

## The Effect of a Training Program during Pregnancy on the Attitude and Intention of Nulliparous Women to Choose the Delivery Mode

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p><b>Background &amp; aim:</b> Despite the advantages of natural childbirth and complications associated with cesarean section, rate of cesarean delivery has increased dramatically in recent years. Therefore, appropriate training is essential to reducing this trend. This study aimed to evaluate the effects of training about the benefits of natural childbirth on the attitude and intention to select the mode of delivery in nulliparous women.</p> <p><b>Methods:</b> This randomized clinical trial was conducted on 64 nulliparous women with normal pregnancy at 30-34 weeks of gestation without indication for cesarean section referring to the health centers of Mashhad, Iran in 2014. Participants were randomly divided into two groups of intervention (training) and control. Training was focused on the benefits of natural delivery and performed in four sessions (60 minutes) using videos and slides. In both groups, pre-test and post-test were carried out using valid and reliable questionnaires. Data analysis was performed in SPSS V.22 using Fisher's exact test, Chi-square, Wilcoxon test, T-test, and Mann-Whitney U test.</p> <p><b>Results:</b> Mean score of attitude toward natural delivery had a significant difference in the intervention group before and after training (<math>P &lt; 0.001</math>). Mean difference in the score of attitude toward cesarean section was significantly higher in the intervention group compared to control group (<math>P &lt; 0.001</math>). Moreover, frequency of intentions to select the mode of delivery was significantly different in the intervention group before and after training (<math>P = 0.004</math>).</p> <p><b>Conclusion:</b> According to the results of this study, training on the benefits of natural childbirth could positively influence the attitude of pregnant women toward natural delivery and reduce the rate of elective cesarean section.</p>
<p><i>Article History:</i> Received: 10-July-2015 Accepted: 03-Mar-2016</p>	
<p><i>Key words:</i> Attitude Intentions to Select Mode of Delivery Natural Childbirth Training</p>	

► Please cite this paper as:

Yousefzadeh S, Esmaeili Darmiyan M, Asadi Younesi MR, Shakeri MT. Effects of Training about the Benefits of Natural Childbirth during Pregnancy on the Attitude and Intentions to Select the Mode of Delivery in Nulliparous Women. Journal of Midwifery and Reproductive Health. 2016; 4(3): 704-711. DOI: 10.22038/JMRH.2016.7162

### Introduction

Delivery is a spontaneous process without the need for any intervention, with the exception of the cases where the mother or infant are at risk. Under such circumstances, cesarean section is performed to save the life of the mother and infant (1, 2). Compared with caesarean section, natural vaginal delivery has numerous advantages, such as cost-effectiveness, short length of hospital stay and lower risk of

hemorrhage and infection after delivery (3). Furthermore, mothers who have natural delivery are able to initiate early breastfeeding with more success compared to those undergoing cesarean section. As a result, these mothers could promptly establish an emotional relationship with their infants (4).

On the other hand, cesarean section is associated with more complications compared to

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natural delivery. Such examples are fever, infection, bleeding, aspiration, atelectasis, uterine inertia, bowel obstruction caused by adhesions, increased risk of hysterectomy and blood transfusion, neonatal respiratory problems, and psychological disorders. Previous studies have indicated that compared to natural delivery, cesarean section is associated with significantly higher financial costs, length of hospital stay, medication use, and possible drug side effects. Moreover, mortality rate of elective and emergency cesarean section has been estimated at 5.9% and 18.2%, respectively, while this rate is 2.1 per 100,000 cases in natural delivery (1-8).

According to the World Health Organization (WHO), cesarean section should only account for 10-15% of all deliveries, while today; cesarean section is performed in 50-65% of the cases in Iran, 90% of which are reported in private hospitals (9-14).

Despite the benefits of natural delivery and complications associated with caesarean section, pregnant women commonly have a negative attitude toward this mode of childbirth due to the attribution of false complications. As such, rate of natural delivery has been reported to decline in recent years (10). Socioeconomic and cultural factors may play a pivotal role in the selection of the mode of delivery. Evidently, decision of women regarding the mode of delivery is influenced by prevailing views in the society. Therefore, physician recommendation regarding the selection of delivery mode for patients and their relatives is essentially effective in the rate of cesarean section (15, 16).

Tendency and attitude of pregnant women is another significant component in the selection of the delivery mode. According to the studies conducted in Iran, more than 70% of pregnant women tend to prefer cesarean section to natural delivery due to avoidable reasons, such as lack of tolerance for labor pain, groundless fear, and negative attitudes of the general population, which are rooted in lack of knowledge about the process of delivery and childbirth (17-19).

Attitude is defined as the viewpoint of an individual toward a certain subject, which is manifested through their behaviors and interactions with other people. Attitude is the foremost dynamic influencing the behavior and

actions of an individual (12). Attitude is directly correlated with knowledge; therefore, promotion of the knowledge and behavior of individuals could lead to the change of attitude.

Determining and implementing of educational programs requires the enhancement of knowledge and attitude in a specific area (3, 12, 20). In a study, Ali Akbari et al. (2008) assessed the knowledge and attitude toward the mode of delivery in women referring to the health centers in Dezfool, Iran. According to their findings, the majority of patients had poor level of knowledge about the benefits of natural childbirth (21).

In another research, Fathian et al. (2008) evaluated the influential factors in the selection of delivery mode and concluded that increased knowledge improved the positive attitudes and beliefs of the subjects toward natural delivery, which was ultimately effective in the reduction of cesarean section rate (22).

According to the literature, the most effective approach to improve the outcomes and quality of care and treatment (except in emergency cases) is to engage the patient in the decision-making process (20, 23).

Previous studies focusing on the reduction of unnecessary cesarean section have been based on training and education about natural delivery for pregnant women. For instance, Lashgari et al. (2005) investigated the effect of training on the selection of delivery mode by pregnant women and reported that training intervention increased the knowledge of women reducing the demand for cesarean section (20).

In the decision-making process, attitude of the decision-maker plays a key role in interpreting and evaluating the information (12, 20). On the other hand, findings of Waldenstrom et al. (2006) revealed that pregnant women who received training on the mode of delivery still had negative attitudes toward natural delivery and opted for cesarean section (3-6 times more than others) (24).

Researchers in Iran have applied various training techniques to enhance the knowledge of pregnant women in order to reduce the rate of cesarean section on maternal request. Some of these methods are group discussions, training based on the behavioral intention model, and use of educational booklets and videos (12, 13,

15). Nevertheless, statistics in Iran are suggestive of the high rate of cesarean section, which do not correspond with the standard rate proposed by WHO (10-15%). This highlights the need for educational interventions in this area (6, 16), which could result in the positive attitude of pregnant women toward selecting the safest mode of delivery depending on their health conditions (3, 12).

In the study by Fathian et al. (2006), subjects of the control group, who received routine training in health centers, showed no significant difference in the pre- and post-test scores of knowledge and attitude (3). This denoted the incomprehensiveness of routine prenatal care and lack of proper training regarding the selection of cesarean section and natural delivery (12). As such, authors of the current paper emphasized on the knowledge of pregnant women about the modes of childbirth and painless techniques of labor and delivery.

This study aimed to evaluate the effects of training about the benefits of natural childbirth on the attitude and intentions of nulliparous women to select the mode of delivery.

## Materials and Methods

This randomized clinical trial was conducted on 64 nulliparous pregnant women referring to the health centers of Mashhad, Iran in 2014. Sample size was determined based on the formula used in the study by Shahraki Sanavi et al. (2013), entitled the "Effect of training based on the theory of planned behavior on the attitude toward the mode of delivery in pregnant women with the intention of cesarean delivery" (8). According to the findings, training of pregnant women based on the theory of planned behavior was associated with 22% and 4% success rate in the intervention and control groups, respectively. Considering the maximum acceptable error rate of  $d=20\%$ , sample size of this study was calculated at 32 subjects in each group using the following formula:

$$n = \frac{(p_1(1-p_1) + p_2(1-p_2))(z_{1-\alpha/2} + z_{1-\beta})^2}{d^2}$$

( $d=0.2$ ;  $P_1=0.22$ ;  $P_2=0.04$ ;  $\beta=0.2$  [20%])

Health centers were selected via multistage sampling. Initially, a list of five health centers of

Mashhad city was prepared. Since the population covered by health center No. 3 accounts for almost half of the population of this city, one category was allocated to this health center, while the other centers were classified in different categories.

Afterwards, four health centers were selected via proportional-to-size sampling (two centers in each category). Using the random numbers table, one center was selected from these two health centers to receive training on the benefits of natural childbirth, and the other centers were considered as control. Participants were selected via convenience sampling based on the inclusion criteria and objectives of the study.

Inclusion criteria were as follows: 1) primigravida with singleton pregnancy; 2) gestational age of 30-34 weeks; 3) age of 18-35 years; 4) no history of infertility; 5) no obstetric indications for cesarean section and 6) lack of continuous training about the mode of delivery. Exclusion criteria of pregnant women were the presence of medical conditions, abnormal or non-viable fetus based on the ultrasound, abnormal volume of amniotic fluid, and abnormal placental placement.

Data collection tools were demographic questionnaire (15 items), questionnaires of attitudes toward natural delivery and cesarean section (each consisting of 14 items), and a checklist to evaluate intentions to select the mode of delivery (2 items).

The attitude questionnaire was used to assess the attitudes of pregnant women toward natural delivery and cesarean section, and the items were scored based on a five-point Likert scale (strongly agree, agree, no comment, disagree, strongly disagree). Reliability of the questionnaires of attitudes toward natural delivery and cesarean section was determined at the Cronbach's alpha coefficient of 0.94 and 0.93, respectively.

Checklist of evaluating the intentions to select the mode of delivery consisted of two items, which were used to register the decision of pregnant woman regarding the mode of delivery before and after the study. Moreover, this checklist contained items to assess factors such as the decision of pregnant woman and physician recommendation regarding the mode of delivery. Validity of the questionnaires and

checklist was determined through the review of literature and providing expert opinions based on content validity.

After obtaining informed consent, the questionnaires were completed by the participants. In this study, training intervention was implemented in four sessions (60 minutes each) held once a week using PowerPoint lectures with a personal computer. Each session consisted of educational content presentation (35 minutes), recess (10 minutes), and question and answer for the participants (15 minutes). Moreover, the researcher contacted the participants before each training session to remind them of the next session.

The first training session included the overview of childbirth stages (stages zero, one, two and three) and modes of delivery (natural delivery and cesarean section) using various tools, which were elaborated through visual presentation and a brief lecture on the indication of each delivery mode.

In the second session, participants were provided with a description of maternal and neonatal advantages and disadvantages of cesarean section through video screening and photos. In the third training session, subjects were trained on the maternal and neonatal advantages and disadvantages of natural childbirth using videos and photos. The fourth training session was focused on the familiarity of the pregnant women with painless techniques of labor and delivery through photo screening.

For the active participation of pregnant women during the training sessions, the researcher drew two columns on the board classifying the benefits of natural childbirth and disadvantages of cesarean section. Afterwards, participants were provided with flash cards and asked to identify the relation of each card to the columns. At the end of the sessions, participants were briefed on the procedures of vaginal examination, episiotomy, and repair of the episiotomy incision, and an educational pamphlet entitled "Vaginal delivery or C-section?" was provided for the subjects.

At the end of the last training session, the questionnaire of attitude toward natural delivery and cesarean section and checklist of intentions to select the mode of delivery were completed again by the pregnant women. It is

noteworthy that in the intervention group, one participant failed to attend the last training session and was excluded from the study due to lack of post-test. In this study, subjects of the control group received routine prenatal care.

Data analysis was performed in SPSS V.22 using the Fisher's exact test, Chi-square, paired and independent T-test, and Mann-Whitney U and Wilcoxon tests. P value of less than 0.05 was considered significant.

## Results

Mean age of the participants was  $24.2 \pm 3.3$  years. With regard to occupational status, 83.9% of the pregnant women were housewife and 16.1% were employed. The majority of the study subjects had high school diploma (43.55%), and the spouses had secondary education (37.1%). In addition, spouses of the majority of the participants were self-employed (66.1%).

Intervention and control groups were homogenous in terms of age, education level of the spouse, income status, source of information about mode of delivery, insurance type and coverage, and frequency and location of prenatal care visits ( $P < 0.05$ ).

We used the Mann-Whitney U test to compare the frequency of the intentions of pregnant women to select the mode of delivery before and after the intervention, and the results showed a statistically significant difference between the study groups in this regard ( $P < 0.05$ ). Furthermore, our findings indicated that the intentions of pregnant women to select natural delivery increased as much as 25.7% after the intervention in participants receiving training on the benefits of this childbirth mode (Table 1).

According to the results of this study, mean score of attitude toward cesarean section had a significant difference in the intervention group before and after training on the benefits of natural delivery ( $P < 0.001$ ). Considering the mean values in this regard, attitude of pregnant women toward cesarean section reduced after the training intervention (Table 2).

In this study, mean difference of the score of attitude toward cesarean section before and after the intervention was  $5.5 \pm 5.3$  in the group receiving training on the benefits of natural delivery and  $1.2 \pm 3.8$  in the control group. Our findings were indicative of a significant

difference between the women receiving training on the benefits of natural delivery and

control group in terms of the mean difference of attitude scores ( $P < 0.001$ ).

**Table 1.** Comparison of frequency of intentions to select mode of delivery before and after intervention in study groups

Intention to select mode of delivery	Training on benefits of natural delivery	Control	<sup>(1)</sup> Intergroup test results
	N (%)	N (%)	
<b>Before intervention</b>			
Definitely cesarean section	1 (2.3)	5 (16.1)	U=450.5 P=0.659
Probably cesarean section	10 (32.3)	10 (32.3)	
Probably natural delivery	14 (45.2)	6 (19.4)	
Definitely natural delivery	6 (19.4)	10 (32.3)	
Total	31 (100.0)	31 (100.0)	
<b>After intervention</b>			
Definitely cesarean section	0 (0.0)	1 (3.2)	U=351.0 P<0.05
Probably cesarean section	3 (9.7)	11 (35.5)	
Probably natural delivery	13 (41.9)	8 (25.8)	
Definitely natural delivery	15 (48.4)	11 (35.5)	
Total	31 (100.0)	31 (100.0)	
<sup>(1)</sup> Intragroup test results	Z=- 2.86 P=0.004	Z=-1.26 P=0.207	

U test Mann-Whitney <sup>(1)</sup>, Wilcoxon test <sup>(1)</sup>

**Table 2.** Comparison of mean scores of attitude toward cesarean section before and after training intervention in study groups

Score of attitude toward cesarean section	Training on benefits of natural delivery	Control	<sup>(1)</sup> Intragroup test results
	Mean±SD	Mean±SD	
Before intervention	34.9±10.9	36.6±12.2	U=464.5 P=0.822
After intervention	29.5±9.9	37.8±10.9	t <sub>(1)</sub> =-3.1 P=0.003
Mean difference before and after intervention	5.5±5.3	1.2±3.8	U=143.0 P<0.001
<sup>(1)</sup> Intergroup test results	Z=-3.93 P<0.001	t <sub>(1)</sub> =-1.74 P=0.092	

(U) Mann-Whitney U test; (t) independent T-test <sup>(1)</sup>; (Z) Wilcoxon test; (t) paired T-test <sup>(1)</sup>

## Discussion

The present study aimed to evaluate the effect of training about the benefits of natural delivery on the attitude and intentions to select the mode of delivery in nulliparous women. According to our findings, score of attitude obtained by the participants increased after the training compared to before the intervention, which is in congruence with the results of the studies by Tofighi Niyaki et al. (2010) and Shahrani Sanavi et al. (2011), while inconsistent with the findings of Toghyani et al. (2007) (10, 13, 15, 17).

Another study in this regard was performed by Shahraki Sanavi et al. (2011), entitled the

"Effect of training based on the theory of planned behavior on the attitude toward the mode of delivery in pregnant women with the intention of cesarean delivery". In the mentioned study, women in the intervention group received an educational package consisting of three booklets, four cards with encouraging messages about natural childbirth, and a CD, accompanied with a discussion session (60 minutes). According to the results, behavior of the intervention group changed as much as 26%, and these women decided to select natural delivery (probably or definitely) (8).

It is noteworthy that the study population and training methods in the research by Shahraki et al. were different with the present study. In the mentioned study, participants were women with intention or decision to select elective cesarean section, and in terms of gravidity, 56% of the women in both groups were primigravida. However, in our study, all the women were nulliparous and decided to choose between natural delivery and caesarean section. Despite the large volume of subject matters and short duration of training, the findings of Shahraki et al. are in line with the results of the current study.

In this regard, another study was conducted by Tofighi Niyaki et al. (2010) entitled the "Effect of group training during pregnancy on the knowledge, attitude and selection of the mode of delivery in nulliparous women". Training of the participants started on week 27 of gestation and continued for 10-15 days (each session 45 minutes) (16). According to the results, 61.8% of the women preferred natural delivery to cesarean section before training, while this rate increased to 80.6% after training, and the difference was statistically significant.

In the present study, 64.6% of the participants preferred natural delivery to cesarean section before training, while this rate increased by 26.3% after training. In other words, training of nulliparous women increased the decision for natural delivery to 90.3%, which denotes the higher efficacy of the training intervention in our study compared to the research by Tofighi Niyaki et al. This could be due to the differences in the educational content since in the current study, continuous training was focused on the familiarity of the subjects with modes of delivery (natural delivery and caesarean section) and techniques of painless labor.

Findings of the present study were indicative of a significant association between training and change of attitude in the subjects. However, the study by Toghiani et al. (2007), which aimed to evaluate the effects of group prenatal care training on the knowledge, attitude and performance of pregnant women regarding the mode of delivery, suggested that training had no significant effect on the attitude of women toward the selection of delivery mode (25). This discrepancy could be due to the differences in the

educational content, as well as the emotional state of the participants in the two studies. In the research by Toghiani et al., continuous training was not focused solely on the familiarity of the participants with delivery modes and techniques of painless labor, which is inconsistent with the present study.

One of the limitations of the current study was the differences in the mental ability of pregnant women to learn the educational content, which might have affected their attitude and decision. However, this issue was controlled to some extent through the random allocation of subjects to the study groups. In addition, we moderately controlled the information sources of the participants about natural delivery and cesarean section (e.g., books, radio, television and other mass media). The main strength of our research was the follow-up and maintaining contact with all the subjects via phone during the study.

It is recommended that future studies in this regard be conducted on larger sample sizes and include the follow-up of the performance of women after admission in the maternity ward of the hospital.

## Conclusion

According to the results of this study, prenatal training focused on the benefits of natural childbirth and disadvantages of cesarean section, as well as the familiarity of pregnant women with painless delivery techniques, could be effective in fostering a positive attitude toward natural childbirth and reduced rate of elective cesarean section. In conclusion, it could be stated that necessary training of pregnant women regarding the modes of delivery and techniques of painless labor could contribute to the selection of the most suitable delivery mode, and it is suggested that such educational interventions be provided for all pregnant women during prenatal care in order to reduce the rate of cesarean section.

## Acknowledgements

This article was extracted from a student's thesis conducted at Mashhad University of Medical Sciences in collaboration with the Evidence-Based Research Center (IRCT: N12015063022995). We extend our gratitude to all the participants and

personnel of the health centers of Mashhad for assisting us in this research project.

### Conflicts of interest

Authors declared no conflicts of interest.

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