

# The Effect of Prenatal Education on the Process of Childbirth

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**Background:** Childbirth mandates support for women due to its painful nature and its maternal and neonatal complications. Increased knowledge and skills during pregnancy prepares pregnant mothers for labor and promotes their health.

**Objectives:** This study was designed to evaluate the education process of childbirth.

**Patients and Methods:** This semiclinical trial was conducted on 195 pregnant women (132 cases in control group and 63 in the case group) attending at health centers in Amol, Iran from 20 weeks of gestational age without any complication during pregnancy. Case group members attended in prenatal classes and the control group only received routine care. Data were collected by means of demographic checklist, standard hospital anxiety questionnaire, and a checklist, related to childbirth information, and intensity of pain based on Visual Analogue Scale (VAS) and McGill scale. The data were analyzed by SPSS using T-test and chi-square test.

**Results:** The results of this study showed that parents with high level of education were more interested in prenatal classes ( $P=0.007$ ,  $P=0.003$ ). The mean score of anxiety among case group was  $14.47 \pm 4.69$  and in control group was  $16 \pm 4.86$  ( $P=0.002$ ). Pain intensity in case group was  $85.68 \pm 1.85$  and in control group was  $90.99 \pm 14.72$  ( $P=0.030$ ), intervention on labor such as episiotomy was 66.1% in case group and 72.8% in control group ( $P > 0.001$ ) and C/S was 17.1% in case group and 32.2% in control group ( $P=0.01$ ).

**Conclusions:** Prenatal education and psychological support of mothers during pregnancy and labor is recommended for all pregnant women.

**Keywords:** Prenatal Care; Delivery; Obstetric; Prenatal Education

## 1. Background

Childbirth is a life-turning event in the most basic sense of the word. It means not only giving birth to a new life, but also becoming something new: a parent. The birth of a child alters all aspects of the new parents' lives (1). Both their inner and outer worlds change and these changes last forever. A new personality adapted to the needs of the baby evolves, and for a woman the physiological transformations are profound. In all cultures and times, women have used rites or strategies and sought support from more experienced women during these deep life changes. This need for support is also associated with awareness of the fact that childbirth is associated with pain (2) and risk of infant and maternal morbidity (3). Even if threats to the infant's and mother's health are small for women who have access to modern obstetric care, and pain relief is available, women and their partners still worry about the birth (4). Over 90% of prenatal stress and anxiety is related to the process of childbirth (5). Mother's anxiety in this period is caused by the lack of knowledge and prenatal fear of the unknown, and childbirth. As a result of fear and anxiety, secretion of stress hormones increases and can lead to pre-term birth, lack of progress, low birth weight of child, and fetal hypoxia (6). Women's access to all health

services, along with increased awareness through education and counseling during pregnancy and childbirth are effective factors in prevention of mortality and complications in this period. Increased prenatal knowledge and skill prepares mothers for delivery, and promotes their health. Today, emphasized by UNESCO, learning is an inseparable part of human life (7).

In many parts of the world, prenatal and delivery trainings that educate pregnant women and their spouses about childbirth and parenthood is routinely provided for women as part of prenatal care (8).

In Iran, prenatal care is limited to regular examinations, tests, and ultrasound. This program is insufficient for mothers and their lack of knowledge and preparation cause anxiety and increased medical interventions, especially cesarean sections (6, 9). Cesarean section in Iran is performed on 40% of cases, while WHO recommends 15%, it is 23% in the U.S. and 10.7% in Sweden (6). Implementation of safe labor policies, mother friendly hospitals, prenatal education classes, and establishing standard delivery wards together with changes of attitude and behavior of midwives and obstetricians could help to reduce cesarean and other emergency interventions (10).

Many studies have shown positive and useful effects of prenatal education classes. There are many studies that show ineffectiveness of this method. In a study by McGrath (2008) in Sweden, the rate of cesarean section and the need for epidural in the trained group had significantly reduced (11).

In a study in Spain (2010), trained mothers' anxiety was much less, but no difference was observed in duration of the first and second stages of delivery, type of delivery, perineal injury, and 5-minute Apgar of the baby (12). In a study in Iran by Mehdizadeh (2003), back and hip pain and fatigue were less in trained mothers. Also, the rate of cesarean and duration of delivery stages were significantly less in trained women (6). In Bergstrom study (2009), use of epidural anesthesia in the trained group compared to the standard group had not reduced, also in experience of delivery and level of parents stress no improvement was observed (13).

## 2. Objectives

This study was conducted with the aim to assess the effect of prenatal training classes on process of delivery at Imam Ali Hospital in Amol, Iran during 2012 and 2013.

## 3. Patients and Methods

This study was a semi-experimental study from June 2012 to April 2013. Convenient sampling was used and the sample size was determined through other studies (6); 292 women were selected at the governmental health-care center of the city of Amol, Iran.

The inclusion criteria were as follows: completion of the 5th grade of elementary school, current gestational age of 16 to 20 weeks, 17 to 35 years old, no contraindication for natural delivery, without any complication during pregnancy.

The women that were interested in attending prenatal classes were selected as the case group (102 people), and others were selected as control group (190 people). The case group attended in eight training sessions run by four doulas (women having experience in childbirth before and trained in this regard) at two private consultation and healthcare centers of the city of Amol. Each class lasted 90 minutes into three parts. Part one was about physical and anatomical changes during pregnancy, psychological health, warning symptoms during pregnancy, the pros and cons of vaginal and caesarian delivery, stages of delivery, breastfeeding and family planning theoretical training that was presented by means of audiovisual instruments like videos of natural delivery. Part two included consultations of 15 minutes long in forms of questions and answers. Part three covered mental and muscular exercises, training proper positions during labor and delivery, proper breathing during pregnancy, labor and delivery, and 30 minutes of practicing for pregnant women. The control groups were conducted routine prenatal care.

The checklist included demographic information, pregnancy information and labor information. Hospital Anxiety and Depression Scale (HADS) was used to assess anxiety; Visual Analogue Scale and McGill questionnaire were used to assess pain. The Persian version of HADS is a standardized tool (14) whose reliability and validity was confirmed by Ali Montazeri. Alpha Chronbach was determined 0.78 for HADS for anxiety subscale, and 0.86 for HADS depression subscale (15). It has seven four-point Likert scale questions; with lower scores showing less anxiety. Visual Analogue Scale is one of the numerical visual scales with scores 0-100; zero means no pain and 100 shows the highest amount of pain felt by a patient. Huskisson demonstrated its validity and reliability (16). The McGill pain questionnaire (MPQ) with three sensory, affective and evaluative aspects is a strong tool to assess pain (17, 18) and numerous studies have approved its reliability and validity (19, 20). The MPQ reliability and validity was confirmed by Khosravi in Iranian patients. Total Chronbach alpha was 0.85 and the stability coefficient in all areas were 0.80 (21). In the present study, the affective aspect of pain was assessed, including tiring, sickening, fearful, and punishing that is attributed to labor pain as a punishment; because the affective aspect indicates a wide range of feelings ranging from merely feeling ill to extremely feeling pain. In this questionnaire, lower points indicate less pain. Four observers collected data from samples. The reliability of observer was 0.72. When labor pain began, in case group, a doula accompanied the parturient to the labor room in Imam Ali Hospital in Amol, Iran. During labor, the individual performed all the procedures she had learned: comforting, reassuring, encouraging, talking, and massaging her back, shoulders, and limbs, helping with the best position for different stages of labor, using acupressure to reduce pain, using birth balls, and applying counter-pressure on sacrum, and parturient walking. The doula completed HADS questionnaire on arrival, VAS at cervical dilatation 3-4, 8-10 cm and the second stage of labor, and McGill scale during the active phase of labor. Information about progress of labor, need for oxytocin and analgesic, type of delivery and condition of the new born (weight, Apgar score, breastfeeding) were collected using a questionnaire. Control group, received only routine prenatal care by the delivery room personnel. Data were analyzed by t-test and chi-square test, using SPSS version 16. The significance level was set at 0.05.

## 4. Results

Initially, 292 women were selected for the study, of whom 97 (10 due to non-cooperation, four due to incomplete questionnaires, 12 because of high-risk pregnancies, 71 due to emergency cesareans) were excluded from the study (39 in case group, and 58 in control group). Statistical analysis was performed on 195 women (132 in control group and 63 in case). The demographic characteristics include

age, mother and spouse occupation, education level, parity, income level, and place of residence, demonstrated. There was a significant difference between mothers in the two groups in terms of education level ( $P = 0.003$ ), such that 20% of mothers in routine care group and 35% in the trained group had university education (Table 1).

The mean score of anxiety in case group was  $14.47 \pm 4.69$  and in control group was  $16.76 \pm 4.86$ , and the difference was significant ( $P = 0.002$ ). In terms of pain intensity using VAS, the results showed the difference between the two groups were insignificant in latent phase (3-4 cm in cervical dilatation), and in the second stage. However, in transitional phase (8-10 cm in cervical dilatation), pain in-

tensity was significantly less in case group. Comparison of McGill scale score in the two groups during active delivery phase showed significantly lower score in trained mothers (Table 2). Study results indicated that there was no significant difference between groups in duration of the first and second stages of labor, use of oxytocin and need for analgesic. However, in educated mothers Cesarean Section rate ( $P = 0.01$ ) and episiotomy rate ( $P = 0.02$ ) were significantly lower comparing to the control group. In terms of the infant's condition, no significant difference was found between the two groups in terms of baby's weight, head circumference, 5-minute Apgar and breastfeeding (Table 3).

**Table 1.** Demographic Characteristics of Study Groups <sup>a</sup>

Demographic Characteristics	Education Group	Control Group	P Value
Age, y	25.42 ± 4.9	25.62 ± 5.28	0.99
Weight, Kg	68.2 ± 11.8	67.8 ± 13.4	0.88
Length, M	1.62 ± 0.14	1.59 ± 0.17	0.56
<b>Mother Education</b>			
Primary	15 (24.2)	66 (50.0)	0.003
High school	28 (45.2)	40 (30.3)	
University	19 (30.6)	26 (19.7)	
<b>Father Education</b>			
Primary	19 (31.7)	71 (53.8)	0.12
High school	20 (33.3)	35 (26.5)	
University	21 (35.5)	26 (19.7)	
<b>Mother Occupation</b>			
Housewife	52 (83.9)	116 (87.9)	0.44
At work	10 (16.1)	16 (12.1)	
<b>Father Occupation</b>			
Employer	17 (27.4)	18 (13.6)	0.08 <sup>a</sup>
Worker	11 (17.7)	30 (22.7)	
Business	34 (54.8)	84 (63.6)	
<b>Living space</b>			
City	36 (63.2)	59 (48.4)	0.06
Village	56 (90.3)	63 (51.6)	
<b>Income level</b>			
Low	6 (9.7)	15 (11.4)	0.72
Average	56 (90.3)	117 (88.6)	

<sup>a</sup> Data are presented as mean ± SD or No. (%).

**Table 2.** Pain Intensity in Study Groups

Pain Intensity	Education Group	Control Group	P Value
<b>First phase</b>			
Latent phase (3-4 cm)	38.13 ± 28.007	40.61 ± 29.5	0.58
Transitional phase (8-10 cm)	85.68 ± 18.5	90.99 ± 14.72	0.03 <sup>a</sup>
<b>Second phase labor</b>			
McGill in the second phase labor	8.34 ± 2.35	9.16 ± 2.14	0.018 <sup>a</sup>

<sup>a</sup> The difference was significant.

**Table 3.** Obstetrics' Characteristics of Study Groups<sup>a</sup>

Characteristics	Education Group	Control Group	P value
<b>Parity</b>			0.094
Nulipar	39 (63.9)	66 (50)	
Multipar	22 (36.1)	66 (50)	
<b>Gestational age, w</b>	38.7 ± 1.8	39 ± 2.3	0.645
<b>Weight, kg</b>	3.58 ± 0.49	3.36 ± 0.39	0.361
<b>Apgar, 5 min</b>	9.3 ± 0.89	9.49 ± 0.62	0.54
<b>Head circumference, cm</b>	34.1 ± 2.8	34.3 ± 1.3	0.32
<b>Mode of delivery</b>			
Normal vaginal delivery	63 (82.9)	122 (67.7)	0.02 <sup>b</sup>
Spontaneous vaginal delivery	11 (16)	17 (13.9)	0.803
Episiotomy	39 (66.1)	80 (72.8)	0.00 <sup>b</sup>
Laceration	13 (19.1)	25 (20.5)	0.709
Caesarean section	13 (17.1)	58 (32.2)	0.01 <sup>b</sup>
<b>Length of labour</b>			
1st stage, h	6.43 ± 3.65	5.92 ± 4.94	0.52
2nd stage, min	41.04 ± 25.75	41.78 ± 28.6	0.46
3rd stage, min	4.40 ± 2.57	4.12 ± 2.25	0.89

<sup>a</sup> Data are presented as mean ± SD or No. (%).

<sup>b</sup> The difference was significant.

## 5. Discussion

The results of this study showed that prenatal education reduced level of hospital anxiety and intensity of pain in trained women, as well as the need for episiotomy and emergency cesarean. The results from the World Bank and World Health Organization studies on 4000 American women showed that use of breathing techniques and massage caused reduction in fear and pain of delivery, resulting in reduced rate of cesarean and mother and baby complications (21). Adequate and correct training increased mothers' awareness about pregnancy and delivery, and enables them to use of problem solving strategies (3, 17). Also, adaptation of the trained group and use of skills to apply these techniques causes reduction of anxiety, pain, and even postnatal depression (22, 23).

The results of this study showed that duration of different stages of delivery did not have a significant difference in two groups. While in a study by Gupta (24), and Mehdizadeh (6) duration of delivery stages was shorter in trained women. In Bergstrom study (2009), natural childbirth preparation including training in breathing and relaxation did not decrease the use of epidural analgesia during labour, nor did it improve the birth experience or affect parental stress in early parenthood in nulliparous women and men, compared with a standard form of antenatal education (13).

In the hospital where this study was conducted, oxytocin is routinely used to induce labor. Also, methods such

as changing positions and breathing technique trainings were used for untrained mothers by midwifery students and some delivery ward personnel. These could perhaps be the reason for lack of difference between groups in duration of delivery. Since this hospital is a child friendly hospital, breastfeeding begins for all infants without problem within the first half hour of birth. In this study, no difference was observed in Apgar, weight, and breastfeeding start. In Leiferman study (2003), no differences were seen in Apgar and weight of the infant, either (25). We could not randomized the patients regarding their gestational age because we could not deprive a woman to attend training classes if she was interested. Furthermore, the subjects of the two groups were not matched for education; regarding the fact that mothers having higher levels of education were more likely to take part in these classes. Therefore, the effect of the agent on the main variables was excluded in analysis.

Prenatal education and psychological support of mothers during labor can reduce anxiety, pain intensity, and interventions such as episiotomy and cesarean section. Prenatal trainings as part of routine pregnancy care could be used as an effective means of improving mothers' health.

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### Authors' Contributions

Study concept and design: Firouzbakht, Nikpour; Analysis and interpretation of data: Khefri, Firouzbakht, and Nikpour; Drafting of the manuscript: Firouzbakht, Nikpour, Khefri; Critical revision of the manuscript for intellectual content: Firouzbakht, Nikpour, Khefri.

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