeks of gestation.

Limitations of this study included the inability to allocate more questions to each of

the theory constructs; since the increased number of questions led to fatigue, discomfort, and boredom of pregnant mothers. Failure to investigate the delivery method of research units was another limitation of this study. One of strengths of this study was the use of an educational model for performing the intervention. In the present study, the first abstract norm was the subjects' husband. Therefore, healthcare authorities of the country are recommended to provide conditions for increasing level of awareness and knowledge of the pregnant women's husbands due to their influential effect in choosing type of delivery in addition to designing educational plans to raise awareness and improve attitude of women and girls in society regarding normal delivery.

### Conclusion

The results of this study showed effectiveness of the education based on the TPB on constructs of attitude, perceived behavioral control, abstract norms, and behavioral intention related to selection of delivery method. Therefore, designing and implementing educational interventions based on these constructs can reduce intention of elective C-section in pregnant women.

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### Conflicts of interest

Authors declared no conflicts of interest.

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