

## **Effect of Behavioral Intention Model-based Education on Decrease the Rate of Caesarean Delivery among Pregnant Women**

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### **ABSTRACT**

Caesarean section is considered as a major surgery which is accompanied by several complications. The present study aimed to determine the effect of behavioral intention model-based educational intervention on reducing the caesarean section among pregnant women. The present interventional study was conducted on 100 primiparous women in the third trimester of pregnancy who were covered by the health and treatment centers of Fasa city, placed in Fars province, Iran. The subjects were selected through simple random sampling and divided into an intervention and a control group. After the pre-test, the intervention group underwent exclusive training based on the behavioral intention model. Then, both groups took part in the post-test and the data were analyzed using paired t-test, independent t-test, and chi-square tests. The results of the study revealed a significant difference between the two groups regarding knowledge, evaluation of the outcomes, attitude, and intention ( $P < 0.001$ ). The results of the chi-square test also showed a significant difference between the two groups regarding their performance ( $P < 0.001$ ). According to the results, the present intervention was effective in increasing the pregnant women's knowledge, evaluation of outcomes, attitude and strengthening their intention as well as performance. Thus, this model and other systematic trainings are suggested to be used for pregnant women in order to decrease the rate of caesarean section.

**Keywords:** Behavioral Intention Model; Cesarean Section; Attitude; Delivery Mode; Performance.

### **INTRODUCTION**

Caesarean surgery is limited to the cases in which delivery is not possible through the natural route or is accompanied by serious risks for the mother and the fetus [1]. Nowadays, caesarean is considered as the most common surgery and one of the normal surgical operations around the world. This operation can save the lives of a large number of mothers and infants in specific conditions with particular reasons [2]. The conditions which prevent natural vaginal delivery include cephalopelvic disproportion, diabetes, fetus' unnatural position in the uterus, reduction or change in the fetus' heartbeat, long duration of

delivery, severe bleeding, severe preeclampsia, membrane rupture, not beginning of labor pains, and any problem in the normal progress of the delivery process [3].

During the past years, the prevalence of caesarean delivery has increased around the world and Iran is no exception [4]. Nevertheless, caesarean is one of the major operations and is accompanied by complications which are highly dangerous and rarely fatal [5]. In comparison to natural delivery, caesarean section is accompanied by more complications, including uterine infection, fever, severe abdominal wall wound infection and cell death after the surgery, abdominal infection,

bleeding, anesthesia complications, urinary system damage during the surgery, formation of blood clots in legs, increase in mothers' mortality rate, and higher expenditures [6-11].

The statistics provided in the recent years have shown that the rate of elective caesarean delivery is increasing all over the world and it is often considered as a natural method. In the U.S., the rate of caesarean delivery was 27.6% in 2003, while it had been reported as 4.8% in 1968 [12]. In addition, the rate of caesarean delivery increased from 10.2% in 1980 to 33.2% in 2000 in Italy and from 13.8% in 1992 to 17% in 1997 in England. In Turkey, the rate of caesarean delivery has reached from 5.7% to 20.8% through the recent 10 years. This rate has been reported up to 30% in a lot of countries. In fact, caesarean has become an epidemic around the world. Significant increase in the rate of caesarean delivery has changed this problem to one of the most important challenges of the health systems [13]. Recently, the number of caesarean deliveries has increased in Iran; For example, Shariat et al. reported the rate of caesarean section in Tehran as 66.5% [14]. Based on Integration Monitoring Evaluation Survey (IMES), the rate of caesarean delivery was reported as 40.6% in 2005 [15]. Furthermore, unofficial statistics from private hospitals have reported the rate of caesarean delivery to be above 90% [14].

Considering the ethical aspects of human productivity, International Federation of Gynecology and Obstetrics has announced that performing the caesarean surgery without medical reasons is unethical [16]. Besides, World Health Organization (W.H.O.) has stated that it is not logical for the rate of caesarean delivery to be above 10-15% in any part of the world [17]. However, the statistics provided by the health centers of the cities of Fars province have shown that 41.4% of the deliveries in this province were performed through the caesarean section [18].

According to the study conducted by Tavassoli, training the mothers and making them mentally ready for natural vaginal delivery caused a 15% reduction in the rate of caesarean delivery in Iran [19]. Overall, high rates of caesarean delivery in Iran, the difference with W.H.O (rate of caesarean

section up to 2010: 15%), and the effect of interventions on reducing the rate of caesarean delivery show the necessity to carry out more serious interventions in this regard. It has been proved that health and treatment services are not supported by health education, they will not be beneficent. Health education increases the mothers' knowledge during pregnancy; so that they would not choose caesarean delivery without clinical reasons. As more appropriate theoretical support together with basic health demands are there in health education, the program will be more effective. In fact, using educational theories which are appropriate for the society under study and the expected outcomes can be quite beneficial [19].

According to the studies conducted on the issue, one of the best models which can be used regarding attitude and productive behaviors is the behavioral intention model which is based on the Theory of Reasoned Action [20]. The assumptions of this theory are: 1- the individuals make their decisions based on logical investigation and the available information and 2- they consider the outcomes of their performance before making decisions [21]. Based on the behavioral intention model, behavioral intention is the most important determinant of an individual's behavior.

Fishbein and Ajzen have expressed the individuals' intention and probable judgment of the intended behavior. An individual's intention for performing a behavior is in fact a combination of the attitude toward the behavior and the subjective norms. Besides, the attitude toward the behavior includes the individual's beliefs and evaluation of the outcomes and the subjective norms consist of the normative beliefs (created in the individual and the family) as well as the motivation for obedience [21, 22].

Since both individual factors, such as knowledge, evaluation of the outcomes, and attitude, and social factors, including normative beliefs and social pressures, are effective in choosing the delivery mode and the mother's intention for delivery is the most important factor, the present study made use of the behavioral intention model in order to decrease the rate of caesarean delivery

in the pregnant women of Fasa city, placed in Fars province, Iran. The available statistics in Iran and Fars province, particularly Fasa, show the high rate of caesarean delivery that confirm the necessity to perform interventions in order to decrease it. Therefore, the present study aims to reduce the rate of caesarean delivery in Fasa, Fars province, Iran in 2011.

## **MATERIALS AND METHODS**

The present interventional, quasi-experimental study was conducted on the primiparous women covered by four health centers of Fasa city, in Fars province of Iran. The exclusion criteria of the study were positive histories for hypertension, diabetes, and miscarriage, small pelvis, diagnosis of multiple birth, gestational diabetes, and preeclampsia. All the eligible women (n=100) were selected from the 4 health centers and divided into two 50-subject groups through simple random sampling.

The study data were collected using a questionnaire designed based on the variables of the behavioral intention model whose reliability had been confirmed by Cronbach's alpha of 0.96. This questionnaire includes the following sections:

- 1- Individual variables, including age, husband's age, mother's and husband's education, mother's and husband's occupation, family's income, gestational age, and the probable date of delivery.
- 2- Knowledge about the delivery modes and their advantages as well as disadvantages, each including 10 items which got 1 and 0 point for correct and incorrect answers, respectively.
- 3- Evaluation of the outcomes of natural vaginal delivery and caesarean section including 10 True/False items.
- 4- Fifteen attitude items based on the 5-point Likert scale which were scored from 1 to 5.
- 5- The items related to the subjective norms which include two parts. The first part involved the individuals who were effective in selecting the mode of delivery; the second part asked about individual's opinion was the most important.
- 6- Behavioral intention which showed the subjects' intention for selecting their delivery mode and had 4 options.

After assigning the study subjects to the two groups and giving the pre-test, the members of the control group received the routine trainings from the health centers. On the other hand, the participants of the intervention group together with their mothers and one of their friends were trained based on the components of the behavioral intention model through 3 training sessions. The first session aimed to increase their knowledge, the second one was a general discussion held in order to change the subjects' attitude, and the third session aimed to confirm the women's attitude and intention toward natural vaginal delivery. In the third trimester which was held in the last month, a film of the two modes of delivery was also shown for the women. Besides, one educational session was held for the husbands of the study participants by the specialists of Gynecology and Obstetrics and the famous specialists of the city in order to influence their subjective norms. Finally, the participants of both study groups took part in the post-test; 3 months after the trainings, the delivery data were gathered from the health centers.

All the statistical analyses were performed using the SPSS statistical software. Paired t-test was used in order to compare the means for knowledge and attitude in the two groups before and after the intervention. In addition, the means of the two groups in knowledge & attitude after the intervention were compared through using independent t-test. Finally, chi-square test was utilized in order to compare the relative frequency of caesarean (behavior) and the behavioral intention between the two groups.  $P < 0.05$  was considered as statistically significant.

It should be noted that the researcher referred to Fasa health centers along with an official referral letter from Fasa University of Medical Sciences. After arrange with the family health unit, he was referred to the control and intervention centers. In addition, different processes of the research were performed by complete coordination with the personnel of each center.

Moreover, the study subjects took part voluntarily in the study and with informed consent that they were also ensured about the secrecy of their information.

## RESULTS

The mean age of the mothers and fathers was  $24.1 \pm 2.3$  and  $29.4 \pm 1.7$  years, respectively. Besides, 87% of the mothers were homemakers, while 13% were employed. In addition, 61%, 24%, 6%, and 9% of the mothers had diploma, middle school, university, and primary school degrees of education, respectively. On the other hand, 57%, 32%, 9%, and 2% of the fathers had diploma, middle school, university, and primary school degrees, respectively. No significant difference was found between the two groups regarding age, education, income, type of housing, economic status, and frequency distribution of women's diseases ( $P=0.5$ ). Tables

1 to 4 express the status of the two groups regarding knowledge, evaluation of the outcomes, attitude, intention, and performance before and after the intervention. Overall, 60% of the mothers in the control group and 50% of those in the intervention group considered their physician as their best source of delivery information. Besides, 53% of the participants of the control group and 56% of those in the intervention group were more motivated to obey their physician compared to other norms. The two study groups were not significantly different before the intervention; however, a significant difference was found between the two groups after the intervention ( $X^2=19.8$ ,  $P=0.006$ ).

**Table 1:** Comparing the means scores of "knowledge regarding natural vaginal delivery" in the two groups before and after the educational intervention

Knowledge Group	Before the intervention		After the intervention		T-paired
	Mean	SD	Mean	SD	
Intervention (50)	54.2	19.4	91.1	13.7	T=1.8 P<0.001
Control (50)	55.7	19.7	56.3	22.1	T=1.3 P=0.12
The result of independent t-test	T=1.6 P=0.08		T=5.9 P<0.001		

**Table 2:** Comparing the means scores of "evaluation of the outcomes of natural vaginal delivery" in the two groups before and after the educational intervention

Evaluation of outcomes Group	Before the intervention		After the intervention		T-paired
	Mean	SD	Mean	SD	
Intervention (50)	20.4	4	28.2	3.3	T=7.9 P<0.001
Control (50)	21.6	4.2	21.5	4.1	T=1.2 P=0.31
The result of independent t-test	T=0.8 P=0.28		T=4.5 P<0.001		

**Table 3:** Comparing the means scores of "attitude toward natural vaginal delivery" in the two groups before and after the educational intervention

Attitude Group	Before the intervention		After the intervention		T-paired
	Mean	SD	Mean	SD	
Intervention (50)	54.9	12.7	74.1	9.6	T=4 P<0.001
Control (50)	55.2	12.8	52.5	16.2	T=0.54 P=0.47
The result of independent t-test	T=0.31 P=0.60		T=2.4 P<0.003		

**Table 4:** Frequency distribution of the “intention for delivery” in the two groups before and after the educational intervention

Intention	Intervention group		Control group	
	Before the intervention	After the intervention	Before the intervention	After the intervention
	Number (percent)	Number (percent)	Number (percent)	Number (percent)
Probably natural	24 (48)	13 (26)	21 (42)	7 (14)
Probably caesarean	11 (22)	1 (2)	10 (20)	7 (14)
Definitely natural	33 (26)	35 (70)	17 (34)	19 (38)
Definitely caesarean	2 (4)	1 (2)	2 (4)	17 (34)
Total	50 (100)	50 (100)	50 (100)	50 (100)

## DISCUSSION

The results of the present study showed a significant difference between the intervention and the control groups regarding knowledge, evaluation of the outcomes, attitude, intention, and performance before and after the intervention, which shows the effectiveness of education in reducing the rate of caesarean delivery. However, no statistically significant relationships were found between age, education, knowledge, attitude, evaluation of outcomes, intention, and performance. On the other hand, the study by Tavassoli showed a significant relationship between the mother's education and type of delivery [19]. Also, a significant relationship was observed between the mother's age and increase of caesarean delivery in the study by Wen Wei Ca [23]. Moreover, in the study conducted by Alimohammadian, a statistically significant relationship was found between the mother's level of education and type of delivery in the caesarean demanding group in comparison to the one which had not requested for caesarean section [24].

In our study, a significant difference was found between the means scores of knowledge in the two groups before and after the intervention. However, after the intervention, a significant increase was observed in the means scores of knowledge in intervention group after the intervention. In the study conducted by Amidi and Akbarzadeh in order to investigate the effect of education on the pregnant women's knowledge and attitude toward caesarean delivery, no significant difference was found between the two groups' knowledge and attitude, while similar results to those of the present study were obtained after the intervention [2]. Regarding the increase of knowledge after the

educational intervention, the findings of this study were in agreement with those of the study performed by Tavassoli et al which aimed to determine the effect of education on reducing the elective caesarean delivery among the women [19]. These findings were also in line with the studies carried out by RahimiKian et al [25], Ganji et al [26], Ghoba et al [27], and Fathian and Sharafirad [5]. In addition, Lagrew and Morgan conducted a study entitled “reduction of caesarean in private hospitals of the U.S.” and showed an increase in the pregnant women's knowledge after the educational intervention [28]. Thus, it can be concluded that training based on the behavioral intention model has been highly effective in increasing the knowledge level of the intervention group subjects.

According to the expectancy-value theory, evaluation of outcomes is in fact an individual's judgment of the behavior s/he aims to execute. As Table 2 depicts, regarding the mothers' evaluation of the outcomes of natural vaginal delivery, a significant difference was found in the intervention group before and after the intervention and between the two groups after the intervention, which shows the effect of education on the positive evaluation of natural vaginal delivery. In the same line, Tavassoli's study revealed a significant difference between the mothers' positive evaluation of the outcomes of natural vaginal delivery before and after the intervention [19].

Regarding the mothers' attitude toward natural vaginal delivery, a statistically significant difference was found in the intervention group before and after the intervention and between the two groups after the intervention ( $P < 0.001$ ). Besides, a statistically significant relationship was

observed between the mean scores of attitude and those of knowledge and evaluation of outcomes. This not only confirms the effectiveness of behavioral intention model-based education in improving the pregnant women's attitude toward natural vaginal delivery, but it also shows the relationship between the components of the model.

The goal of subjective norms in this study was recognition of the individuals who affected the pregnant women's intention for choosing their delivery mode. Therefore, normative beliefs and motivation for obedience, as the two major factors affecting the subjective norms, were investigated. In response to the question "Which resources do you use for gaining information about delivery", 50% of the mothers in the intervention group and 60% of those in the control group had selected their physician followed by mother, husband, friends, and books. Regarding motivation for obedience, also, the same order was followed in response to the question "Which of these resources is more important for you in choosing the mode of delivery". In the study by Faraji, 70% of the women considered their physician as the determiner of the delivery mode, which shows that the physicians' attitude is highly effective in choosing the delivery mode [29].

According to Signorellie's report in Italy, the physicians' method is an important factor in the prevalence of caesarean delivery [30]. In a study conducted by Porreco, 64% of the women considered their husband to be effective in selection of their delivery mode, while 8.8% of the women had this opinion in a similar study in Australia [31].

This great difference might result from the economic and social differences of the societies. In any event, the physicians had played a major role in increasing the rate of caesarean delivery through the past years; such a way that instead of the patients' delivery conditions, several researchers have considered the physicians' judgment and environmental conditions as the most effective factors in making decisions. The changed culture of some communities [32] and the families' as well as the patients' insistence on performing caesarean section also affect the

physicians' decisions; they are among the other causes of the increase in the rate of caesarean delivery.

Intention is the most important variable in Fishbein and Ajzen's theory. This theory assumes that behavior follows intention and no behavior occurs without intention. In general, an individual's intention for a particular behavior is the sum of individual factors (attitude) and social ones (subjective norms). Regarding the mothers' intention for natural vaginal delivery in the present study, a significant difference was found in the intervention group before and after the intervention and between the two groups after the intervention. This not only revealed the effectiveness of the behavioral intention model in changing the mothers' intention toward natural vaginal delivery, but it also proved the relationship between the components of the model. Miri also conducted a study entitled "Investigation of the nomad men's viewpoints toward family planning" and showed a statistically significant difference between the intervention and the control group regarding their behavioral intention [33].

Considering the last component of the behavioral intention model; i.e., behavior, the study results revealed a significant difference between the two groups regarding natural vaginal delivery, which shows the effect of the behavioral intention model on reducing the rate of caesarean delivery in this study. Similar results were also obtained in the studies conducted by Fathian and Sharifirad [5] and Ghoba et al [27]. These findings were also consistent with those of the studies performed by Ryding [34] and Saisto [35] showing an increase in the intention for selection of natural vaginal delivery.

The limitations of the present study includes the problems resulting from arranging with the women's husbands to take part in the classes, arranging with the health centers for holding the classes, the women's problems for participating in the training sessions, and the effective role of the specialists of Gynecology and Obstetrics in increasing the prevalence of caesarean delivery, particularly in primiparous women.

Considering the effectiveness of training based on the behavioral intention model, this model and

other systematic trainings are recommended to be used in all the interventions in which, both individual and social factors play a role. Training of the pregnant women's husbands and mothers in educational interventions and group discussions is also strongly suggested. Moreover, further studies are needed to be conducted on the role of other effective factors in the rate of caesarean delivery, including exercising, hospital environment, and physicians.

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