

Original Article**The effect of health education using behavior intention model on of cesarean in Khomeiny-shahr, Iran**

*Gholam Reza Sharifirad**, *Mohammad Hosein Baghiani Moghadam***,
*Fariba Fathyian****, *Mohsen Rezaeian*****

Abstract

BACKGROUND: Cesarean section rates are rising in many countries and the result of it is increase in maternal and prenatal morbidity and mortality rates. We assessed the content and concurrent validity of constructs of Behavioral Intention Model (BIM) scales to evaluate safer choices by pregnant women to select their method of delivery.

METHODS: This was a quasi-experimental study that carried out on 140 women with their first pregnancies in Khomeiny-shahr (2006). Data were collected using a researcher-made questionnaire, before and after education, in experiment and control groups. For data analysis, t-paired, t-test, chi-square, and Wilcoxon test were used ($\alpha \leq 0.5$)

RESULTS: The mean grade scores of knowledge of experiment group about information of delivery, before intervention was 5.7 out of 10 that increased to 8.7 after intervention. There were significant differences between attitude of experiment group before and after intervention ($p < 0.001$). T-paired test revealed significant difference between the intention of participants in experiment group for vaginal delivery, before and after intervention. The data showed that the proportion of cesarean section in participants was 57.2% that in control group is very higher than experiment group (60% to 40%). Chi square test revealed significant difference between the methods of delivery of participants in two groups ($p < 0.026$).

CONCLUSION: The BIM has potential for providing the foundation to educational intervention at the individual and community. It can be therefore, recommended that the application of this model may change and improve different behaviors including method of delivery.

KEY WORDS: Behavior Intention Model (BIM), cesarean, vaginal delivery.

IJNMR 2009; 14(3): 105-110

A cesarean section is a life saving procedure for both mother and baby when medically indicated, and in many cases it ensures a live birth and avoids neurological damage to the baby. However, the indiscriminate use of this intervention considerably increases maternal morbidity and mortality and increase woman's discomfort after birth, which may in turn create difficulties in taking care of the newborn and for breastfeeding. Unnecessary cesareans generate higher expenditure, but they do not reduce neonatal or infant death

rates nor prevent the birth of newborns with neurological damage. Moreover, they increase the risk of premature birth and the number of babies with low birth weight and respiratory problems.¹

The World Health Organization considers that there is no justification for any region to have cesarean section rates higher than 15%.²

Cesarean section rates are rising in many countries and the result is increasing maternal, prenatal morbidity and mortality rates.^{3,4} But against the effort to keep the cesarean section

*PhD, Associate Professor, Health Education, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran.

**PhD, Associate Professor, Health Education, School of Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

***BSc in Health Education, Isfahan University of Medical Sciences, Isfahan, Iran.

****Associate Professor, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

Correspondence to: Mohammad Hosein Baghiani Moghadam PhD.

E-mail: baghianimoghadam@yahoo.com

rates it's going higher than 15%.^{5,6}

Cesarean section, intrapartum or elective, has traditionally been performed only when clinically indicated and cesarean section on maternal request has been considered inappropriate⁷ but views are changing. Some authors consider acceptable cesarean section on request, as long as the woman is fully informed of the implications of the procedure.⁷ Moreover, recent research in Washington State concluded that, adjusted for maternal age and severe preeclampsia, women who had cesarean delivery were not at significantly higher risk for death compared to women who had vaginal delivery.⁸

Cesarean delivery rates have increased all over the world since the 1970s, but the rates in some developing countries are much greater than those found in any other countries. In the United States, which has the highest number of cesarean section for a developed country, cesarean section rates have risen to more than 40% between 1976 and 1981; they went down to 25% in 1988,⁹ and the proportion reached 23.6% of total deliveries in 1991.¹⁰ This has been associated with a decreasing prenatal mortality rate^{11,12} and decreasing maternal mortality and morbidity.^{13,14} Japan, on the other hand, had a rate of only 7% in 1992, and most European countries also have cesarean rates below 15%.¹⁵ These countries have very low maternal and neonatal mortality rates. In Iran the proportion of cesarean was 42.3% of total deliveries in 2005 and in Isfahan it was 58.2%.¹⁶ In a study in Iran,

the rate of cesarean decreased about 15%, by health education to pregnant mothers.¹⁷

There is clear evidence that we can decrease health problems by programs that insist on educating at risk people. Theory plays an essential role in health education as a profession. Theories enable the health education practitioner to choose the most appropriate and specific situation.¹⁸

The evaluation of theory-based health programs requires valid measurement instruments to assess a program's impact on the theoretical mediating variables. Failing to develop and use the valid and reliable instrument can cause, spurious findings.^{19,20} The Behavioral Intention Model (BIM) is one of the most widely used model in attitude and behavioral of pregnancy. In this model intention for behavior is combination of attitude to behavior and Subjective Norms (SN). Attitude to behavior is including personal nature and evaluation of results of behavior, and subjective norms is including normative beliefs and reflecting social influence.²¹ For better understanding, BIM details, is seen in figure 1. We assessed the content and concurrent validity of constructs of Behavioral Intention Model's scales, to evaluate safer choices by pregnant women to select their method of delivery.

The purpose of this study was to test the utility of the BIM in understanding and predicating the intention of pregnant women in selecting their method of delivery.

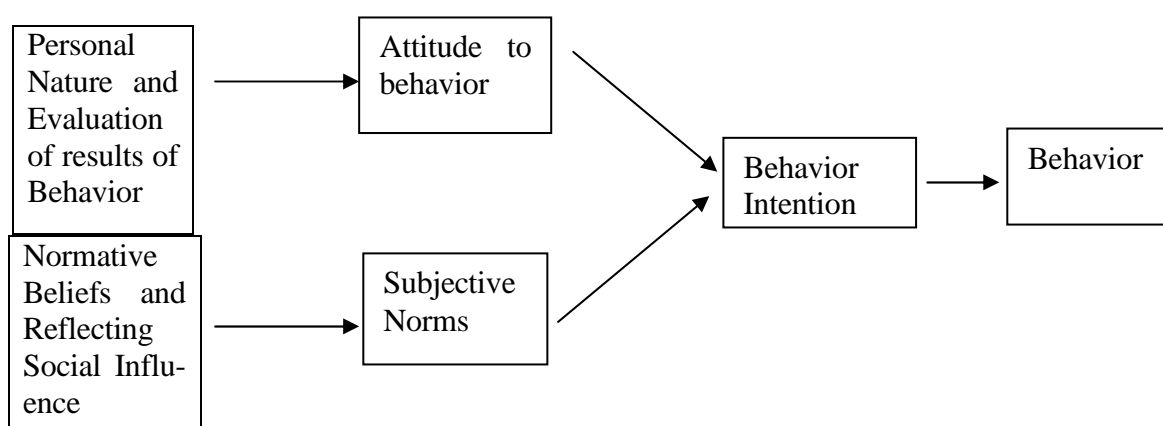


Figure 1. Behavior Intention Model aspects

Methods

This was a quasi-experimental study carried out on 140 women with their first pregnancies in Khomeiny-shahr (2006).

Total health centers in Khomeiny-shahr were 33. Eight health centers were selected by simple random sampling for study (4 centers as experiment group and 4 centers as control groups). The samples were selected from 8 health centers by convenient sampling.

Data were collected by using a researcher-made questionnaire, before and after intervention, in experiment and control groups. To ensure the clarity of questionnaires, pilot testing of the questionnaire was also performed using the coherence and consistency upon 10 pregnant women who were not included in the survey. Then, the questionnaire was modified on the basis of their feedback. Content validity was established by 4 experts who were either academic staff or practicing health educators. To determine the internal reliability, a Cronbach's alpha was calculated for each scale ($\alpha = 0.72$ for knowledge scale, $\alpha = 0.83$ for evaluation of results, $\alpha = 0.78$ for attitude and $\alpha = 0.73$ for intention scale).

The questionnaire had 5 parts as: A- Ten questions about knowledge of participant and the range of scores was, 0-10. B- Ten questions about evaluation of results of behavior with scores range of 0-10. C- Fifteen questions about attitude, that were measured using five-point Likert scales (strongly agree = 5, thorough disagree = 1, with range of 15-75). D- Ten Questions about Subjective Norms that total sum of scores was 10. E- Six questions about intention that was Multiple Choice Questions (MCQ).

The education as intervention factor was performed using lecturing and group teaching methods for pregnant women in three sessions and for their husbands in one session, in experiment group. All data which were collected before and after intervention (three months after education) were transferred directly into SPSS software. For data analysis, paired and independent-sample t, chi-square and Wilcoxon tests were used with the level of 95% confidence.

Results

Interview with 140 pregnant women was conducted and asked about the method of their delivery in 2006. Majority of participants were educated in which 65.7% of them were high school graduate and higher. They were generally young; the mean age of them was 23.2 (2.8).

The results which are shown in table 1 indicate that intervention caused an increase in knowledge of experiment group. The mean grade of experiment group scores from knowledge about delivery, before intervention was 5.7 out of 10 that increased to 8.7 after intervention. There was significant difference between the knowledge of experiment group before and after intervention ($p < 0.001$). The increase in knowledge of control group, after intervention was not significant ($p = 0.2$).

As table 1 presents, the mean grade of evaluation of results scores increased in experiment group after intervention whereas it decreased in control group after intervention. T-test revealed significant difference between the evaluation of results of experiment and control groups after intervention ($p < 0.001$). The attitude was measured by summing participants' responses to related questions. In experiment group, the mean grade was 55.1 and 66.5 out of 75, before and after intervention, respectively (Table 1). There was significant difference between attitude of experiment group before and after intervention ($p < 0.001$). About Subjective Norms, the SN increased after intervention in experiment group whereas decreased in control group, while in experiment group, the mean grade was 6.78 and 8.8 before and after intervention respectively, in control group, the mean grade was 6.8 and 6.4 before and after intervention, respectively (Table 1).

The intervention basis on BIM improved the intention and practice of participants in selecting the method of their delivery. As shown in table 2, in experiment group before intervention, only 25.7% of participants intended for vaginal delivery, but after intervention 68.6% intended for vaginal delivery. T-paired test revealed significant difference between the

Table 1. The comparison of mean grades of knowledge, evaluation of results, attitude and subjective norms before and after intervention in experiment and control group

	Experiment group (n = 70)	Control group (n = 70)	P value
Knowledge			
Before intervention	5.7(2.1)	4.9(1.85)	0.09
After intervention	8.7(1.45)	5 (2.3)	0.001
P value	0.001	0.2	
Evaluation of results			
Before intervention	2.18(0.42)	2.27(0.41)	0.35
After intervention	2.73(0.35)	2.01(0.41)	0.001
P value	0.001	0.28	
Attitude			
Before intervention	55.1(12.8)	56.8(13.3)	0.62
After intervention	66.5(10.8)	52.5(16.2)	0.004
P value	0.001	0.51	
Subjective norms			
Before intervention	6.78(0.97)	6.8(0.99)	0.57
After intervention	8.8 (1.82)	6.4 (1.5)	0.001
P value	0.00001	0.98	

Table 2. The comparison of intention of participants before and after intervention in experiment and control groups

Groups	Intention	Probably natural No(%)	Probably cesarean No(%)	Really nature No(%)	Really cesarean No(%)
Experiment					
Before intervention		34(48.6)	15(21.4)	18(25.7)	3(4.3)
After intervention		17(24.3)	2(2.9)	48(68.6)	3(4.3)
Control					
Before intervention		29(41.4)	13(18.6)	21(30)	7(10)
After intervention		9(12.8)	9(12.8)	26(37.1)	26(37.1)
P value		0.32	0.04	0.05	0.16

intention of participant in experiment group for vaginal delivery, before and after intervention.

The data in table 3 present the practice of participants in method of delivery in two groups. As these data show, the proportion of cesarean section in participants was 57.2%, which in control group is very higher than experiment group (60% to 40%). Chi-square test revealed significant difference between the methods of delivery of participants in two groups ($p < 0.026$).

Table 3. Practice of participants in two groups in delivery after intervention*

Practice Group	Vaginal No (%)	Cesarean No (%)
Experiment	38(63.33)	32(40)
Control	22(36.7)	48(60)
Total	60(42.8)	80(57.2)

*P value = 0.026

Discussion

This study establishes preliminary confirmation of the feasibility of applying the BIM to predict and understand the intention of pregnant women to choose vaginal delivery not cesarean.

Studies have identified several basic educational needs in participants which increase their knowledge and change their intention to deliver in vaginal. It was shown that the awareness of individuals about the delivery information was low (5.7 out of 10). Increasing the participants' awareness on need for vaginal delivery through educational campaigns is likely to improve the participants' intention in vaginal delivery. The awareness of individuals about information of delivery significantly increased after intervention in experiment group.

The finding of this study are consistent with the observation of Anderson, who described the

increase of knowledge of participants decreases the prevalence of cesarean delivery²¹ and the finding of Tan, who found that HbA_{1c} in diabetic patients declined when their awareness increased.²² The increase in awareness in this study is also consistent with the finding of Lin et al, who observed the change and improvement of behavior of individual in vaccination rate of HB.²³

Evaluation of results, as one of the constructs of BIM, was increased in experiment group, suggesting that education may have influence upon the participant's behaviors. The results of this study are consistent with the finding of Tavasoli et al who found the increase of positive evaluation toward vaginal delivery was significantly related with decrease of cesarean delivery.¹⁷

Our findings showed that attitude of participants was significantly increased after intervention in experiment group but declined in control group. The results of our study about attitude and Subjective Norms are consistent with the finding of Baghiani-moghadam et al, who found that education changed the attitude and SN of diabetic patients and they decreased their HbA_{1c}.²⁴

We know that behavior is after intention, and it can not be behavior and practice without intention. The intervention basis on BIM improved the intention and practice of participants in selecting the method of their delivery.

This finding is consistent with the findings of Miri et al who found the increase of intention of men of Ashayers increased the using the family planning in them.²⁵ The data in Table 3, show the behavior and practice of women in delivery. These data revealed that the prevalence of cesarean section in this city is 57.2% that is same as Isfahan, and is more than in total of Iran.¹⁶

In addition, the difference of the cesarean prevalence in experiment and control groups are concordant with previous studies which demonstrated that practice can be increased after intervention.^{24,26-30} All of these findings imply that the specific intervention may cause the changes and improvements of behavior in participants.

However, traditional strategies that provide only general information to all people, disregarding the attitude of the segment of the target audience being served, will likely to be ineffective in changing behavior. Using public health theories to tailor intervention to the target population can overcome these problems. The BIM has potential for providing the foundation to educational intervention at individual and community levels. It can be therefore, recommended that the application of this model may change and improve different behaviors including method of delivery.

The Authors declare that have no conflict of interest in this study and they have surveyed under the research ethics.

References

1. Chacham AS, Perpetuo IHO. The incidence of cesarean deliveries in Belo Horizonte, Brazil: social and economic determinants. *Reproductive Health Matters* 1998; 6(11): 115-21.
2. World Health Organization (WHO), the Pan American Health Organization (Paho). Appropriate technology for birth. *The Lancet* 1985; 2(8452): 436-7.
3. Francome C, Savage W. Cesarean section in Britain and the United States 12% or 24%: is either the right rate? *Social Science and Medicine* 1993; 37(10): 1199-218.
4. Bobadilla JL, Walker GJ. Early neonatal mortality and cesarean delivery in Mexico City. *Am J Obstet Gynecol* 1991; 164(1 pt 1): 22-8.
5. Sachs BP, Kobelin C, Castro MA, Frigoletto F. The risks of lowering the cesarean delivery rate. *N Engl J Med* 1999; 340(1): 54-7.
6. Matthews TG, Crowley P, Chong A, McKenna P, McGarvey C, O'Regan M. Rising cesarean section rates: a cause for concern? *BJOG* 2003; 110(4): 346-9.
7. Paterson-Brown S. Controversies in management: should doctors perform an elective cesarean section on request? *BMJ* 1998; 317(7156): 462-5.
8. Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP. Cesarean delivery and postpartum mortality among primiparas in Washington State, 1987-1996(1). *Obstet Gynecol* 2001; 97(2): 169-74.

9. Placek PJ, Taffel SM. Recent patterns in cesarean delivery in the United State. *Obstet Gynecol Clin North Am* 1988; 15(4): 607-27.
10. Scully DH. Men who control women's health: the miseducation of Obstetrician-Gynecologists. New York: Teachers College Press; 1994.
11. William RL, Chen PM. Identifying the sources of the recent decline in perinatal mortality rates in California. *N Engl J Med* 1982; 306(4): 207-14.
12. Sanchez-Ramos L, Kaunitz AM, Peterson HB, Martinez-Schnell B, Thompson RJ. Reducing cesarean sections at a teaching hospital. *Am J Obstet Gynecol* 1990; 163(3): 1081-8.
13. Rubin GL, Peterson HB, Rochat RW, McCarthy BJ, Terry JS, Maternal death after cesarean section in Georgia. *Am J Obstet Gynecol* 1981; 139(6): 681-5.
14. Evrard JR, Gold EM. Cesarean section and maternal mortality in Rhode Island. Incidence and risk factors, 1965-1975. *Obstet Gynecol* 1977; 50(5): 594-7.
15. Notzon FC, Cnattingius S, Bergsjö P, Cole S, Taffel S, Irgens L, et al. Cesarean section delivery in the 1980s: international comparison by indication. *Am J Obstet Gynecol* 1994; 170(2): 495-504.
16. Isfahan Province Health Center. Report of monitoring and evaluation of mothers health in Isfahan. Isfahan: Isfahan Province Health Center; 2005. p. 1-5.
17. Tavsooli M, Haidarnia MA. The effect of health education in decreasing of selected cesarean in pregnant women. [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2002.
18. Glanz K, Lewis FM, Rimer BK. Health behavior and health education: theory, research, and practice. 2nd ed. San Francisco: Jossey-Bass; 1997.
19. Becker MH, Maiman LA. Sociobehavioral determinants of compliance with health and medical care recommendations. *Med Care* 1975; 13(1): 10-24.
20. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. *Health Educ Q* 1988; 15(2): 175-83.
21. Pender NJ, Barkauskas VH, Hayman L, Rice VH, Anderson ET. Health promotion and disease prevention: toward excellence in nursing practice and education. *Nursing Outlook* 1996; 40(3): 106-12.
22. Tan AS, Yong LS, Wan S, Wong ML. Patient education in the management of diabetes mellitus. *Singapore Med J* 1997; 38(4): 156-60.
23. Lin WC, Ball C. Factors affecting the decision of nursing students in Taiwan to be vaccinated against hepatitis B infection. *J Adv Nurs* 1997; 25(4): 709-18.
24. Baghiani Moghadam MH, Shafie F, Haydarneia AR, Afkhami M. Efficacy of BASNEF model in controlling of diabetic patients in the city of Yazd. Iran. *Indian Journal of Community Medicine* 2005; 30(4): 144-5.
25. Miri MR, Shafiee F, Heidar-nia AR, Kazem-nejad. A survey about the view of Birjand Ashayer men to family planning, base on behavior intention model. *Journal of Mazandaran University of Medical Sciences* 2003; 12(37): 67-74.
26. James AS, Campbell MK, Hudson MA, Perceived barriers and benefits to colon cancer screening among African Americans in North Carolina: how dose perception relate to screening behavior? *Cancer Epidemiology, Biomarkers & Prevention* 2002; 11(6): 529-34.
27. Aiken LS, West SG, Woodward CK, Reno RR, Reynolds KD. Increasing screening mammography in asymptomatic women: evaluation of a second generation, theory-based program. *Health Psychol* 1994; 13(6): 526-38.
28. Bowen DJ, Christensen CL, Powers D, Graves DR, Anderson CAM. Effects of counseling and ethnic identity on perceived risk and cancer worry in African American women. *Journal of Clinical Psychology in Medical Settings* 1998; 5(3): 365-79.
29. Siero S, Kok G, Pruyn J. Effects of public education about breast cancer and breast self-examination. *Soc Sci Med* 1984; 18(10): 881-8.
30. Lerman C, Lustbader E, Rimer B, Daly M, Miller S, Sands C, et al. Effects of individualized breast cancer risk counseling: a randomized trial. *J Natl Cancer Inst* 1995; 87(4): 286-92.