

Persuading Iranian Women toward Normal Vaginal Delivery: Using Pictorial Perception of the Labour Process

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Abstract

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BACKGROUND: Pictorial education could provide an innovative approach for health educators which help to increase health-related information, the attention of individuals, comprehension, and recall.

AIM: The purpose of this study was to determine the effect of pictorial perception of labour process by persuading Iranian women toward normal vaginal delivery.

MATERIALS AND METHODS: The pre and post non-randomized trial with control group carried out on non-probability sample consisted of 76 pregnant women during the third trimester of pregnancy in the four urban health care centres in Pars-Abad city, Iran, during 2014. Demographic, knowledge, attitude, subjective norms, outcome expectations, self-efficacy, and intention to do normal vaginal delivery variables were measured by using self-administered questionnaire and via the self-report method. Data analysis was performed using SPSS-21 software by Independent t-test, repeated measure, paired T-test, ANOVA, chi-square, Cochran's Q, and McNemar test. Manipulation included a pictorial education program to persuade pregnant women toward selecting normal vaginal delivery.

RESULTS: The results showed significant improvement in mean scores of knowledge, attitudes, self-efficacy and behavioural intention of labour after manipulation in the intervention group ($P < 0.001$). It was found about 60% changes for intending to choose normal vaginal delivery, and 27/06% of women in the intervention group reported normal vaginal delivery versus the control group. And 10/81% of women did a cesarean section because of medical reasons during of delivery. Reduction of cesarean section was evident. Additionally, the annual rate of cesarean section decreased about 7% in comparison to the previous year.

CONCLUSION: Pictorial education could be effective on the intention of women to choose natural vaginal delivery among pregnant women, and it can be used as an effective training technique for developing health literacy, enhancing self-efficacy and decision-making power of women in the delivery.

Introduction

Cesarean Section (CS) has become increasingly safer in the last century, but it cannot and more importantly should not replace natural vaginal delivery (NVD), because the maternal and infantile mortality associated with CS is 4-10 and 4 times higher; respectively [1] [2] [3].

While the highest reported rate of CS was for Brazil with about 50%, however, it is also high in Iran, for instance, 48% in 2009; and 58.6% based on the findings of another study in the Ardebil province, North West of Iran, which is a high figure compared to global statistics [4] [5] [6].

In comparison to NVD, CS has more complications, including uterine infection, fever, bleeding, anesthesia complications, urinary system damage during surgery, venous thrombosis in legs, higher expenditure, thromboembolism, postpartum depression, increased need for blood transfusion, placenta prevail, and fetal distress syndrome [2] [3] [7].

Tendency cause of CS is different including socio-economic factors, ageing women at first pregnancy, the preference of physicians, utilisation of technology, fear of physical harms, concern about the fetus, and determine the specific date for the birth of baby [3] [8] [9]. However, according to the World Health Organization has identified indications of CS,

but it is the preferred method of delivery [6].

According to studies, pictorial education provides an innovative approach and appropriate learning opportunity by using powerful and interesting graphics tool to create, manage, and exchange information and knowledge, and it helps to develop a mental model that for problem-solving [10] [11]. Also, pictures facilitate and accelerate the learning process, were easily learned and subsequently recalled over a prolonged time [10].

Moreover, humans have a cognitive preference for picture-based information and learning process as well rather than text-based which called "picture superiority effect" [11]. However, pictorial educations in combination with written or spoken text could have more effectiveness. In fact, it markedly increases attention to and recall, comprehension, adherence to health information, and the effectiveness of health communications in health education programs [12].

Since the training has a key role in choosing the type of delivery, so the education of pregnant women can lead to their preparation to deal with labour and thus reducing unnecessary CS, and this is important to the health education authorities [8] [13].

Hence, the audio-visual signs have greater objectivity and are considered as effective tools for learning process and health communication; the aim of current study was to develop and conduct how integrating pictorial education about labour process into routine health education programs will work and act to persuade pregnant women to make informed choices and voluntarily NVD method where there are numerous quest and forces to choose CS.

Material and Methods

The study was a pre-post randomised clinical trial with a control group which took place from April to September 2014. The non-probability sample consisted of all pregnant women including 37 women as intervention and 39 control groups who were recruited from four urban health care centres from among seven centres in Pars Abad city, Iran. Estimates for the number of women to be selected at each health services centre were calculated in proportion to the size of the population of women in child bring ages in each health care delivery centre covered. Eligibility criteria included: (1) being graduate in high school, (2) primiparous and multiparous women (grade 2) with gestational age of 26-30 weeks, (3) multiparous women (grade 2) with previous NVD, (4) pregnant women without miscarriage, (5) confirmed the ultrasound single fetus pregnancy, (6) confirmed the fetal ultrasound health, (7) no history of

depression or chronic illness in the past, (8) not having an abnormal child, (9) have a normal pregnancy without any medical indication to make CS inevitable to termination of pregnancy during the study, (10) not seen CS and NVD films in the past, (11) not having recent history of prenatal education about CS and NVD, and (12) agreement to participate in the study. Also, exclusion criteria were premature delivery, multiple pregnancy diagnoses, small pelvis, diabetes, high blood pressure, CS indications, and the continued absence of women in the training sessions, and the unavailability of pregnant women at the time of completing the questionnaire and during conduct the study. The participants ranged in age from 18 to 35 years (Mean = 25.19, SD = 4.48). Of all 80 participants, 76 women completed the written questionnaire completely and participated in all training sessions. A self-report and researcher-designed questionnaire was used to collect relevant data.

The study was recorded in IRCT, and the Tabriz University of Medical Sciences' Ethics Committee approved the study and 92233 as ethical code received from the Department of Research and Technology University. The women received a demonstration on how to fill in the questionnaire, and they signed an informed consent before completing the questionnaire.

Measures included the demographic data and knowledge of NVD benefits and CS complication using 11-item (e.g., the risk of postoperative infection is lower in NVD) and 17-item (e.g., the risk of bleeding is higher in CS); respectively. The options were yes, no, or I don't know. Other scales were positive attitude toward NVD (e.g. NVD is easier than CS), subjective norms of NVD (e.g., my mother and sister are recommending me to choose the natural vaginal delivery method), outcome expectations of NVD (e.g., I will have less pain after the natural vaginal delivery), and self-efficacy for NVD (e.g., the natural vaginal delivery is hard; but, I will do) using 15, 8, 12, and 5-item scales; respectively, which were measured based on a 5-point Likert-type scaling (1 = strongly disagree to 5 = strongly agree).

Table 1: Instrument construction

Scales	# of Items	CVI [†]	CVR [‡]	Reliability coefficient
Knowledge of NVD Benefits	11	0.89	0.91	0.86
Knowledge of CS Complication	17	0.85	0.94	0.92
Attitude toward NVD	15	0.95	0.97	0.69
Subjective Norms of NVD	8	1.00	1.00	0.83
Outcome Expectations of NVD	12	0.94	0.97	0.93
Self-Efficacy for NVD	5	1.00	1.00	0.85
Intention to Choose NVD	2	1.00	1.00	0.90

[†]-Content Validity Index; [‡]-Content Validity Ratio.

Furthermore, intention to choose NVD was another measure which measured via two-item scale. 1) "Which one of delivery method do you intend to choose?" and 2) "If your physician make you free to choose the delivery method which one of NVD or CS you will prefer?" Two options were available for each item, namely, CS or NVD.

Tests were used after confirmed the normality by Kolmogorov-Smirnov test using the SPSS-21 software. Descriptive statistics were used to summarise and organise the demographics data. Chi-square was performed to examine the relationship between demographic variables with the choice of delivery method. To compare the mean score of all scales except intention to choose NVD were used the Paired Samples T-test and ANOVA with repeated measures based on Greenhouse-Geiser test in the control and intervention groups in the pre and post stages of the intervention, respectively; and between the two groups were used the Independent T-test before the intervention and Covariance Analysis by adjusting the basic variables after the intervention. Mc-Nemar test and Cochran's test were used to compare the intention to choose NVD before and after the intervention in the control and intervention groups, respectively; and Chi-square test was used between the two groups in both of pre and post stages of the intervention. To analysis choice of the delivery method before the intervention and after the delivery between the two groups was used Chi-square test. To express the favourable and unfavourable changes in the intention to choose NVD and the choice of delivery method (Behavior) was performed Odds Ratio Paired. Also, P-value <0.05 was considered significant in all analyses.

From four health centres that were simple randomly assigned to two intervention and control groups, eligible women for the study were selected by convenience sampling method. Eligible pregnant women in the intervention group were invited via a phone call to participate in this study and then they were informed about all the aims and procedures of manipulation.

Manipulation included a pictorial and audio-visual education program to persuade pregnant women toward selecting NVD and was performed during four 60-minute training session, using pictures and videos, interactive communication, and question and answer after training. Most of the educational content of intervention was done according to diagnostic assessment. In addition to the intervention group participated in training sessions, benefited from routine prenatal care also, but the control group received only routine prenatal care.

The content of the training sessions included: a) the first session related to the anatomy and physiology of pregnancy, b) the second session was about the harms and benefits of NVD and CS, effective factors on the type of delivery and indications of CS, c) the third session related to movies and stages of NVD and CS, and d) the fourth session was about the pictures of delivery room, available obstetric facilities in the hospital and interviews with postpartum, and were answered to their questions after the session.

Training sessions took place while receiving

regular prenatal care. Each training session was a continuation of the previous session, and if a pregnant woman had received a training session, next training session was formed. Also, the phone number was placed at their disposal if they need to call and ask their questions.

All of the training sessions ended to 36-37 weeks of pregnancy, and the post-test was conducted in three stages; 1) after the second interventional session, 2) immediately after completing all of the manipulation programs, and 3) the next referring to pregnant women to the health centre after completing all of the manipulation programs. Then the groups completed the initial questionnaire. In the end, their delivery method and their reason for its choice were recorded.

Results

The mean age of pregnant women in the intervention and control groups, were, $24/43 \pm 3/50$ and $24/56 \pm 3/46$ and meant age of husbands with $29/49 \pm 4/31$ and $30/13 \pm 4/47$; respectively.

Table 2: Characteristics of participants and their relationship with the choice of delivery method (n = 76)

Variables	Intervention Group (n = 37)		Control Group (n = 39)	
	n (%)	P-value*	n (%)	P-value*
Educational level				
High school	25 (67.6%)	0.011 [#]	26 (66.7%)	0.107
University	12 (32.4%)		13 (33.3%)	
Spouse Educational level				
Elementary	1 (2.7%)	0.541	6 (15.4%)	0.351
Middle school	3 (8.1%)		7 (17.9%)	
High school	15 (40.5%)		12 (30.8%)	
University	18 (48.6%)		14 (35.9%)	
Employment status				
Housewife	34 (91.9%)	0.554 [#]	39 (100%)	NS
Employed	3 (8.1%)		0	
Spouse Employment status				
Staffer	8 (21.6%)	0.431	2 (5.1%)	0.471
Worker	3 (8.1%)		2 (5.1%)	
Self-employment	26 (70.3%)		35 (89.7%)	
Housing finance Status				
Landlord	18 (48.6%)	0.124	20 (51.3%)	0.151
Leased	19 (51.4%)		19 (48.7%)	
Having an independent life				
Yes	28 (75.5%)	0.711 [#]	24 (61.5%)	0.571
No	9 (24.3%)		15 (38.5%)	
History of smoking				
Yes	0	NS	0	NS
No	37 (100%)		39 (100%)	
Spouse History of smoking				
Yes	4 (10.8%)	0.283 [#]	1 (2.6%)	0.410 [#]
No	33 (89.2%)		38 (97.4%)	
Household income				
Low	15 (40.5%)	0.531	10 (25.6%)	0.264 [#]
Average	22 (59.5%)		29 (74.4%)	
High	0		0	
Having health insurance				
Yes	20 (54.1)	0.457	27 (69.2%)	0.726 [#]
No	17 (45.9%)		12 (30.8%)	
Having supplemental insurance				
Yes	7 (18.9%)	0.677 [#]	6 (15.4%)	0.370 [#]
No	30 (81.1%)		33 (84.6%)	
Pregnancy				
Wanted	30 (81.1%)	0.408 [#]	36 (92.3%)	0.557 [#]
Unwanted	7 (18.9%)		3 (7.7%)	
Type of prenatal care				
Private physicians	0	0.204	2 (5.1%)	0.099
Health care centre	17 (45.9%)		17 (43.6%)	
Both	20 (54.1%)		20 (51.3%)	
Medical doctor's recommendation to choosing the CS				
Yes	1 (2.7%)	0.405 [#]	1 (2.6%)	1.000 [#]
No	36 (97.3%)		38 (97.4%)	
Place of delivery				
Private hospital	1 (2.7%)	1.000	0	NS
Public hospital	36 (97.3%)		39 (100%)	

*P-value based on chi-square test; [#]P-value based on Fisher's Exact test; No statistics are computed because this is a constant.

Choice of delivery and maternal education in the intervention group were statistically correlated.

67/6% (25/37) of mothers in the intervention group who were high school graduates chose NVD. No other significant associations were found.

The results of Greenhouse-Geisser test and paired t-test showed significant difference with the maternal knowledge about complications of CS and advantages of NVD in the intervention and control group; respectively, but the increased awareness in the intervention was more than the control group before and after the intervention. Women's attitude about NVD changed in a positive direction, but very little change was observed in the control group.

Table 3: Comparing the means scores Knowledge, Attitude, Subjective Norms related to NVD, Outcome Expectations of NVD, and Self-Efficacy for NVD among Participants; before and after the intervention

Variables	Measurement	Intervention Group	Control Group	P-value ^{ab}
		(n = 37)	(n = 39)	
		Mean ± SD	Mean ± SD	
Knowledge of NVD Benefits	B	17.32 ± 3.33	17.59 ± 3.66	0.371 ^{at}
	A ₁	20.73 ± 1.83		
	A ₂	21.03 ± 1.34 [#]		
	A ₃	21.35 ± 0.94 [#]		
P-value ^{c,d}		<0.001 ^c	<0.001 ^d	
Knowledge of CS Complication	B	20.5 ± 4.58	20.13 ± 5.32	0.474 ^{at}
	A ₁	30.08 ± 5.38		
	A ₂	32.16 ± 4.91 [#]		
	A ₃	32.57 ± 2.15 [#]		
P-value ^{c,d}		<0.001 ^c	<0.001 ^d	
Positive Attitude toward NVD	B	53.30 ± 9.45	52.46 ± 10.43	0.356 ^{at}
	A ₁	55.49 ± 8.14		
	A ₂	60.46 ± 8.69 [#]		
	A ₃	61.05 ± 10.96 [#]		
P-value ^{c,d}		<0.001 ^c	0.301 ^d	
Subjective Norms of NVD	B	19.92 ± 9.36	19.79 ± 8.12	0.475 ^{at}
	A ₁	19.62 ± 5.28		
	A ₂	19.65 ± 6.30		
	A ₃	18.84 ± 6.76		
P-value ^{c,d}		0.686 ^c	<0.001 ^d	
Outcome Expectations of NVD	B	52.03 ± 10.56	50.69 ± 9.00	0.277 ^{at}
	A ₁	54.04 ± 6.73		
	A ₂	55.59 ± 5.41		
	A ₃	55.23 ± 8.21		
P-value ^{c,d}		<0.059 ^f	<0.007 ^d	
Self-Efficacy for NVD	B	15.00 ± 8.03	12.85 ± 6.93	0.107 ^{at}
	A ₁	13.78 ± 6.25		
	A ₂	15.57 ± 6.52 [#]		
	A ₃	16.16 ± 6.26 [#]		
P-value ^{c,d}		0.057 ^c	<0.107 ^d	

B-Before the intervention; A₁-The first stage after the intervention (after completion the second training session); A₂-The second stage after the intervention (immediately after the completion of the training sessions); A₃-The third stage after the intervention (First visit after the completion of the training sessions); #-Significant intra-group differences with pre-intervention stage values; - Significant intra-group differences with the values of the first stage after the intervention; a-P-value based on Independent T-test samples and a single tide is reported; †-Variables are reported on the basis of equal variances of Independent T-test; b-The P-value based on ANKOV (Covariance); c-P-value based on Greenhouse-Geisser; d-P-value based on Paired-samples T-test and a single tide is reported; - The range of questions is knowledge of CS complication (0-34); - The range of questions is knowledge of NVD benefits (0-22); - The range of questions is positive attitude toward NVD (15-75); - The range of questions is subjective norms of NVD (8-40); - The range of questions is outcome expectations of NVD (12-60); - The range of questions is self-efficacy of NVD (5-25).

Also, using analysis of Covariance was observed a significant relationship in the mean scores of awareness, positive attitude toward NVD, self-efficacy for NVD, and intention of doing NVD between two groups after intervention, but this change did not occur in the mean scores for positive subjective norms of NVD and expectations outcome of NVD, and this is

while t-test did not showed significant difference before intervention.

Table 4: Intention to Choose NVD among Participants; before and after the intervention

Variables	Measurement	Intervention Group	Control Group	P-value		
		(n = 37)	(n = 39)			
		n(%)	n(%)			
Intention to Choose NVD	B	CS	22 (/59.55)	24 (/61.5)	0.853 ^a	
		NVD	15 (/40.5)	15 (/40.5)		
	A ₁	CS	18 (/48.6)			
		NVD	19 (/51.4)			
	A ₂	CS	14 (/37.8)			
		NVD	23 (/62.2)			
	A ₃	CS	12 (/32.4)	22 (/56.4)		< 0.036 ^a
		NVD	25 (/67.6)	17 (/43.6)		
	P-value ^{c,d}		<0.001 ^e	<0.343 ^e		

B-Before the intervention; A₁-The first stage after the intervention (after completing the second training session); A₂-The second stage after the intervention (immediately after the completion of the training sessions); A₃-The third stage after the intervention (immediately after the completion of the training sessions); a-P-value based on Chi-square test; b-The P-value based on Cochran's test; c-P-value based on Mc-Nemar test and a single tide are reported; * Significant intra-group differences with the pre-intervention stage.

Moreover, Cochran's Q test showed a significant relationship in the intention of doing NVD at pre and post-intervention periods in the intervention group, and it was increased. Also, despite the increase of NVD frequency and reduce CS frequency was observed no significant correlation compared to the selected method of delivery between the two groups in the pre-intervention and after giving birth phase using Chi-square test

Table 5: Choice of delivery method among Participants; before and after the delivery

Variables	Measurement	Intervention Group	Control Group	P-value
		(n = 37)	(n = 39)	
		N(%)	N(%)	
Choice of delivery method Before the delivery	CS	22 (/59.5)	23 (/59.0)	0.966
	NVD	15 (/40.5)	16 (/41.0)	
After the delivery	CS	19 (/51.4)	24 (/61.5)	0.370
	NVD	18 (/48.6)	15 (/38.5)	

* P-value based on Chi-square test.

Generally in the intervention group 27/02% (n = 10) from 37 samples had the intention changes from the CS to NVD that 16/21% (n = 6) of this number were performed NVD, and 10/81% (n = 4) were performed CS at the stage of labor because of medical reasons and emergency situations such as sudden increase in blood pressure and dystocia or lack of progress of labor. In other words, almost 60% of the intended changes from the CS to NVD was led to behaviour (NVD) in the intervention group. Also in the control group, 10/25% (n = 4) from 39 samples had the intention changes from the CS to NVD, that same percentage was maintained via performance of NVD.

It should be noted that 3 and 5 samples in the intervention and control group that had the intention of doing NVD since the beginning of the intervention respectively; were forced to have CS because of dystocia, breech presentation and preeclampsia in labour stage.

It is important to note that according to the time off provided statistics of CS rate by Pars Abad

city that was applying this intervention, 7% reduction was observed in all rate of urban CS.

Discussion

This interventional study was evaluated an innovative approach using fixed and mobile pictures to facilitate a better understanding of individuals that was different from other studies in this field.

Generally the results showed favorable changes in the intention to choose NVD (27/06%) in the intervention group that 60% of the desired changes were evident in the post-partum in the behavior, in addition to the annual assessment of the city was reported 7% reduction in the rate of CS which was included the implementation of the intervention.

Unlike other interventional studies that are focused on investigation of pre and post intervention; this study of the effect of intervention sessions sequences showed a significant intergroup relationship with the pre-intervention stage and the relationship of the stages with each other at the factors of knowledge of NVD benefits, knowledge of CS complication, positive attitude toward NVD, self-efficacy for NVD, and the intention to choose NVD.

In recent researches in 2013 in Iran, the knowledge of the majority of pregnant women (over 50%) was poor about delivery methods, and their advantages and disadvantages which it's the reason were described inadequacy of the training in prenatal in health centres [14]. But despite the knowledge and attitude of pregnant women of this study was moderate in this field, so was felt a need to upgrade the information. Therefore, these findings revealed the importance of parental education about different delivery methods, and it showed the effect of visual education that could through increased transfer of information to participants cause creation and promotion their positive attitude toward NVD.

Also, after training intervention, the knowledge about CS and NVD and the positive attitude toward NVD was improved in the intervention group, and significant correlation was reported between pre- and post-intervention stages between two the groups, which other studies confirmed these findings [7] [8] [11] [15].

Versus, the studies by Shahraky et al. and Toghyani reported lack of effect of the training program on knowledge and attitude toward childbirth and declared that this might be due to the inadequate educational content in the realm of emotional [9] [16]. But the cause of significant attitude construct in this study can be expressed properly designed interventional training based on attitude and behavioural beliefs of pregnant women in this field,

because images, slide and video have more objective and are of most interest to change the attitude [17]. Moreover, despite an increase in the mean score of knowledge of delivery method in the control group, attitude construct did not change, that this was also evident in the study by Rahimikian et al., [15]. This increased knowledge in the control group could be possible because of receiving knowledge about childbirth from other information sources such as mass media, educational books, personnel of health centres, etc. which this trend of gaining unsystematic of information caused that slight promotion of knowledge and lack of changing attitude among them.

In the current study, subjective norms aimed to determine the effects of different people including doctors, midwives, wife, family, and friends and acquaintances about the pregnant women decision for choice of NVD. Despite other studies showed an increase in the mean scores of subjective norms associated with NVD and the significant relationship between pre and post intervention in the intervention group and between two the intervention and control groups [8] [9], in this intervention a smaller decrease was revealed in this scale in the intervention group compared with the control group and this can be revealed that the positive impact of different individuals views in relation to NVD in the pregnant women of the intervention group was more than the control group, and therefore, the primary effect of these comments has been maintained to some extent in the intervention group.

Also, there was no increase in this score in the intervention group, probably it's reason be to obtain a training program, observation of images objectively and videos of delivery methods by this group and thus promotion of a positive attitude toward NVD that in their decision to birth are focused more on personal beliefs rather than social or norm beliefs and prefer NVD regardless of social demand; totally Ajzen & Fishbein stated that are expected to vary the relative importance of attitudes and subjective norms to predict the intentions and needs of people from society to society [18].

Moreover, researchers have shown that NVD selection in pregnant women is associated with high self-efficacy [14]. In fact, the self-efficacy is individuals' assessment of own ability to cope with stressful situations and necessary reactions, especially during labour and pair of childbirth [19]. Women who have low self-efficacy, consider NVD as impossible issue and experience much fear during pregnancy [20]. Therefore, these women may prefer CS to avoid or escape from the pain of childbirth associated with NVD [21]. Therefore self-efficacy was explained as a mediator factor in childbirth, and a key element in the choice of delivery method and control of childbirth fear that can enable the person to cope with childbirth [20] [21]. Thus self-efficacy plays an important role in behavioural intention [19] [22] and act as a bridge between think, intention and a specific

behaviour [14]. The results also showed a positive effect of training program on this important factor to choose the delivery method, so that after intervention between two groups there was statistically significant in mean scores of self-efficacy that this result was consistent with Myoghwa 's study findings [10].

Also, since the acquisition of skills through past successes and positive experiences reinforces the self-efficacy, so multiparous pregnant women have greater self-efficacy than nulliparous [20] [23]. Hence cause of the lack of significance in mean scores of self-efficacy in the intervention group pre and post-intervention phase is probably related to this fact that the majority of mothers under current study were nulliparous.

In fact, people with high self-efficacy expect to gain success in their efforts, these people have favourable outcome expectation from certain behaviour, which this focuses on the relationship between self-efficacy and outcome expectations that had been revealed this relation in childbirth also [20] [23] [24] [25]. But in this study in spite of significance in the mean scores of self-efficacy between the two groups, was not a significant difference in the mean score of the outcome expectation of NVD. Although the studies have shown a relationship between self-efficacy and outcome expectation, these two variables are different from each other [20]. As Tudoran & Williams and et al. explained that outcome expectation is important in forming an intention and can be used as a tool in changing individuals' behaviour and alone be sufficient to explain the behaviour [25] [26] [27].

A person may be aware from the beneficial outcomes of behaviour, but had no confidence in her ability to do it; the person may have more confidence, but doubt in reaching to the outcome expectation [21]. In fact, an interaction between the outcome expectation and self-efficacy has been found in the investigations, so that the people believe that they can do a certain healthy behaviour, but do not do it, because they ask from the results of such behaviour [26] [28] [29]. So if self-efficacy is allocated as an interface between the outcome expectation and intention, the direct relation of the outcome expectation with intention will disintegrate; so the outcome expectation may be associated with intention through two different methods: 1) directly, 2) indirectly through its effect on self-efficacy and the subsequent impact on intention [26].

Therefore in the current study, the lack of significant increase in the mean scores of outcome expectation is probably its indirect effect on intention; in other words, perhaps increase in the mean score of outcome expectation has been revealed with its impact on self-efficacy, and it's significant. Moreover researchers have been showed that a person's beliefs about a certain behavior as outcome expectation and values associated with attitudes, this means that

person's attitudes toward behavioral intention may be formed from a linear combination of the outcome expectation and the expected value [25] [30] which this can be another probability of the lack of significant apparent increase in the mean score of the favorable outcome expectation of NVD and its indirect impact on intention with the increase in the mean score of positive attitude toward NVD. In general, it can be said that self-efficacy and outcome expectation is effective in the formation of intention and are important as tools in the development of behaviour [27] [31].

Despite the significant relationship in labor behavioral intention between pre-post training in the intervention group and among two groups after training that were similar with many researchers results [7] [8] [9], but was not observed this significance in choice of delivery method between two groups that were not consistent with the findings of other studies [7] [8] [9] [13] [15].

Generally, behavioural intention as a person's mental willingness to do behaviour is the most determinant and predictor of behaviour which is a sign of person's readiness to carry out the desired behaviour [18] [32]. Although in Poss et al. study is confirmed strong relationship between intention and behavior and it is common quite that people behave in accordance with their intentions, but for carry out the behavior is not enough only behavioral intention [18] [32] [33], because there are factors that participate in convert the intention to behavior and filling out the gap between intention and behavior; among these factors, the factors are that facilitate the conversion of the intention to behavior like facilities, resources, needfull skills to change the behavior which John Hubley express it as enabling factors and or unpredictable obstacles or factors are that lead to the surrender of the person against temptations, such as a person's ability to cope and strength in dealing with barriers after intention as self-efficacy survival and planning to do behavior in dealing with obstacles after decision-making which have been raised by Schwarzer et al as meditors after intention to overcome intention-behavior gap and become intention to behavior [18] [22] [31].

While in the conducted surveys, the main reasons for high tendency and preference for CS among Iranian pregnant women were described as non-medical reasons, social beliefs, cultural and economic factors [34] [35], but according to Besharati et al. findings [8], in this study also, the cause of lack of convert a favorable behavioral intention (ie modified intention from CS to NVD) to the desired behavior (NVD) in the intervention group was medical reasons and mother's emergency conditions in the process of giving birth such as a sudden increase in blood pressure or lack of progress of labor or dystocia; so by the necessary arrangements except for the medical cases that diagnosed originally, other casess should be cotrolled in order to reduce the emergency CS rate resulting in such cases; because the more

understanding of the determinants of a behavioral will be caused the more success of interventions [36].

The findings of present study reflected the impact of visual training on reducing CS among the pregnant women, regardless of CS that was necessary because of emergency reasons, the rest of the modified intention was observed as desirable in the behaviour of pregnant women with NVD.

Studies showed that pictures stimulate memory, elevates attention, understanding, help to recall information, and are important to learning speed and strengthen communication [11] [12] [37]. Visual training is an innovative approach to learn and appropriate use of health-related issues because it enables people with different educational levels by strengthening self-efficacy, knowledge and increase understanding [10].

While most studies about visual training were focused among individuals with low education or lack of sufficient skills in reading and on issues other than childbirth [11] [12], but in this study were evident the effectiveness of this intervention training among individuals with high education level and familiarity with the delivery methods.

Moreover, as researchers have shown in education and psychology that people have a priority and cognitive preference for visual information rather than contextual information [10] [11]. However, if the pictures are provided with verbal explanations, in addition, to increase recall and effective help to patient understanding, causes to avoid wrong interpretation of the pictures [10] [11]. Hence, the findings of this study also showed the way impact of combining of visual training with audio training among participants.

As a limitations of this study are: 1) way of self-report for completing questionnaires that is likely bring recall bias, 2) how sampling depending on its non-random nature that causes lack of generalizing the results to other populations, 3) collecting information using self-structure instruments compared to standard tools, there are the carelessness likelihood and lack of understanding by participants in answering, 4) non large studied area, which bring out the possibility of communication and transfer of information between two groups or in other words the possibility of communication bias, and 5) The lack of audio-visual tools in some health centers under study. Therefore, it is suggested that in addition to taking into consideration the cited limitations by further researchers, in order to better achievement to research objectives, this training should be provided for pregnant women with different educational levels and their spouses and mothers in companion with routine prenatal care. Also, it is recommended to check out the entire process after intervention in control groups simultaneously with intervention group to confirm the effects of each of the training sessions.

In conclusion, the current study showed the effectiveness conducted visual training in selecting NVD and prevention of the unnecessary CS rate, and as a new approach could provide pregnant women with the advantage of increasing awareness of both delivery methods, increasing positive attitudes toward NVD, increasing self-efficacy of NVD, and favorable behavioral intentions through presentation of pictures and related. So this method can be used to developing health literacy, enhancing self-efficacy, decision-making power in women's skills about NVD, and the future decisions of health authorities to more encouraging mothers to do NVD, reducing unnecessary CS and providing maternal and their child health as a suitable educational tool. Thus the health communication efficiency can be increased significantly by this training in designing new cases of health education and be effective.

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References

1. Karim F, Ghazi A, Ali T, et al. Trends and Determinants of Caesarean Section. *JSP*. 2011; 16(1): 22-27.
2. Runmei M, Terence TL, Yonghu S, et al. Practice audits to reduce caesareans in a tertiary referral hospital in south-western China. *Bull World Health Organ*. 2012; 90(7): 488-494. <https://doi.org/10.2471/BLT.11.093369> PMID:22807594 PMCID:PMC3397701
3. Darvishi E, Mortazavi SS, Nedjat S, et al. Experiences of women and gynecologists on the choice of delivery method: A qualitative research. *HSRJ*. 2012; 8(1): 59-67.
4. Goldani MZ, Barbieri MA, Da Silva AAM, et al. Cesarean section and increased body mass index in school children: two cohort studies from distinct socioeconomic background areas in Brazil. *Nutr J*. 2013; 12: 104-110. <https://doi.org/10.1186/1475-2891-12-104> PMID:23886115 PMCID:PMC3727942
5. Bahadori F, Hakimi S, Heidarzade M. The trend of caesarean delivery in the Islamic Republic of Iran. *EMHJ*. 2013; 19: 67-70. <https://doi.org/10.26719/2013.19.Supp3.S67>
6. Sharghi A, Kamran A, Sharifirad GR. Assessing the factors influencing delivery method selection in primiparous pregnant women referred to health centers in Ardabil, 2010. *HMJ*. 2011; 15(3): 234-242.
7. Kashfi SM, Khani Jeihooni A, Babaei Heydarabadi A, et al. Effect of behavioral intention model-based education on decrease the rate of caesarean delivery among pregnant women. *JPS*. 2014; 5(1): 16-23.

8. Besharati F, Hazavehei SMM, Moeini B, et al. Effect of educational interventions based on theory of planned behavior (TPB) in selecting delivery mode among pregnant women referred to Rasht health centers. *ZUMSJ*. 2012; 19(77): 94-106.
9. Shahraki Sanavi F, Ansari-Moghaddam A, Rakhshani F, et al. Two teaching methods to encourage pregnant women for performing normal vaginal delivery. *IJME*. 2012; 12(3): 184-192.
10. Myonghwa P. Effects of interactive pictorial education on community dwelling older adult's self-efficacy and knowledge for safe medication. *J Korean Acad Nurs*. 2011; 41(6): 795-804. <https://doi.org/10.4040/jkan.2011.41.6.795> PMID:22310864
11. Katz MG, Kripalani S, Weiss BD. Use of pictorial aids in medication instructions: A review of the literature. *AJHP*. 2006; 63(23): 2391-2397. <https://doi.org/10.2146/ajhp060162>
12. Houts PS, Doak CC, Doak LG, et al. The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *PEC*. 2006; 61(2): 173-190. <https://doi.org/10.1016/j.pec.2005.05.004>
13. Ajh N, Sabet ghadam Sh, Unesyan M. The effect of health education on the rate of cesarean section. *JQUMS*. 2011; 14(4): 71-76.
14. Baghianimoghadam MH, Baghianimoghadam M, jozi F, et al. The relationship between HBM constructs and intended delivery method. *TB*. 2014; 12(4): 105-116.
15. Rahimikian F, Mirmohamdalei M, Mehran A, et al. Effect of education designed based on Health Belief Model on choosing delivery mode. *Hayat*. 2009; 14 (4 and 3): 25-32. [Persian]
16. Tofighi Niaki M, Ramezani M, Izadi M, et al. The effect of prenatal care group education on pregnant mothers knowledge, attitude and practice. *IJME*. 2008; 7(2): 317-324.
17. Hashemian M. Education of health and communication. 2th ed. Tehran: Andishe Rfi; 2014. [Persian]
18. Saffari M, Shojaeizadeh D, Ghofranipour F. Health education and promotion theories, models, and methodes. 2th ed. Tehran: Asare Sobhan; 2012. [Persian]
19. Bandura A. Health promotion by social cognitive means. *HEB*. 2004; 31(2): 143-164. <https://doi.org/10.1177/1090198104263660>
20. Khorsandi m, Ghofranipour F, Heydarnia A, et al. The survey of perceived self-efficacy of labor in pregnant women. *Journal of Medical Council of Iran* 2009; 26(1): 89-95.
21. Salomonsson B, Bertero C, Alehagen S. Self-efficacy in pregnant women with severe fear of childbirth. *JOGNN*. 2013; 42(2): 191-202. <https://doi.org/10.1111/1552-6909.12024> PMID:23488555
22. Schwarzer R. Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*. 2008; 57(1): 1-29. <https://doi.org/10.1111/j.1464-0597.2007.00325.x>
23. Tanglakmankhong K, Perrin NA, Lowe NK. Childbirth self-Efficacy inventory and childbirth attitudes questionnaire: psychometric properties of Thai language versions. *J Adv Nurs*. 2011; 67(1): 193-203. <https://doi.org/10.1111/j.1365-2648.2010.05479.x> PMID:21158905
24. Bandura A. Self-efficacy in changing societies. 1 ed. United Kingdom: Syndicate: Cambridge University Press, 1995.
25. Williams DM, Anderson ES, Winett RA. A review of the outcome expectancy construct in physical activity research. *Ann Behav Med*. 2005; 29(1): 70-79. https://doi.org/10.1207/s15324796abm2901_10 PMID:15677303
26. Tudoran AA, Scholderer J, Bruns K. Regulatory focus self-efficacy and outcome expectations as drivers of motivation to consume healthy food products. *Appetite*. 2012; 59(2): 243-251. <https://doi.org/10.1016/j.appet.2012.05.002> PMID:22595287
27. Sexton TL, Tuckman BW. Self-beliefs and behavior: The role of self-efficacy and outcome expectation over time. *Personality and Individual Differences*. 1991; 12(7): 725-736. [https://doi.org/10.1016/0191-8869\(91\)90228-4](https://doi.org/10.1016/0191-8869(91)90228-4)
28. Iannotti RJ, Schneider S, Nansel TR, et al. Self-Efficacy, outcome expectations, and diabetes self-management in adolescents with type 1 diabetes. *J Dev Behav Pediatr*. 2006; 27(2): 98-105. <https://doi.org/10.1097/00004703-200604000-00003> PMID:16682872
29. Keller PA. Regulatory focus and efficacy of health messages. *JCR*. 2006; 33(1): 109-114. <https://doi.org/10.1086/504141>
30. Conner M. Cognitive Determinants of Health Behavior. In: United Kingdom: University of Leeds: Institute of Psychological Sciences; 2010. https://doi.org/10.1007/978-0-387-09488-5_2
31. Schwarzer R, Luszczynska A. How to overcome health-compromising behaviors: The health action process approach. *European Psychologist*. 2008; 13(2): 141-151. <https://doi.org/10.1027/1016-9040.13.2.141>
32. Sniehotta FF, Scholz U, Schwarzer R. Bridging the intention-behaviour gap: Planning, selfefficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*. 2005; 20(2): 143-160. <https://doi.org/10.1080/08870440512331317670>
33. Poss JE. Factors associated with participation by mexican migrant farmworkers in a tuberculosis screening program. *Nurs Res*. 2000; 49(1): 20-28. <https://doi.org/10.1097/00006199-200001000-00004> PMID:10667625
34. Hajian S, Shariati M, Najmabadi KM, et al. Psychological predictors of intention to deliver vaginally through the extended parallel process model: A mixed-method approach in pregnant Iranian women. *OMJ*. 2013; 28(6): 395-403. <https://doi.org/10.5001/omj.2013.115> PMID:24223242 PMID:PMC3815863
35. Jamshidimanesh M, Oskouie F, Jouybary L, et al. The process of women's decision making for selection of cesarean delivery. *IJN*. 2009; 21(56): 55-67.
36. Diclemente RJ, Crosby RA, Kegler MC. Emerging theories in health promotion practice and research: strategies for improving public health. 1 ed. San Francisco: Jossey-Bass Wiley, 2002.
37. Moll J. Doctor-patient communication in rheumatology: studies of visual and verbal perception using educational booklets and other graphic material. *Ann Rheum Dis*. 1986; 45(3): 198-209. <https://doi.org/10.1136/ard.45.3.198> PMID:3954469 PMID:PMC1001852