

# Development of a tailored intervention to promote normal vaginal delivery among primigravida women: a formative study

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## Summary

**Purpose of Investigation:** This study aimed to develop a tailored intervention to promote normal vaginal delivery among primigravida. **Materials and Methods:** This cross-sectional formative research was done in Boyer-Ahmad County, Iran. Qualitative data were collected through individual in-depth interviews with healthcare providers and focus group discussions with primigravida women. Quantitative data were collected using a questionnaire based on the Theory of Planned Behavior among all primigravida women. **Results:** The most important barriers of normal vaginal delivery were: unpleasant delivery in maternity, fear of child birth, others' recommendations, and negative experiences of referring to maternity services. The interventions recommended for increasing normal vaginal delivery were: education, counseling services, and making the process of normal vaginal delivery more pleasant. The authors found that 44.3% of urban women and 9.4% among the rural women intended to undergo cesarean section (CS). Attitude, subjective norms, place of residence, and the spouse's job were the main predictors of selecting the types of birth. **Conclusion:** The main elements of the tailored intervention were: target audiences' education, telephone counseling services, and brief interventions.

**Key words:** Tailored intervention; Normal vaginal delivery; Formative research; Primigravida.

## Introduction

Cesarean section (CS) is one of the most widespread surgeries across the world, and is performed to reduce maternal and baby mortality and morbidity in particular circumstances. The mortality rate due to CS is two to three times greater than normal vaginal delivery (NVD) and the number of disability adjusted life years (DALY) is 206 years for cesarean and 8.8 years for NVD per 1,000 deliveries [1, 2]. It was estimated that reducing the rate of CS to 15% will save about 2.32 billion USD and 108,495,217 USD for the world and Iran, respectively [3].

According to a WHO report, the acceptable rate of CS is 10-15% [4]. In Iran, about 48% of the women undergo CS [5]. Some suggested approaches to reduce the number of CSs are: developing and applying clinical guidelines in hospitals, persuading opinion leaders to encourage pregnant women with previous CS to select NVD, providing counseling services, training women for relaxation and preparing women for the delivery, and implementing multifaceted interventions (training maternity personnel, obstetricians, pregnant women, and monitoring the performance of obstetricians) [6], asking a second or a third specialist about recommendation for CS [7], promoting vaginal birth after CS (VBAC) [8], modifying the medical indications for CS [9], offering incentives for NVD, and restricting the induced demand for CS [10].

Individual factors and personal behavior play the most important roles in choosing CS [5]. Official announcements and the implementation of clinical protocols and guidelines do not guarantee the reduction of CS [11]. It seems that the pregnant women's wants and needs, as the target audience, are not usually considered in the design, implementation, and evaluation of interventions to reduce CS in Iran; therefore the interventions are not tailored to their needs and wants. Boyd suggested that studying the cultural factors related to the high prevalence of CS is a key to developing appropriate and effective interventions [12]. Some studies have shown that the increase in CS among primigravida women and women who have previously had a CS has been the major causes for high cesarean section rate (CSR) worldwide [5, 8, 13]. Eighty-nine percent of CSs have followed previous CSs [14]. Therefore, to reduce the CS rate, effective interventions should be designed and implemented for primigravida [3].

Formative research is applied to test concepts, products, or message design and to pre-test intervention materials and products with the target audience [15]. Using the formative research to develop tailored interventions can be a useful tool for ensuring the effectiveness and appropriateness of an intervention program's messages with the target audience [16]. Tailoring is defined as: "any combination of information or change strategies intended to reach one specific person, based on the characteristics that are unique

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to whom related to outcome of interested, and have been derived from the individual assessment” [17]. In many studies, formative research has been used to develop the elements of tailored intervention; for example, the development of tailored messages to promote the human papilloma vaccine among African American girls [18], the design of an environmental program for obesity prevention at schools in Mexico City [19], and the design of an intervention based on social marketing to persuade rural women to have a mammography [20].

## Materials and Methods

This cross-sectional formative research (qualitative study and quantitative survey) was conducted in the summer of 2015, Boyer-Ahmad County, Iran. It aims to develop an intervention based on the principles of the social marketing model to reduce CS among primigravida women.

The qualitative study was based on social marketing principles. Its main focus was the benefits and barriers to NVD, promotional strategies for NVD, the people who affect decision making, the appropriate place and channel for communicating with the pregnant women, and transferring of the content of the intervention program to them.

Data was collected through individual in-depth interviews with healthcare providers (12 participants: ten midwives, and two obstetricians) and focus group discussions with 37 primigravida women. To gather the data, semi-structured questions were designed with a focus on the social marketing mix. The healthcare providers were selected for in-depth interviews according to their work experience in the maternity ward and in the provision of services in health centers, and had an office. The time and place of the interviews were selected by the participants. Approval for the research was obtained from Yasuj University of Medical Sciences Ethics Committee (IR.YUMS.REC.1394.52) before the study commenced. At the beginning of each interview, informed consent was obtained for the interviews and the tape-recordings of the conversations. The researcher found that no new themes emerged after conducting ten interviews. However, two more interviews were conducted to ensure data saturation. At the end of each interview, the participants were asked whether they wanted to add any points to the interview. Each interview took about 60 minutes. All interviews were transcribed to plain text in preparation for analysis.

Primigravida women were purposefully selected based on a number of variables, including their place of residence (rural or urban) and their level of education (university degree and no university degree) to take part in the focused group discussions. The sessions were held at a health center near the women's place of residence, thus easing their participation in the study. The sessions began at 9 A.M. and continued until 11 A.M. At each session, nine to 12 of the women, the coordinator of the session, and one person acting as the facilitator were present. At the beginning of the session, the purpose of the discussion was clarified for the participants and their written consent was obtained. Semi-structured interview questions were used for the focus group discussions. The collected data was analyzed manually and through content analysis, implemented at sentence level. First, the audio files were converted into text. These files were read carefully several times to get a general comprehension of the texts, the answers to the questions, and to draw out the main themes of the interviews. At this stage, the themes of the interviews were compared with each other to draw out the subthemes and main themes.

The population of the survey was all primigravida women in Boyer-Ahmad County. In this stage of the study, 198 primigravida women were identified as potential participants. Of this number, 157 women were involved in the quantitative survey. A form was developed to collect the following information from the women: the name of health care facility, their first and last name, their literacy level, their place of residence, their age, gestational age, their phone number, the literacy level of their husbands, and their estimated date of confinement (EDC). Boyer-Ahmad County has 23 healthcare facilities; because of their geographic distribution, two methods were used to collect the primary data: interview with the women and telephone interviews with the midwives and the medical practitioners at the other healthcare centers.

A questionnaire based on the theory of planned behavior (TPB) was used to measure the factors that affected behavior when selecting the type of delivery. The reliability and validity of the questionnaire was determined in an earlier study in Zahedan [21]. The questionnaire included demographic questions and 27 items for measuring the constructs of TPB. A telephone interview was then conducted with the eligible women whose information has been clarified in the previous phase. The researchers asked these women to come to the healthcare facility to fill out the questionnaire and the written informed consent form. Data were entered in SPSS software and analyzed. Median, interquartile range, logistic regression, Man-Whitney, and Chi-square tests were used to analyze the results. A  $p$ -value  $< 0.05$  was considered as significant difference in this study.

## Results

The participants in focus group discussions were 37 women aged 18-37 years. Mean and standard deviation of their age was  $24.31 \pm 4.32$  years. Sixty-one percent of them were high school educated without any academic degree, 80% were housewives, 17% employees, and 3% students. The comments and experiences of the primigravida and healthcare providers were classified into five main themes and thirty subthemes, as below:

Some advantages of NVD expressed by the participants were less bleeding, quick relief of the pain, faster recovery, and returning back to a normal life, keeping in shape, and loss of excess fat around the abdomen. Some of the women mentioned a short period of the pain. One of the pregnant women expressed: *“Vaginal delivery has severe pain, but it lasts for short time and after that you are OK. My cousin delivered normally and the same day I saw her walking and she seemed quite happy and comfortable.”* Another interviewee said: *“In NVD, the body will be in shape and we will get back to the former shape of body”*.

Another advantage of NVD is that it is free of charge, as many of the rural women pointed out. However, most of urban women believed that if people could afford it, most would not select the NVD. Also, some of the healthcare providers believed that since beginning the health reform program, NVD became free of charge, and most poor families have tended to have NVD. One of the healthcare providers believed: *“After NVD, the hospitalization will be shorter than CS, and we will be less involved in taking care of mothers”*.

Some of the women considered the personnel's inappropriate behavior and treatment at the maternity ward as a barrier to NVD. One pregnant woman said: *"Nurses at maternity are really bad-tempered. I think this is a most important reason for not selecting NVD"*. Another healthcare provider, who worked at the maternity ward, agreed that the midwives' bad-temper contributed to a tendency towards CS over NVD. Some of the interviewees stated that the atmosphere of the maternity ward was not relaxing. A participant believed: *"When a pregnant woman comes to the maternity, whether for childbirth or to receive another services, she is scared and agitated. This experience will be shared with other women, especially with primigravida, and this will result in a really bad image for NVD"*. Another woman said: *"midwives do not pay enough attention to the pregnant woman."*

Most of the interviewees believed that fear of childbirth was the main reason of tendency towards CS. A pregnant woman said: *"I have heard that the first childbirth is very painful and that one may be in pain for 24 hours. If I want to stand this pain for 24 hours that would be out of my tolerance"*. Some of the pregnant women were also afraid of improper care and damage to the mother and the neonate at the maternity ward. One of them said: *"I am scared of not getting enough care. My baby is as important as me and I must be sure about his or her health"*. Other challenges that primigravida pointed out were fears of the deformation of the body, and looking ugly or less beautiful after childbirth. An interviewee who worked in the health facility said: *"Most of the women suppose that NVD would damage their sexual system and that this will affect their sexual relationship negatively"*. Some of the pregnant women reported that they did not know about NVD and that this was the main reason for their fear. A pregnant woman stated: *"I think most of the bewilderment we have in this regard is because we do not know what will happen before, during, and after the NVD"*.

Another barrier to the selection of NVD was the advice of others. A pregnant woman expressed that: *"My mother and my mother-in-law had terrible pain during NVD. They told me that they did not want me to suffer from NVD."* A healthcare provider believed that: *"Mothers usually do not want their girls to suffer the pain of childbirth and so they do not like NVD for their daughter"*.

All of healthcare providers and most of the pregnant women talked about the improper conditions in maternity wards and the lack of personnel. One healthcare provider said: *"In the maternity, each midwife may manage two or more pregnant women in labor at the same time."* One pregnant woman, referring to the maternity ward, said: *"The environment is not good at all for delivery and I think women are right that they do not have NVD"*.

Lack of knowledge in women, opposition of their husbands to NVD, negative advertisements relating to the maternity ward, and the presence of trainee students at the

maternity ward were further barriers pointed out by healthcare providers. Most of them believed that customary education was not effective enough. One of the interviewees who worked at the health facility said: *"A lot of scattered content should be educated. Because of many clients and a lack of personnel, we cannot educate very well"*. Fake indications for CS and the violation of laws related to CS were other challenges that were created after mandatory NVD.

In this section, four subthemes have been created: education, counseling services, making the maternity ward more pleasant, and optimizing the situation and environment of the maternity ward.

The education and empowerment of women were subthemes that most of the women and healthcare providers suggested. A pregnant woman believed: *"Increasing knowledge among pregnant women is very important. If I know enough about childbirth and the type of delivery, I will not be scared; if I could find appropriate childbirth services, I will not select cesarean"*. Telephone counseling was suggested by one of the employed women as an effective method and most of the other women agree with her. One pregnant woman commented: *"I do not have enough time to attend classes or to go to the health facility. So that if I do not have the time to come to the health facility, the midwife can call me and give me a consultation"*. Another woman said: *"If the personnel talk friendly and show empathy and kindness and pay attention to the pregnant women in labor, things would be much more pleasant"*.

All of health care providers suggested education for pregnant women, especially the primigravida. One of them said: *"A training course must be prepared for the personnel to train them about what to educate and how to educate. With this method we will be able to focus on certain targets"*. Training communication skills for the healthcare providers, especially the maternity ward personnel, was another suggestion. One of the interviewees said: *"If there was a tutorial for the midwives and the nurses to train them for effective communication skills, it would be perfect"*.

Providing consultation services for the pregnant women and their husbands was another suggestion. One of the interviewees with 20-year experience believed: *"Providing counseling for primigravida about the relationship between NVD and sexual function is very important. Beauty and body fitness are very important for women. So, it should be managed their stress and worries about these issues"*.

Most of the healthcare providers considered the painless methods of childbirth as an applicable and appropriate action to promote NVD. One of them said: *"When the most important reason for cesarean is the fear of pain, it must be done something to reduce this fear."* The use of a companion midwife is another strategy. One of the healthcare providers with an office and working in the maternity ward said: *"Most of my clients want me to help them deliver the child. They hope that I supervise their labor and child-*



birth”.

Pregnant women reported that the people who have the most influence on their decision-making about how to deliver the baby are their mothers, women who have had the experience of childbirth, midwives, doctors, and obstetricians. Healthcare providers reported that the most effective people are the pregnant woman's husband, the healthcare providers (the midwife, the doctor, and the nurse), the mother, the sister, and friends.

All interviewees believed that healthcare centers, preparation classes for childbirth, and hospitals are the appropriate places to implement services and plans to increase NVD. In addition, midwives and obstetricians suggested that offices are good places to receive the service. Personal attendance, telephone consultation, promoting NVD through the media, and showing movies about NVD and CS were better methods of communicating with pregnant women and promoting NVD. Referring to telephone consultation, one of the healthcare providers said: *“Our friends and relatives call us and ask their questions. I think this is a good idea”*. Most of the women consider that attending the class is a better method because they can have mutual communication with the instructors and ask questions. Some other women believed that coming to class may not be a good option for some women because of long distances and busy schedules. These women recommended at-home instructions through media (phone consultation, radio, and TV).

Mean and standard deviation of women's age was  $25 \pm 4.71$  years and 57.3% of the women had a diploma degree or lower (Table 1).

The intention to have CS was 44.3% among urban women and 9.4% among the rural women ( $p < 0.001$ ). Regardless of residency, the intention for selecting CS was 25.2%. The relative frequency distribution of intention for selecting each type of delivery can be seen in Figure 1. Seventeen percent of the women with diploma degree or lower, and 39% of the women with university degree intended to have CS ( $p = 0.004$ ). There was a significant difference between the place of residency and the intention towards the type of delivery based on the Mann-Whitney test ( $p < 0.001$ ). According to the Chi-square test, a significant difference was found between the level of education and the intention towards the type of delivery ( $p = 0.015$ ).

The median and interquartile range of the attitude, subjective norms, and perceived behavior control with the maximum score of 21 were  $18 \pm 4$ ,  $16.5 \pm 3$ , and  $16 \pm 3$ , respectively. The median scores of the theory constructs were higher among rural women than urban women. According to the Mann-Whitney test, the median of rural women's attitudes and subjective norms was significantly higher than those of urban women ( $p < 0.001$  and  $p = 0.002$ , respectively), but there was no significant difference in perceived behavior control between rural and urban women. In addition, the median of subjective norms, attitudes, and per-

Table 1. — Demographic variables of primigravida women.

Demographic variables		Frequency	Percentage
Academic degree of pregnant women	Under diploma	42	26.8
	Diploma	48	30.6
	University degree	67	42.7
Academic degree of pregnant women husband	Under diploma	32	20.4
	Diploma	50	31.8
	University degree	75	47.8
Job of pregnant women	Housewife	136	87.2
	Employee	12	7.7
	Student	8	5.1
Job of pregnant women' husband	Employee	101	65.6
	Self-employment	41	26.6
	Unemployed	12	7.8
Place of residence	Urban areas	72	45.9
	Rural areas	85	54.1
Status of pregnancy	Planned	136	88.3
	Unplanned	18	11.7

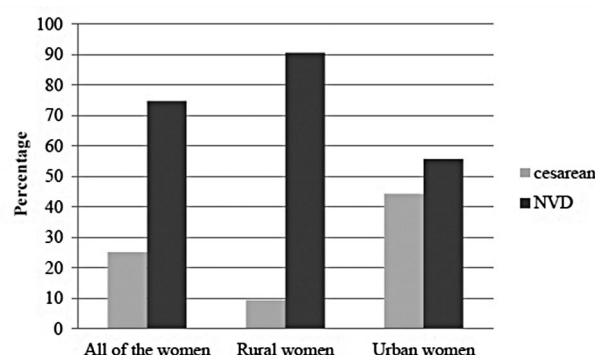


Figure 1. — The relative frequency distribution of intention towards the type of delivery.

ceived behavior control among the women intending to have NVD were higher than those of women intended to have CS (Table 2).

As seen in Table 3, the strongest predictors for the intention towards a particular type of delivery were subjective norms ( $OR=2.413$ ,  $p = 0.021$ ) and attitude towards NVD ( $OR=1.754$ ,  $p = 0.002$ ). The variables relating to place of residency ( $OR=14.365$ ,  $p = 0.001$ ) and the husband's job ( $OR=3.389$ ,  $p = 0.035$ ) were the strongest predictors. Moreover, the results showed that the healthcare providers at the healthcare centers (midwives, the doctors, and health workers), the pregnant women, and their husbands had the largest influence when selecting the type of delivery.

## Discussion

Unpleasant NVD in the maternity ward is one of the barriers to NVD. In some of the previous studies the barriers to NVD were expressed as below: women's unhappiness

Table 2. — Median and interquartile range of scores of theory of planned behavior structures among women with NVD and CS intention.

Structures of the theory	Intention of cesarean	Intention on NVD	All of the women	Score range	p-value
Attitude*	4 ± 14	4 ± 19	4 ± 18	21 - 7	<0,001
Subjective norms*	1.5 ± 13.5	1.5 ± 16.5	3 ± 16.5	21 - 7	<0,001
Perceived behavior control*	4 ± 15	3 ± 16	3 ± 16	21 - 7	0.016

\*p-Value &lt; 0.05

Table 3. — Odds ratio estimation of selecting of NVD based on theory of planned behavior structures and demographic variables.

Variables	Odds Ratio	Confident Interval (95 %)	p-value
Attitude*	1.754	2.519 – 1.221	0.002
Subjective norms*	2.413	5.087 – 1.144	0.021
Perceived behavior control	.844	1.091 – 0.653	0.195
Place of residence*	14.365	65.452 – 3.153	0.001
Husband's job*	3.389	1.806 – 1.106	0.035

\*p-Value &lt; 0.05

with the physical structure of the maternity ward, the unequal distribution, and the different services and equipment, the low quality of the services in the maternity ward, not being allowed to have a companion in the maternity ward, and having a common room for pain and labor [22-24].

Fear of childbirth is the main reason for selecting CS. In Australia primigravida prefer elective CS because of the fear of NVD, increased feelings of security, relaxation, and control when having CS [25]. Wiklund *et al.* also believes that primigravida are often afraid of NVD and this is why they select CS [26]. In another study, it was found that Thai primigravida consider NVD as a threat to the baby and the mother and that CS is the way to manage this threat [27]. The findings of studies conducted in Iran also show that because of the fear of childbirth primigravida preferred to have CS [22, 23, 28]. Studies in Iran confirm that women do not have a positive attitude towards NVD because of inadequate information about advantages and disadvantages of both types of childbirth and previous bad experiences of delivery [29].

Participants believed that a pleasant delivery can result from staying with pregnant women in the maternity ward and labor rooms. Kashanian's study also showed that having company at the maternity ward could reduce the bad experiences of childbirth and increase the possibility of selecting NVD [30].

Using an attendant midwife or a private midwife was another suggestion for increasing NVD. In a study by Du Plessis, it was found that the delivery of a baby by an attendant midwife creates a positive and secure feeling for mothers, and this feeling reduces their stress and anxiety [31].

Another suggestion has been the education of pregnant women. Results of previous studies have showed that edu-

cation relating to the advantages and disadvantages of the two types of delivery is necessary and that there is a significant relationship between education and the selection of the type of childbirth [32, 33]. However, education during pregnancy is not seen as effective and sufficient [34]. Therefore, it seems that the quality of services during pregnancy, especially education services, needs to be revised and reformed.

Providing consulting services for the pregnant women and their husbands is another suggestion to promoting NVD. Rudsari *et al.*'s study has the same view, and showed that effective communication with primigravida and the provision of childbirth consultations for them can reduce the fear and anxiety of NVD [35].

The quantitative survey has showed that 25.2% (39 women) of the 157 pregnant women tended to have CS at the third and fourth months of pregnancy. This finding is consistent with similar studies. It has been shown that 21% of women in the eastern parts of Iran and 47.2% of the urban women in Rasht, north of Iran, have tended to have CS [29, 36]. There was a significant difference between urban and rural women when selecting the type of delivery. In Bahadori *et al.*'s study the rate of CS was 27.6% in rural areas and 46.7% in urban areas [28]. NVD has become free of charge at public hospitals in Iran and this could be a reason for these differences. However, it seems that other factors have a more important role than economic factors on the high rate of CS in Iran, and free NVD might not guarantee the reduction of CS, particularly urban primigravida women. In rural areas of Iran, the health services are provided actively and the population of each health house is low. Therefore, health workers have enough time for education and consultation; this may be another reason for this difference.

In most of the studies conducted in Iran, women with high levels of academic degrees have a greater tendency to have CS [32, 37-39]. Therefore, it seems that having a higher academic degree is one of the factors that motivate Iranian women to have CS. Contrary to this study, a study in Italy showed that highly educated women were more likely to have NVD [40]. However, women's views and beliefs should be studied to find why highly educated women are more likely to have CSs.

The modification of attitudes and strengthening the subjective norms toward NVD can increase the women's tendency toward NVD. This finding is consistent with other

studies. In one study it was found that the most significant predictor for selecting the type of childbirth was subjective norms and the modification of women's attitudes about the advantages and disadvantages of both childbirth types, which could increase the intention towards NVD [33]. As mentioned above, the place of habitation had a significant relationship to the selection of the type of childbirth. Therefore, it seems that the subjective norms and attitudes of rural women were important factors in selecting NVD. In addition, the differences between rural and urban women's attitudes and subjective norms must be considered when planning programs to reduce elective CS, as the same interventions will not have the same effect on intention towards delivery type. The husband's job was another variable that predicted the type of childbirth. If the husband's job was well-paid, there was being higher probability of selecting CS and of the husband's agreement with it. Other studies have shown that higher income and good economic status were positively connected with women's increased tendency to have CS [32, 39].

This study also shows that midwives, doctors, the pregnant women, and their husbands have the most influence on the selection of the type of childbirth. This finding is similar to Sanavi *et al.*'s study, where it was found that the doctor, the pregnant woman, and their husbands played the greatest roles in choosing the type of childbirth [21]. Therefore, it is suggested that permanent training and workshops (educational, clinical, consulting, and effective communication skills) be held for them.

## Conclusion

Several behavioral and non-behavioral factors can affect the intention for selecting the type of delivery. To develop a tailored intervention, the target group must first be identified. Then these factors must be identified and multifaceted interventions designed to reduce the effect of each factor. In this study, it was indicated that the attitudes towards the selection of the type of childbirth, and pregnant women's subjective norms, should be considered when designing interventions to reduce CS.

The findings of this formative research provided evidence supporting the development of tailored intervention based on a social marketing model to reduce the intention to choose CS among primigravida. The contents of the program were: holding educational sessions and making brief interventions through appropriate channels for women (doctor and midwife) at health facilities and delivery preparation classes; decreasing the costs of interventions by reducing the barriers to participation in the classes, and transferring the messages through free telephone consultations by effective people.

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