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Effect of Education on Choosing Delivery Mode among Pregnant Women Referred to Health Centers of Minoodasht City: An Application of BASNEF Model

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Abstract

Aim: Caesarean section is dramatically increasing across the world. Pregnant women have an increasing tendency for caesarean section without acceptable medical indications. In general, 50 to 60% of childbirths in Iran are cesarean section. Despite the high complications of cesarean section, they are not caused by medical problems. Therefore, the current survey aims to screen the effect of education on choosing delivery mode based on BASNEF model.

Methods: A quasi-experimental study was done on 160 nulliparous women in the third trimester of pregnancy who were assigned randomly to the intervention (80 subjects) and control (80 samples) groups. A researcher-made questionnaire was utilized to collect the required data. Education and its content were developed according to the BASNEF model and the pregnant women's educational requirements. Numerous education methods were implemented in all target groups of intervention including pregnant women, their family and the health staffs. To analyze the data, paired and McNemar tests through SPSS version 18 were utilized. Significant level was also considered <0.05.

Findings: The majority of women were in the age range of 24-20 years. Only 1.2% of the women were illiterate in both groups. Knowledge, attitude, enabling factors, subjective norms and intention were significantly different between the two arms before and 2 months after the intervention (p=0.001) except for intention. In addition, in the intervention group, they get information significantly from friends, families, printed materials, educational films, educational sessions in the Health Centers, and the health personnel after the intervention (p=0.001).

Conclusion: Designing educational programs about delivery mode based on BASNEF model appeared to be beneficial due to the model's emphasis on subjective norms and enabling factors; therefore, educational programs based on change behavior model can notably decrease the unnecessary cesarean section in the country.

Keywords: Educational program, BASNEF model, Delivery method, pregnant women

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Introduction

Cesarean section is progressively increasing across the world, especially in many developing countries [1]. Around the world, 10 to 30% of deliveries are nearly done using cesarean section, while it is recently accounted for 50- 65% of deliveries in Iranian society, 90% of which is done in cities and private hospitals [2]. In other words, from two deliveries, one is surely performed using caesarean surgery. Shariat et al.'s study conducted in Tehran reported caesarean surgery as 66.5%. Also in Tatari et al.'s study carried out in Mashhad City, it accounted for 66.6 and 30% in private and governmental hospitals, respectively [3, 4], which is much higher than the recommended caesarean section rate (5-15%) in the World Health Organization's (WHO) guidelines [1].

Cesarean section has traditionally been categorized into either elective or emergency mode [1, 5]. It exposes women at increased risk of delivery compared to vaginal delivery mode. Cesarean section has been found to be pertinent to remarkably increased rates of uterine rupture in labor, placental abruption, and placenta praevia leading to partum hysterectomy, stillbirth and perinatal death [6]. In many cases, caesarean section is not indicated; rather, poor awareness, beliefs, attitudes and behaviors affect the type of delivery mode. According to numerous studies in Iran, education, previous cesarean, respiratory distress, pelvic diseases and gestational diabetes are determinants factors [7, 8]. One of the main reasons for cesarean delivery is the patient's request [9]. Numerous factors have contributed to the raising rates of caesarean section including promoted surgical and anesthetic techniques, demographic and nutritional factors, decreased risk of post-operative problems, providers' and patients' perception toward the safety of the procedure, and some of changes in health systems [10, 11]. In several investigations, the vast majorities of women were poorly aware of the short-and long-term hazards of cesarean for themselves and their babies, and almost all of them considered many benefits for that [12].

As mentioned above, women should be provided by appropriate information in terms of vaginal and cesarean section modes [13]. There are other studies focusing on the importance of knowledge in pregnant women because of their poor awareness [14, 15].

Health education can play an important role to increase knowledge, and change attitude and behavior using applicable theories and models [16]. BASNEF model hypothesizes that individual beliefs toward the outcomes of a behavior and the value placed upon all outcomes result in personal attitude that combined with the subjective norms and enabling factors lead to behavioral intention. It

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usually considers family, community and national-based programs. The BASNEF model appeared useful for the current survey [17]. Then the present survey aimed to assess the effectiveness of education based on BASNEF model on selecting delivery mode among pregnant women.

Materials and Methods

Study design

An experimental study (pre-test and post-test with control group) was conducted on nulliparous pregnant women in the third trimester referred to health centers. The study protocol was granted by the Ethics Committee of Golestan University of Medical Sciences (no. 2666). Informed consent was obtained from all participants prior to the study. Stratified random sampling technique was utilized to recruit samples from six health centers in Minoodasht City. The questionnaires were completed at baseline (before intervention) and two months follow-up (after intervention).

Sample size

According to 50.42% of caesarean surgery rate in the city, 25% reduction in cesarean delivery after educational sessions, 95% confidence interval and 90% test power, 71 subjects were estimated for each group, and in total, 80 participants were included in the study.

Control group

The women in this group received a standard education program that is routinely used in the Health Centers addressing the benefits and hazards of vaginal and caesarean delivery modes Educators were trained midwives in the two groups. The participants were also provided by brochures and pamphlets at the end of the sessions.

Intervention group

This group not only received the routine education same as the control group, but was also provided by two sessions (30 minutes for each session). Between 10 and 15 participants took part in each session. Also, to improve the enabling factors, an educational session of the decision-making skills was held at least a week later. Finally, in order to intervene in the subjective norms, a face-to-face education was held for spouses or effective persons. A pamphlet designed based on the BASNEF model was given to all subjects at the end of the sessions.

Participants

Inclusion criteria were as follows: 1) age range of 15-35 years, 2) height of 145 cm and over, 3) weight range of 50 to 90 kg, 4) absence of contraindications to vaginal delivery, 5) exact age of pregnancy (last accurate menstrual cycle or sonography before 20 weeks), 6)

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gestational age of 30-40 weeks, and 7) the first delivery. The exclusion criteria were 1) reluctance of women to participate, 2) contraindication for vaginal delivery in the delivery time, and 3) preterm delivery. In total, 160 eligible participants (80 in each group) were included in the current survey.

Instrument

Our search yielded no eligible questionnaires, so a new one was developed by the research team. Thus, the required data were collected using a researcher-made questionnaire based on the BASNEF model in two sections: 1) demographic characteristics including age, education, spouse's education, and job, income of family, the first day of the last menstrual period, age of pregnancy, number of abortion, infertility and disease, and 2) BASNEF model constructs including 1) knowledge (5 questions; scores: "no" = 0 and "yes" = 1; points ranging from 0 to 5); 2) attitude (10 questions scores = 1 to 5; ranging from 10 to 50); 3) subjective norms (6 questions; scores: "no" = 0 and "yes" = 1; points ranging from 0 to 6); 4) enabling factors (5 questions; scores: "no" = 0 and "yes" = 1; points ranging from 0 to 5); and, 6) behavior (2 questions; 1 question was about the type of selected delivery mode before and after education, and another one was about the delivery type). Only, attitude questions were all scored between 1 and 5 based on a 5-point Likert scale, including *"completely agree"*, *"agree"*, *"no comment"*, "disagree", and *"completely disagree"*.

Data analysis

Descriptive analysis was used to explain the mean and standard deviation of the demographic characteristics. To analyze the qualitative variables, Chi-square and McNemar tests were used, and also Independent t-test was conducted to explore the quantitative variables of the study. P-value was taken significant as <0.05.

Results

A total of 160 of nulliparous women in the third trimester were screened including 80 subjects in the intervention group and 80 participants in the control group. The results showed no significant difference between the two groups before the intervention (at the baseline).

As shown in Table 1, all demographic traits of women were not different at the baseline (pre-test) such as age, education, job, income of family, number of birth, number of abortion and previous diseases.

The majority of women were in the age range of 20-24 years (38.8% in the control group and 41.2% in the intervention group). Also 11.2% of the samples had academic degree in both groups. Comprehensive figures are reported in

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Table 1.

Table 2 declares that knowledge, attitude, enabling factors, subjective norms and intention were significantly different before and two months after the intervention (p= 0.001) except for intention.

Table 1: Demographic characteristics, birth and abortion and previous complications of the participants

Variable		Groups		P- value
		Control N (%)	Intervention N (%)	
Age	15-19	10 (12.5)	11 (13.8)	0.63
	20-24	31 (38.8)	33 (41.2)	
	25-29	24 (30)	22 (27.5)	
	30-34	10 (12.5)	9 (11.2)	
	35 and over	5 (6.2)	5 (6.2)	
	Total (mean and standard deviation)	**25.22 ± 5.07**	**24.83 ± 5.26**	
Education	Illiterate	1(1.2)	1 (1.2)	0.36
	Primary school	14 (17.5)	19 (23.8)	
	High school	23 (28.8)	30 (37.5)	
	Diploma	33 (41.2)	21 (26.2)	
	Academic	9 (11.2)	9 (11.2)	
	Total	**80 (100)**	**80 (100)**	
Job status	Housewife	72 (90)	73 (91.2)	0.74
	Employed	8 (10)	7 (8.8)	
	Total	**80 (100)**	**80 (100)**	
	1-3	77 (96.2)	75 (93.8)	
	4-6	3 (3.8)	5 (6.2)	
	Total (mean and standard deviation)	**1.89 ± 0.89**	**1.95 ± 1.07**	
Number of abortion	No	63 (78.8)	60 (75)	0.63
	1	15 (18.8)	18 (22.5)	
	2	2 (2.5)	2 (2.5)	
	Total (mean and standard deviation)	**0.24 ± 0.48**	**0.27 ± 0.5**	
Previous diseases	Yes	3 (3.8)	6 (7.5)	0.46
	No	77 (96.2)	74 (92.5)	
	Total (mean and standard deviation)	**80 (100)**	**80 (100)**	

Table 2: The mean score of BASNEF model constructs in pregnant women in the control and intervention groups before and after (2 months follow-up) education

Constructs of BASNEF model	Group	Pre-test (mean ± SD)	Two months follow- up (mean ± SD)	P- value (Independent T-test)
Knowledge	Intervention	8.68 ± 4.14	10.45 ± 3.43	0.001
	Control	8.35± 3.5	7.93 ± 3.28	
Attitude	Intervention	35.23 ± 4.74	33.3 ± 5.6	0.001
	Control	35.66 ± 4.35	36.25 ± 3.96	
Enabling factors	Intervention	3.98 ± 2.25	4.87 ± 1.5	0.001
	Control	3.4 ± 1.85	3.1 ± 1.68	
Subjective norms	Intervention	3.81 ± 1.38	3.93 ± 1.22	0.001
	Control	3.72 ± 1.48	3.63 ± 1.5	
Intention	Intervention	1.37 ± 0.49	1.38± 0.48	0.96
	Control	1.35 ± 0.48	1.35 ± 0.51	

✹ Mean and standard deviation

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Subjective norms were not significantly changed before and after the intervention in both of the study groups as shown in Table 3.

Table 4 reports that the women more preferred to receive information from family, friends, health personnel (doctor, nurse and health staff) and similar persons that was not different between before and after the intervention. While, in the intervention group, they got information significantly from friends, families, printed materials, educational films, educational sessions in the health centers, and health personnel after the intervention (p=0.001).

Table 3: The comparison of subjective norms in pregnant women in the control and intervention groups before and after (two months follow-up) the education

Effective factors on decision-making	Group		Pre-test	Two months follow up (post-test)	P- value
Spouse	Intervention	Yes	48(60)	48(60)	1
		No	32(40)	32(40)	
	Control	Yes	48(60)	50(62.5)	0.74
		No	32(40)	30(37.5)	
Doctor	Intervention	Yes	20(26.2)	20(26.2)	1
		No	60(73.8)	60(73.8)	
	Control	Yes	16(20)	13(16.2)	0.54
		No	64(80)	67(83.8)	
Health staffs	Intervention	Yes	18(22.5)	22(27.5)	0.46
		No	62(77.5)	58(72.5)	
	Control	Yes	20(26.2)	19(23.8)	0.71
		No	60(73.8)	61(76.2)	
Similar persons	Intervention	Yes	2(2.5)	2(2.5)	1
		No	78(97.5)	78(97.5)	
	Control	Yes	3(3.8)	3(3.8)	1
		No	77(96.2)	77(96.2)	
Family of spouse	Intervention	Yes	14(17.5)	14(17.5)	1
		No	66(82.5)	66(82.5)	
	Control	Yes	14(17.5)	15(18.8)	0.84
		No	66(82.5)	65(81.2)	
Family of pregnant women	Intervention	Yes	14(17.5)	14(17.5)	1
		No	66(82.5)	66(82.5)	
	Control	Yes	11(13.8)	9(11.2)	0.63
		No	69(86.2)	71(88.8)	
Friends and families	Intervention	Yes	2(2.5)	6(7.5)	0.147
		No	78(97.5)	74(92.5)	
	Control	Yes	9(11.2)	8(10)	0.79
		No	71(88.8)	72(90)	

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Table 4: Source of information in pregnant women in the control and intervention groups before and after (two months follow-up) the education

Sources of information	Group		Pre-test	2 month follow up (post-test)	P- value
Friends and families	Intervention	Yes	30(37.5)	44(56.2)	0.016
		No	50(62.5)	36(43.8)	
	Control	Yes	30(37.5)	24(31.2)	0.500
		No	50(62.5)	56(68.8)	
Television and radio	Intervention	Yes	6(7.5)	6(7.5)	1
		No	74(92.5)	74(92.5)	
	Control	Yes	3(3.8)	3(3.8)	1
		No	77(96.2)	77(96.2)	
Printed materials (tract, pamphlet, poster, newspaper, journal, book and brochure) and educational films	Intervention	Yes	13(16.2)	26(32.5)	0.001
		No	67(83.8)	54(67.5)	
	Control	Yes	15(18.8)	15(18.8)	1
		No	65(81.2)	65(81.2)	
Educational sessions in the Health Centers	Intervention	Yes	14(17.5)	48(60)	0.001
		No	66(82.5)	32(40)	
	Control	Yes	12(15)	11(13.8)	0.98
		No	68(85)	69(86.2)	
Health personnel (doctor, nurse, and health staffs)	Intervention	Yes	23(28.8)	30(47.5)	0.001
		No	57(71.2)	50(52.5)	
	Control	Yes	20(25)	23(28.8)	0.44
		No	60(75)	57(81.2)	
Similar people (pregnant women)	Intervention	Yes	26(32.5)	26(32.5)	1
		No	54(67.5)	54(67.5)	
	Control	Yes	23(28.8	19(23.8	0.503
		No	57(71.2)	61(76.2)	
Internet	Intervention	Yes	6(7.5)	6(7.5)	1
		No	74(92.5)	74(92.5)	
	Control	Yes	30(3.8)	4(5)	0.97
		No	50(96.2)	76(95)	
Satellite	Intervention	Yes	1(1.2)	1(1.2)	1
		No	79(98.8)	79(98.8)	
	Control	Yes	0(0)	1(1.2)	0.98
		No	80(100)	79(98.8)	

McNemar test also showed a remarkable difference about the intention of women to choose the vaginal mode before and after the intervention (p=0.004).

Discussion

In Iran, cesarean section exceeds 3-4 times higher than the international standard, and 75% of it is selectively performed without medical indications.

Similar to the earlier studies conducted by Tofighi [18], Toughyani [19], Abedian [20], Azh [21], and Sanavi [22], educational sessions significantly increased the knowledge and awareness of the participants in both groups; while, Kjærgaard [23] and Ryding [24] reported conflicting results such that education had not adequately improved the knowledge of

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subjects; it may likely be hypothesized that the content of education and the participants traits (age and cultural and environmental disparities) can cause these differences. Since the participants in the control group were unsystematically provided by education from unqualified staffs, this improvement was not significantly marked.

Attitude was also remarkably improved after education in the intervention group in line with the findings of Rahimikian et al. (2007) [25]. Education by increasing of knowledge caused increased motivation, and subsequently, led to a more positive attitude to use contraception methods as shown in Bani Aghil's survey (2010) [26]. Therefore, improved attitude followed by increased knowledge was reasonably expected in the current survey.

With regard to the enabling factors, the intervention had remarkable effect, indicating the vital role of the family and spouse in supporting to prefer vaginal delivery. In the studies conducted by Sharifirad [27] and Pirzadeh [28] to explore the BASNEF model-based education on the smoking behavior of students and students' nutrition behavior, correspondingly, a positive impact of education was found that may largely be due to the similar studied behaviors in the two afore-mentioned studies with this review. In contract, Taghdisi [29] found different results in patients with cancer; this discrepancy may be due to the dangerous nature of the disease such that for many years, doubt has been shed upon whether it can be prevented or controlled. LaVeist concluded that enabling factors could actually be much more important than cultural and behavioral differences in doing or changing a behavior [30].

After education, subjective norms in the intervention group including spouse, physician, similar people, family of spouse and family of pregnant women as well as friends, respectively played an important role to choose the appropriate mode of delivery that is in accordance with Charkazi et al's. study carried out in health staffs (2010) [31]. Jeyhouniand Hazaveie (2011) declared health personnel, physician and family as the most influential people, respectively [32]. The majority of subjects in the present were young women were in the age range of 20-24 years who are likely more inclined to be affected by others; additionally, poor education can exacerbate the subjective norms' effects as most of the present samples were not adequately educated.

In the intervention group, after education, the women significantly inclined to have vaginal delivery; this finding is in line with the findings of other investigations comprising Besharati [33], Fathian [34], Ghaffari [35] and Goba [36].

The present findings emphasize the importance of subjective norms in Iranian society and

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culture that should not be neglected, especially in the cities like Minoodasht located in North of Iran, a region with critical subcultures.

Conclusion

Behavior change is inevitably challenged by numerous barriers caused by cultural norms that may be properly treated by health education models and theories [37]. Additionally, due to the importance of subjective norms and poor behaviors of pregnant women, implementing routing education seems beneficial not only for pregnant women but also for families and friends; moreover, booked caesarean section should be definitely avoided strongly (because of its doubtful complications) by providing necessary education in the health centers.

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Conflict of interest

The authors declared no conflict of interest.

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