

# Impact of Motivational Interviewing on Women's Knowledge, Attitude and Intention to Choose Vaginal Birth after Caesarean Section: A Randomized Clinical Trial

Seyedeh Zahra Hosseini haji (MSc)<sup>1</sup>, Mahboobeh Firoozi (MSc)<sup>2\*</sup>, Negar Asgharipour (PhD)<sup>3</sup>, Mohammad Taghi Shakeri (PhD)<sup>4</sup>

1 Graduate, Midwifery Counseling, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

2 Lecturer, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

3 Associate Professor, Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

4 Professor, Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Iran

## ARTICLE INFO

*Article type:*  
Original article

*Article History:*  
Received: 09-May-2019  
Accepted: 20-Jul-2019

*Key words:*  
Motivational interviewing  
Vaginal birth after Cesarean  
Knowledge  
Attitude  
Intention  
pregnancy

## ABSTRACT

**Background & aim:** Promoting vaginal birth after cesarean section (VBAC) is a suitable approach to reduce repeat cesarean section. It seems that counseling can help women to choose VBAC appropriately. The present study, therefore, aimed to investigate the impact of motivational interviewing on knowledge, attitude, and intention of women to choose VBAC.

**Methods:** In this randomized clinical trial 60 pregnant women who referred to the health centers of Mashhad, Iran in 2018, were randomly assigned to two groups of motivational interviewing and control. Intervention group received three 60-90 minutes sessions of group counseling, which scheduled every other week based on motivational interviewing. The control group only received routine care. Subjects' knowledge, attitude, and intention were assessed before and two weeks after intervention. Self-structured tools were used to measure knowledge, attitude and intention of participants towards VBAC. The data were analyzed using SPSS version 25 with independent and paired t-test, U Mann-Whitney, Chi-Square and Kruskal-Wallis tests.

**Results:** The mean score of knowledge and attitude during weeks 34-36 of pregnancy was  $14.57 \pm 0.54$  and  $65.6 \pm 1.3$  in the intervention group and  $11.7 \pm 0.56$  and  $58.2 \pm 1.42$  in the control group, respectively; which was significantly different between two groups ( $P < 0.05$ ). However, there was no significant difference between the two groups in terms of intention towards VBAC ( $P > 0.05$ ); although a difference was seen in intention of intervention group after compared with before intervention ( $22.7$  vs  $43.4\%$ ,  $P < 0.05$ ).

**Conclusion:** motivational interviewing enhances knowledge and attitude toward vaginal birth after cesarean. Therefore, this method can be applied for prenatal counseling about vaginal birth after cesarean.

► Please cite this paper as:

Hosseini haji SZ, Firoozi M, Asgharipour N, Shakeri MT. Impact of Motivational Interviewing on Women's Knowledge, Attitude and Intention to Choose Vaginal Birth after Caesarean Section: A Randomized Clinical Trial. Journal of Midwifery and Reproductive Health. 2020; 8(1): 2115-2125. DOI: 10.22038/jmrh.2019.40249.1451

## Introduction

Increased rate of cesarean section (C-section) poses negative impacts on maternal-fetal health and the economy of the society (1). The leading cause of increasing in C-section in most parts of the world (2) and Iran is the previous cesarean as in Iran it accounts for approximately half of the cesarean section rates

(3). The side effects of repeated C-sections (RCS) along with the high number of this procedure have caused the researchers to focus on this labor type (4). According to the guidelines of the Ministry of Health and Medical Education, vaginal birth after C-section (VBAC) is recommended as an alternative for RCS in

\* Corresponding author: Mahboobeh Firoozi, Lecturer, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. Tel: 00989155056898; Email: firoozim@mums.ac.ir

women who have the indication (5).

VBAC reduces maternal complications during the current and upcoming pregnancies leading to a diminish in the national rate of C-section (6). Compared to RCS, VBAC decreases the hospitalization duration, negative outcomes of delivery, maternal mortality, hysterectomy, and blood transfusion. Furthermore, it is accompanied by a rapid return to daily activities (5). The literature shows that 60-80% of the women who have VBAC, experience successful labor (1).

Choosing a suitable candidate for VBAC requires gathering full information regarding the pros and cons of VBAC. Moreover, health care providers can have an effective role in assisting mothers to decide about the route of delivery (7). Despite communicating the guidelines concerning counseling for VBAC, the costs are still low in health centers (8). The choice of VBAC depends on various reasons, such as the recommendation of obstetricians, legal issues, and maternal choice. In addition, behavioral factors may affect the maternal choice in terms of the delivery route (9).

The first and most important purpose of a consultation is helping to change the behavior. Knowledge, positive attitude, and choosing references can result in alterations in the behavior. The first step in the counseling process is changing knowledge. Therefore, the activities in terms of behavioral change in the health field start from evaluating the level of knowledge (10). In order to empower mothers for making an informed choice, sufficient knowledge concerning the labor type should be given to mothers. Next, mothers evaluate their possible choices and assess performance, experiences, and personal values (11).

Furthermore, decision-making attitude plays a remarkable role in interpreting and evaluating the data. Counseling is influential in case it has the potential to result in the best and most secure decision through creating positive attitude (12, 13). The choice of delivery route is influenced by a wide range of medical characteristics, including race, psychological characteristics (e.g., fear from a new experience), social features (e.g., attitude toward C-section as a culture), and intellectual aspects (e.g., the feel of forgiveness for the sins) (4).

These characteristics, unknown personal values, unreal expectations, social pressures, lack of support, and diminished self-confidence are all considered during the process of consultation and are attempted to get eliminated (14).

Distinct approaches, such as theory-based training (15), lecture and role-play (16), optimism training (17), and different counseling techniques (e.g., behavioral therapy (18) have been practiced in promoting the choice of vaginal delivery among the primiparous women. Motivational interviewing (MI) is one of the counseling techniques that has been proved to be influential in choosing suitable health behaviors (19).

MI is a client-centered counseling style that elevates internal motivation for changing the attitude and behavior through exploring and solving ambiguities and can be adapted to the priorities of the patient (20). The basic principles of MI introduced by Miller (1995) entail expressing empathy, developing discrepancy in the condition of the client, avoidance from arguments, rolling with the resistance of the client, and supporting self-efficacy (21).

MI approach has been used in the field of hygiene and health. For instance, this method has been proposed for counseling with primiparous pregnant women regarding the elevation of their knowledge and attitude toward participation in pre-pregnancy classes and choosing vaginal labor (22).

One of the tasks of midwives concerning the maintenance and improvement of maternal and familial health is consultation and health training. Counselor midwife can help to change the behavior of the patient by inducing motivation (23, 24). Various studies supported the role of a midwife in choosing the route of delivery. Shorten et al. (2005) reported the impact of counseling and supportive practices of midwives on decision making and the choice of VBAC (25). Moreover, Homer et al. (2013) believed that continual care by a midwife is influential in the promotion of VBAC (7).

It is of remarkable importance to reduce repetitive C-sections and promote VBAC, especially using an effective approach for behavior alteration. On the other hand, no studies investigated the influence of knowledge

and attitude on the intention of choosing vaginal delivery in women with previous C-section. With this background in mind, the present study aimed to assess the impact of MI on the knowledge, attitude, and intention of choosing vaginal delivery in women referring to health centers in Mashhad, Iran with an experience of C-section for the previous childbirth.

### Materials and Methods

This parallel randomized clinical trial was performed in the health centers of Mashhad during June 2018-October 2018. The study was confirmed by the Ethical Committee of Mashhad University of Medical Sciences with the code of IR.MUMS.REC.1397.097. Regarding the ethical considerations, the aims of the study were explained to the subjects followed by obtaining informed consents concerning the ethical codes.

The participants were selected through convenience sampling method out of the statistical population of pregnant women referring to the health centers of Mashhad for receiving pregnancy cares. Afterwards, the subjects were randomly assigned to two groups of intervention and control receiving group counseling based on MI and routine cares, respectively.

The study setting was selected as health center number 3 by random drawing out of the health centers of Mashhad. Next, four centers with similar social texture were selected from the ones under the supervision of these center. In order to randomly allocate the centers to the study groups, the names of centers and groups were written on separate papers and placed in two pockets.

Afterwards, the names of two centers and one group were simultaneously selected from two pockets. The same process was repeated for selecting two other centers. Finally, two centers were assigned to the test group and two centers to the control group. Sampling was carried out through the convenience sampling method by referring to the centers and extracting the names of the mothers followed by phone call invitations for participating in the meeting.

The sample size was calculated according to the highest size obtained by the pilot study and concerning the investigations performed by Esmaeili et al. (17) and Malakouti et al. (26). Moreover, the changes in the mean, standard

deviation, and frequency of knowledge, attitude, and the intention for choosing vaginal delivery were regarded with the confidence level of 95% and power of 80%.

Finally, the sample size was obtained as 60 participants and considering the sample drop out of 30%, 40 individuals were calculated for each group making an overall size of 80 subjects. Twenty of the participants were excluded due to absence in all the counseling sessions (N=7), C-section indication during the study period (N=1), absence in pre- and post-intervention evaluations (N=10), and delivery before the termination of the study (N=2).

The inclusion criteria for this study entailed being pregnant Iranian women, living in Mashhad, being the age of 18-35 years, having the minimum literacy for reading and writing, a tendency for participation in the study, having a phone number, having an experience of the previous C-section with a transversal scar in the lower segment.

Other criteria included not having an indication for C-section, not having medical or midwifery complications, not showing fetal disorders discrepant with vaginal delivery, pregnancy age of 28-30 weeks, pregnancy with an interval of more than six months from the previous childbirth, live single placental, normal volume of amniotic fluid, normal fetal position based on the pregnancy ultrasound, and pregnancy without infertility treatment.

The exclusion criteria encompassed absence in all counseling sessions, unwillingness for continuing to participate in the research, absence in pre- and post-intervention assessments and delivery during the study, and showing an indication of C-section during the research.

Research instruments were a form of demographic and pregnancy characteristics with 34 questions, researcher-made questionnaires of knowledge and attitude, and a checklist for evaluating the intention of choosing VBAC. The questionnaire of knowledge about VBAC included 20 double-choice questions, which were scored as 1 for correct answer and 0 for the wrong answer making the total score of 0-20.

The questionnaire of attitude toward VBAC contained 20 questions scored based on the five-point Likert scale with the total score ranging from 0 to 80. For nine questions of the

questionnaire with positive direction, the choices completely agree, agree, no idea, disagree, and completely disagree were scored as 4, 3, 2, 1, and 0, respectively. In terms of the 11 questions with negative direction, scores 0, 1, 2, 3, and 4 belonged to choices completely agree, agree, no idea, disagree, and completely disagree, respectively.

The higher scores in knowledge and attitude questionnaires were accompanied by elevated knowledge and attitude. The checklist for assessing the choosing intention had one question regarding the intention for choosing mode of delivery after C-section.

The validity of the instruments was evaluated through content validity by eight of the academic staff of Nursing and Midwifery Faculty and Psychology Faculty. The reliability of the knowledge and attitude questionnaires about VBAC was confirmed by the internal consistency of 20 participants with Cronbach's alpha of 0.88 and 0.75, respectively.

The reliability of the choosing intention

checklist was measured through the inter-rater method by the researcher and midwife of the health center with a Kappa coefficient of 0.9. The competence of the researcher for performing MI was confirmed by a specialist after obtaining the participation certificate for the workshop and practicing the counseling method in the presence of the specialist.

In the intervention group, group counseling based on MI was held as three 60-90 min sessions every other week according to the design of the researcher in groups of 8-12 people. The number of the sessions was determined considering the amount and content of the counseling structure, psychologist suggestion, review of the similar studies, and the ability of pregnant women for transfer. The content of these sessions was defined according to the MI approach. The four principals of this technique, including empathy express, discrepancy development, argument avoidance, and self-efficacy support (20) were applied in the schedule.

**Table 1.** Summary of counseling sessions design based on motivational interviewing

	<b>Content of sessions</b>	<b>Aim of sessions</b>	<b>Duties of clients</b>
<b>First session</b>	Welcoming the clients, introduction Explaining the confidentiality of conversation invitation for active cooperation of group members, encouraging people to express their information and beliefs regarding the route of delivery	Initiating a conversation for change	Responding to open questions, Expressing information, beliefs, and concerns
<b>Second session</b>	Considering the doubts, ambivalence, and contradictory motivations of individuals Confronting the resistance of the client Evaluating the tendency, ability, reasons, and need for change Diagnosing the differences of group members in each of the motivational levels Providing information proportionate to people needs, evaluation of pros and cons	Taking into consideration the reasons for people to change	Expressing the reasons for change Hypothesizing regarding the consequences
<b>Third session</b>	Getting familiar with the methods of low-pain and painless delivery Imagining vaginal childbirth after cesarean section Interviewing people with successful experience of vaginal childbirth after cesarean section	Practical commitment to change	Expressing positive and negative beliefs Stretching and aerobic exercises, relaxing

In the first session, following introducing and initial communications, changing was discussed. Moreover, the mothers were encouraged to express their feelings concerning VBAC and its possibility through active and reflective listening as the empathy express part. During the second session, the ambiguities and questions of mothers were heard and answered. Listening to

the subjects talking about changing health behaviors, motivations, sensations, and values resulted in the clarification of the reasons for feeling a need for change. In case of resistance, the counselor altered the approach and sought for the problems and obstacles of the client.

The third session included supporting the self-efficacy of the participants in terms of

change using empowerment. In order to empower the individuals, supportive techniques, thinking, and approaches, such as interviewing people who experienced VBAC or had a successful delivery were applied. In addition, this session entailed aerobic and stretching exercises. Follow-ups by phone calls were performed during the study to remind the upcoming consultation sessions and answer the questions of the subjects (Table 1).

All the data were analyzed by independent t-test, paired t-test, Mann-Whitney U test, Chi-

Square, Fischer's exact test, and Kruskal-Wallis using SPSS software version 25.  $P < 0.05$  was considered significant for all tests.

### Results

According to our findings, age, body mass index (BMI), education, income, occupation, having knowledge of VBAC, the reason for previous C-section, and satisfaction with the previous cesarean were homogenous in the two groups ( $P > 0.05$ ) (Table 2).

**Table 2.** Demographic characteristics of the study participants

Variables	Motivational interviewing	Control	P-value
	N = 30	N = 30	
Age (year) Mean±SD	28.3±3.34	29.13±2.76	P* = 0.359
Body mass index (kg/m <sup>2</sup> ) Mean±SD	25.76±3.34	25.26±3.34	P** = 0.951
Education level N (%)			
Reading and writing literacy	0 (0)	1 (3.3)	
Under high school diploma	3 (10)	7 (23.4)	P*** = 0.199
High school diploma	23 (76.7)	16 (53.3)	
University degree	4 (13.3)	6 (20)	
Mother occupation			
Housewife	26 (86.7)	21 (70)	P**** = 0.117
Working	4 (13.3)	9 (30)	
Family income			
Below sufficient	5 (16.5)	8 (26.7)	P*** = 0.659
Sufficient	25 (83.5)	17 (56.7)	
Over sufficient	0 (0)	5 (16.6)	
Having prior information			
Yes	12 (39.6)	16 (52.8)	P**** = 0.301
No	18 (60.4)	14 (47.2)	
Satisfaction with the previous C-section			
Completely satisfied	9 (30)	8 (26.7)	
Almost satisfied	14 (46.7)	14 (46.7)	P**** = 0.981
Almost unsatisfied	6 (20)	7 (23.3)	
Completely unsatisfied	1 (3.3)	1 (3.3)	
Previous C-section reason			
Lack of delivery progress	13 (43.3)	14 (46.6)	
Abnormal presentation	12 (40)	11 (36.7)	P**** = 0.842
Placenta previa	1 (3.3)	2 (6.7)	
Personal request	3 (10)	1 (3.3)	
Abnormal fetal heart rate	1 (3.3)	2 (6.7)	

\*Independent t-test

\*\*Mann-Whitney test

\*\*\*Fischer's exact test

\*\*\*\*Chi-Square

The mean score of knowledge about VBAC was not significantly different pre-intervention between the two groups ( $P > 0.05$ ). However,

the same mean score was found to have a significant difference between the two groups post-intervention ( $P < 0.05$ ).

The results of this study showed that the mean score of knowledge about VBAC in the test group was significantly different between the times of pre-intervention and two weeks post-intervention ( $P < 0.001$ ). On the other hand, the

pre- and post-intervention mean VBAC knowledge scores were not significantly different in the control group ( $P > 0.05$ ) (Table 3).

**Table 3.** Comparison of the mean scores of knowledge and attitude toward VBAC pre-intervention and two weeks post-intervention based on the groups

Variables	Motivational interviewing N = 30	Control N = 30	P-value
Knowledge (mean±SD)			
Pre-intervention	11.7±0.83	11.6±0.57	P** = 0.733
Week 34-36 of pregnancy	14.57±0.54	11.70±0.56	P** = 0.006
Mean changes	2.8±0.52	0.66±0.09	P** < 0.001
P-value	P* = 0.001	P* = 0.48	
Attitude (mean±SD)			
Pre-intervention	56.4±0.87	55.5±1.78	P*** = 0.653
Week 34-36 of pregnancy	65.6±1.3	58.2±1.42	P** < 0.001
Mean changes	9.23±0.92	2.70±1.2	P** < 0.001
P-value	P* < 0.001	P* = 0.61	

\*Wilcoxon test

\*\*Mann-Whitney test

\*\*\*Independent t-test

**Table 4.** Frequency of intention for choosing VBAC pre-intervention and two weeks post-intervention based on group

Variables		Motivational interviewing	Control	P*
		N (%)	N (%)	
Pre-intervention	Definitely repetitive cesarean section	5 (16.7)	4 (13.3)	P = 0.56
	Probably repetitive cesarean section	18 (60)	17 (56.7)	
	Probably vaginal birth after cesarean section	5 (16.7)	7 (23.3)	
	Definitely vaginal birth after cesarean section	2 (6.6)	2 (6.7)	
Post-intervention	Definitely repetitive cesarean section	0 (0)	2 (6.7)	P = 0.32
	Probably repetitive cesarean section	17 (56.7)	18 (60)	
	Probably vaginal birth after cesarean section	11 (36.7)	8 (26.6)	
	Definitely vaginal birth after cesarean section	2 (6.6)	2 (6.7)	
	p**	P=0.02	P = 0.18	

\*Mann-Whitney test

\*\*Wilcoxon test

Our results indicated that the pre-intervention difference in the mean attitude scores toward VBAC was not significant between the two groups ( $P > 0.05$ ). Nonetheless, the two groups were significantly different post-intervention regarding the mean scores of attitude toward VBAC ( $P < 0.001$ ). Furthermore, the intragroup

comparison revealed that the mean score of attitude changed significantly after the intervention in the test group ( $P < 0.001$ ). However, in the control group, there was not a significant difference in terms of the mean attitude score between the pre- and post-intervention stages ( $P > 0.05$ ) (Table 3).

Moreover, before the intervention, the two groups did not have a significant difference regarding the frequency of intention for choosing VBAC ( $P > 0.05$ ). Two weeks after the intervention, the frequency of intention for choosing VBAC was not significantly different between the two groups ( $P > 0.05$ ). Comparison of the choosing intention frequency in the case group demonstrated a significant difference between the pre- and post-intervention stages ( $P=0.02$ ). On the other hand, the difference between the two times in the control group was not significant ( $P > 0.05$ ) (Table 4).

## Discussion

The results showed that the mean knowledge score in the test group had a 40% increase after the intervention. It could be concluded that MI was effective in increasing knowledge toward VBAC. The mean score of knowledge regarding VBAC elevated 0.8% in the control group.

Moreover, two weeks after MI, the change in the mean knowledge score was 2.5 and 0.2 points in the MI and control groups, respectively. Therefore, this elevation was found to be statistically different between the two groups.

Rasouli et al. (2016) reported similar results to our findings in a comparison of the impact of MI, lecture, and routine cares (22). In addition, Farnworth et al. (2008) evaluated the influence of counseling along with midwife visit on the knowledge of pregnant women and choosing VBAC. The results of the latter study were also in line with the current investigation (27). Shorten et al (25). (2013) assessed the effect of web-based virtual counseling on the knowledge and decision of VBAC. These authors revealed an augmentation in the score of knowledge concerning VBAC. Although the mentioned finding indicates the efficacy of a distinct counseling approach, it is consistent with our results

Information provision is considered as a part of the counseling process and the researcher in the present study dedicated some time to the transfer of information concerning VBAC. Therefore, similar results to the studies performed by Malakouti et al (2014) (26) and Navaee et al. (2012) (12) were found. The aforementioned studies evaluated the impact of

group training, role-play training, and presentation on the knowledge of pregnant women about VBAC, respectively.

Shahraki Sanavi et al. (2011) reported that although the knowledge of pregnant women before training was moderate to good in their study, the intervention significantly raised their knowledge level. In the current study, the knowledge of people pre-intervention was moderate and reached a moderate to a good level by counseling (15). The results reported by Fathian et al. in terms of training influence on knowledge was in line with the mentioned researches (28).

According to the results of the present study, the mean attitude score in the test group had a 16% increase post-intervention, compared to the control group. It could be concluded that MI was effective in enhancing the attitude toward VBAC. The mean score of attitude regarding VBAC elevated 0.5% in the control group.

Moreover, two weeks after group counseling, the change in the mean attitude score was 9.5 and 2.7 points in the MI and control groups, respectively. Therefore, this elevation was found to be statistically different between the two groups. The latter finding is in line with the results of Rasouli et al. (2016) in terms of the effect of MI-based group counseling on the attitude score (22).

Various studies investigated the influence of training by diverse techniques on the attitude of pregnant women. The effect of group consultation on people attitude might be justified by the interactions and experience sharing in group training and counseling. The studies completed by Shahraki Sanavi (15), Malakouti (26), Fathian (28), and Sharifirad (29) assessed the influence of training on attitude toward choosing a delivery route in primiparous women. They showed that people attitude gets improved by theory-based and group trainings, which is consistent with the results of this study.

Esmaeili et al. (2014) (17) revealed that the scores of attitude toward vaginal childbirth augmented in the optimism training group, in comparison with the control group. Although the intervention design in the mentioned study is different from our investigation, both studies compared vaginal labor with C-section and

discussed the impact of training on the attitude of the subjects.

Toughyani et al. (2006) (30) performed a study to determine the impact of group training during pregnancy on the knowledge, attitude, and performance of pregnant women. Contrary to the current study that indicated the effect of counseling process on attitude promotion, the latter investigation concluded that the presented pieces of training did not affect people attitude significantly.

This controversy might be attributed to the difference in the content of training and consultation. Moreover, Toughyani et al. designed the number of the sessions based on the schedule for the nine-month pregnancy period, while we succeeded to make significant alterations in the participants using counseling techniques in fewer sessions.

According to our results, 22.7% of the subjects in MI group and 30% of the women in the control group had the intention for VBAC before the intervention showing that the two groups were not significantly different in this regard. The intention of choosing VBAC two weeks post-intervention raised to 43.4% in the MI group (36.7% and 6.7% probable and definitive decisions, respectively) and to 32.7% in the control group (26.7% and 6% probable and definitive decisions, respectively). Therefore, the intention for choosing VBAC elevated 20.7% and 3.4% in the MI and control groups, respectively, which is significant for the test group.

Esmaeili et al. (2014) (17) reported optimism training to be influential on the attitude and intention of choosing a delivery route. Although they did not apply the counseling approach, determined the impact of training on the intention of choosing VBAC in pregnant women. As a result, their investigation is comparable to our study. In the present study, the two groups were not significantly different regarding the effect of consultation on the frequency of intention for choosing VBAC. Nonetheless, the intention frequency had a more remarkable increase in the intervention group (21%), in comparison with the control group (4.2%).

In terms of choosing VBAC, the supports are not sufficient in most of the existing care

settings. On the other hand, mothers, especially the ones with previous C-section, highly get influenced by the physicians and treatment team. Consequently, the influence of such resources on the intention of mothers during the follow-up periods could be expected.

This efficacy of group counseling through the MI approach in changing the choices is confirmed by the significant difference in choosing intention between the pre- and post-intervention times of the MI group. However, it should be noted that other interventions and sample size may also play a role in the significant differences.

Fathian et al. (2006) (28) reported a significant augmentation in the intention of choosing VBAC post-intervention in the test group, compared to the control group. In the mentioned investigation, the intention for choosing vaginal labor increased by 18.6% in the case group, which is lower than the 21% elevation observed in the present study. This difference in the augmentation rate might be due to the content of counseling and reciprocal participation of the counselor and client in terms of information provision, experience, perceptions, beliefs, and attitudes that are more influential than training alone.

Lashgari et al. (2004) (31) demonstrated a 14% rise in the frequency of intention for choosing vaginal childbirth in the training group. The latter finding is different from the 21% augmentation in the current investigation. The aforementioned evaluation utilized diverse methods, such as films, pamphlets, and visits from the maternal hospital. The more prominent efficacy observed in the present study, compared to their results confirms the impact of practical approaches in counseling, including inviting people with successful experience of VBAC and supplying different beliefs.

The authors of the present study confronted some limitations for performing this investigation. Personal differences, diversities in the needs of clients with the counseling process, the lack of concentration on personal beliefs due to the absence of individual counseling are among these limitations. Moreover, the researchers did not have control over the impact imposed on the responses by the knowledge and attitude of physicians or companions.



On the other hand, MI application as a novel and suitable counseling technique for mothers with C-section experience, who are a sensitive group requiring consult was a strong point for this study. In addition, the opportunity for the presence of mothers with successful vaginal delivery experience in the counseling sessions was of value.

### Conclusion

According to the findings of this study, MI improves knowledge and attitude regarding VBAC. It should be noted that enhanced knowledge and attitude are of importance in making decisions. Therefore, this counseling technique can be used for preparing individuals in terms of behavior change for choosing a delivery route and developing vaginal childbirth culture.

### Acknowledgements

The present study was a part of Master thesis in Counseling in Midwifery, Mashhad University of Medical Sciences with the clinical trial code of IRCT20180714040463N1. The authors extend their gratitude to all the authorities of Mashhad University of Medical Sciences and the Faculty of Nursing and Midwifery. Furthermore, we would like to thank the authorities and midwives of the centers authorized by health center number 3 in Mashhad, as well as the participating mothers.

### Conflicts of interest

The authors declare no conflicts of interest.

### References

- Cunningham F, Leveno K, Bloom S, Spong CY, Dashe J. Williams obstetrics. 24<sup>th</sup> ed. New York: McGraw-Hill; 2014. P. 280-282.
- Quinlivan JA, Petersen RW, Nichols CN. Patient preference the leading indication for elective caesarean section in public patients-results of a 2-year prospective audit in a teaching hospital. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 1999; 39(2):207-214.
- Ghadimi M, Rasouli M, Motahar S, Lajevardi Z, Imani A, Chobsaz A, et al. Affecting factors the choice of delivery and attitude of pregnant women admitted to the civil hospitals, the social security organization in 2013. *Journal of Sabzevar University of Medical Sciences*. 2014; 21(2):310-319.
- Ugwumadu A. Does the maxim "once a caesarean, always a caesarean" still hold true? *PLoS Medicine*. 2005; 2(9):e305.
- Vaginal birth after cesarean. Tehran: Iran Ministry of Health and Medical Education; 2017. P. 180-183.
- Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics & Gynecology*. 2006; 107(6):1226-1232.
- Homer CS, Besley K, Bell J, Davis D, Adams J, Porteous A, et al. Does continuity of care impact decision making in the next birth after a caesarean section (VBAC)? A randomised controlled trial. *BMC Pregnancy and Childbirth*. 2013; 13(1):140.
- Promote natural delivery. Mashhad University of Medical Sciences. Available at: URL: <http://v-darman.mums.ac.ir/index.php/component/content/article/69-affairs-midwifery/214-promote-natural-childbirth>; 2017.
- Shams M, Mousavizadeh A, Parhizkar S, Maleki M, Angha P. Development a tailored intervention to promote normal vaginal delivery among primigravida women. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2016; 19(30):9-25.
- Miller YD, Holdaway W. How communication about risk and role affects women's decisions about birth after caesarean. *Patient Education and Counseling*. 2019; 102(1):68-76.
- Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section—a cross-sectional study at various stages of pregnancy in Sweden. *Acta Obstetrica et Gynecologica Scandinavica*. 2009; 88(7):807-813.
- Abedian Z, Navaee M, Jaafari Sani H, Arani A, Ebrahimzadeh S. Comparing the effect of two teaching methods, role playing and lecture on primigravida women's knowledge, attitude and performance according to delivery mode. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2012; 15(1):26-34.
- Terry DJ, Hogg MA, McKimmie BM. Attitude-behaviour relations: the role of in-group norms and mode of behavioural decision-making. *British Journal of Social Psychology*. 2000; 39(3):337-361.
- O'Connor AM, Jacobsen MJ, Stacey D. An evidence-based approach to managing women's decisional conflict. *Journal of Obstetric*

- Gynecologic, & Neonatal Nursing. 2002; 31(5):570-581.
15. Shahraki-Sanavi F, Rakhshani F, Navidiyan A, Ansari-Moghaddam A. A study on attitude of pregnant women with intention of elective cesarean based on theory of planned behavior. *Zahedan Journal of Research in Medical Sciences*. 2012; 14(9):95-97.
16. Navaei M. Comparing two teaching methods of role playing and lectures on knowledge, attitude and performance of primiparous women regarding mode of delivery. [Doctoral Dissertation]. Mashhad: School of Nursing and Midwifery, Mashhad University of Medical Science; 2010.
17. Yousefzadeh S, Esmaeili Darmiyan M, Asadi Younesi M, Shakeri M. The effect of a training program during pregnancy on the attitude and intention of nulliparous women to choose the delivery mode. *Journal of Midwifery and Reproductive Health*. 2016; 4(3):704-711.
18. Khanzadeh A, Rostampour A, Nedae N, Khosrojauid M. Effectiveness of cognitive-behavioral education on anxiety during pregnancy and delivery method in primiparous women. *Journal of Nursing Education*. 2017; 5:24-32.
19. Miller WR, Rollnick S. *Motivational interviewing: helping people change*. New York: Guilford Press; 2012. P. 3-25.
20. Rollnick S, Miller WR. What is motivational interviewing? *Behavioural and Cognitive Psychotherapy*. 1995; 23(4):325-334.
21. Arkowitz H, Miller WR, Rollnick S. *Motivational interviewing in the treatment of psychological problems*. New York: Guilford Publications; 2015.
22. Rasouli M, AtashSokhan G, Keramat A, Khosravi A, Fooladi E, Mousavi S. The impact of motivational interviewing on participation in childbirth preparation classes and having a natural delivery: a randomised trial. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2017; 124(4):631-639.
23. Gamble J, Creedy D. Content and processes of postpartum counseling after a distressing birth experience: a review. *Birth*. 2004; 31(3):213-218.
24. Fraser W, Maunsell E, Hodnett E, Moutquin JM, Childbirth Alternatives Post-Cesarean Study Group. Randomized controlled trial of a prenatal vaginal birth after cesarean section education and support program. *American Journal of Obstetrics and Gynecology*. 1997; 176(2):419-425.
25. Shorten A, Shorten B, Keogh J, West S, Morris J. Making choices for childbirth: a randomized controlled trial of a decision-aid for informed birth after cesarean a. *Birth*. 2005; 32(4):252-261.
26. Malakouti J, Sattarzadeh Jahdi N, Mohaddesi H, Alidoost N, Asghari Jafarabadi M, Salehi Pourmehr H. The evaluating effect of education on knowledge and attitude of nulliparous women toward the delivery method. *The Journal of Urmia Nursing and Midwifery Faculty*. 2014; 12(7):568-575.
27. Farnworth A, Robson S, Thomson R, Watson DB, Murtagh M. Decision support for women choosing mode of delivery after a previous caesarean section: a developmental study. *Patient Education and Counseling*. 2008; 71(1):116-124.
28. Fathian Z, Sharifirad GR, Hasanzadeh A, Fathian Z. Study of the effects of behavioral intention model education on reducing the cesarean rate among pregnant women of Khomeiny-Shahr, Isfahan in 2006. *Zahedan Journal of Research in Medical Sciences*. 2007; 9(2):123-131.
29. Sharifirad GR, Fathian Z, Tirani M, Mahaki B. Study on behavioral intention model (BIM) to the attitude of pregnant women toward normal delivery and cesarean section in province of Isfahan-Khomeiny Shahr-2006. *Journal of Ilam University of Medical Sciences*. 2007; 15(1):19-23.
30. Toughyani R, Ramezani MA, Izadi M, Motie Z. The effect of prenatal care group education on pregnant mothers' knowledge, attitude and practice. *Iranian Journal of Medical Education*. 2008; 7(2):317-324.
31. Lashgari MH, Delavari S, Markazi MN, Gorouhi F. Effects of training programs of pregnant women on their delivery type selection: a single blind, randomized control trial. *Annals of Military and Health Sciences Research*. 2005; 3(4):679-684.