

The effect of the Extended Parallel Process Model of childbirth education for decreasing the rate of Caesarean section among Iranian women

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Abstract: Despite the fact that childbirth by caesarean section (CS) does not provide significant health benefits for either the mother or the newborn, there has been a noticeable upward trend in CS births in Iran over the last two decades. The aim of the current study was to determine the effect of using the Extended Parallel Process Model for childbirth education on decreasing the number of births by CS among Iranian women. This field study consisted of three steps. In step one; a formative evaluation was conducted using a pre-test questionnaire based on the Extended Parallel Process Model (EPPM). In step two, a structured childbirth education program was developed based mainly EPPM. In step three, evaluation of the outcome was conducted by comparing the scores from the post-test questionnaire and CS rates between two groups. Two hundred and eighty-four low-risk pregnant women from antenatal clinics participated in and completed the study, and they were assigned to experimental and control groups that consisted of 145 and 139 women, respectively. Follow-up pairwise comparisons using paired t-test between the comparative groups indicated significant statistical changes for the outcome variable, i.e., the intention to have vaginal birth, from the pretest to posttest in the experimental group's score ($p < 0.001$, 95% CI = -3/7 - -2/8), but such a finding was not observed in the control group. Furthermore, the rate of caesarean delivery was significantly decreased in the experimental group compared with control group (66.2% and 48.2%, respectively) and the odds of giving birth by CS was 2.1 times greater in the control group ($p < 0.001$). Using EPPM-based childbirth education was found to effectively lower the rate of intended and actual caesarean births. The findings also indicated that childbirth preparation programs that place emphasis on promoting mothers' self-awareness and self-confidence increased the probability of their having normal childbirth.

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1. Introduction

Caesarean section (CS) can be a life-saving operation in some special circumstances; however, pregnancy and childbirth are both normal and physiologic processes that often occur without intervention (Campero, 2004). In recent years, CS rates have increased dramatically some developed countries and in several developing countries (Leone, 2008). According to a statement issued by the World Health Organization (WHO), there is no justification for the 10-15% increase in the CS rate (A. Scarella, 2011); even so, the goal of reducing CS birth rates has not been achievable in some developing areas, such as Iran. Notably, the caesarean birthrate in Iran

has increased significantly, from 35% in 2000 to 46% in 2009 (Maternal Health office, 2010). Although more than 95% of all deliveries take place in hospitals where they are assisted by educated midwives, medical interventions, such as episiotomy, perineal shaving, and intravenous lines, are included as routine and common practices during childbirth. Furthermore, the services of a doula are not common, and the spouse is forbidden to be present for the birth in all teaching hospitals and most private hospitals. Obviously, midwives are the only source of support for a woman in labor, but they often must engage in many duties and accompany other women in labor. In spite of the availability of certified childbirth

educators, maternal education is provided only briefly during short prenatal visits, and most of the educators do not take it upon themselves to educate women about feasible methods for relieving the pain of labor and childbirth. Thus, it is not surprising that the lack of information and some misconceptions

about childbirth that the mother-to-be might have could lead to excessive fear and anxiety, thereby leading her to choose an alternative plan of “painless” and “easy” childbirth, such as CS (Tork Zahrani, 2008).

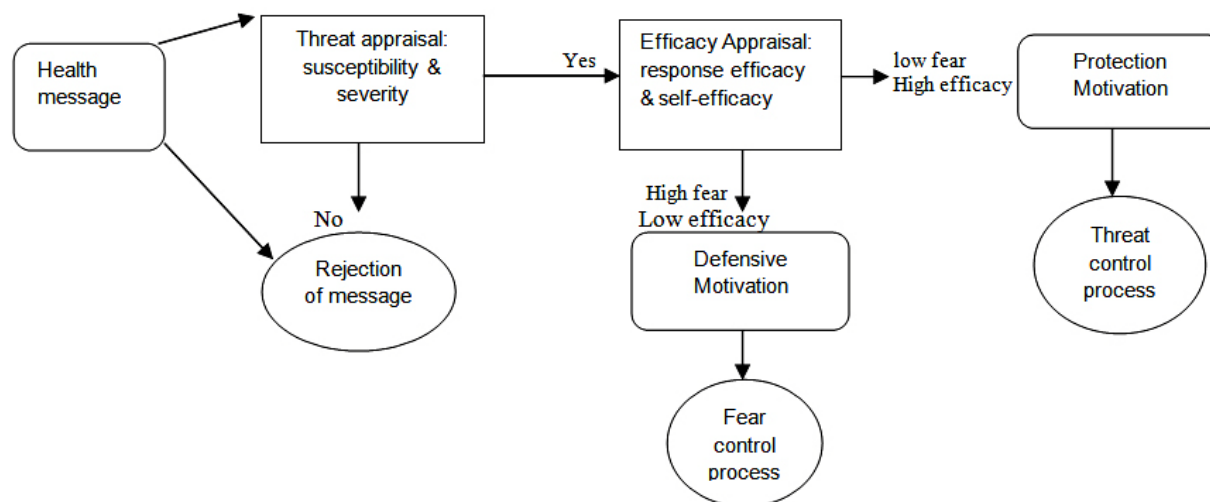


Figure1. Simple Description of Witte’s Extended Parallel Process Model for fear appeals (according to Witte, 2001)

It has been proposed that the negative effects of excessive fear could be reversed through medical intervention by trained healthcare providers who could educate and support women in all stages of pregnancy and labor (Campero, 2004). Appropriate training during pregnancy would provide opportunities to guide the mother to better understand her abilities, to control herself with less fear and apprehension, and also to benefit from valuable methods that can help her complete a healthy pregnancy and have a safe delivery. In addition, training courses could provide appropriate conditions for mothers and their families to speak to their counterparts and the trainers about their fears and concerns and share their thoughts and experiences, which could go a long way toward decreasing their concerns most of the time (Bascom, 2002). However, the effects of general, prenatal education have been debated extensively due to the methods and materials used in the educational process (Fraser, 1997; Gagnon, 2009).

It is proposed that educational models based on fear appeals theory can be effective in motivating people to change some health-related behaviors. In this field, the Extended Parallel Process Model (EPPM) has been used and found to be a useful method for appraising the knowledge and perceptions of a target population regarding an issue in order to

develop effective messages and interventions. This model, first proposed by Witte in the early 1990s, offers a condition in which fear appeals succeed or fail in motivating people to behave in certain ways relative to accepting or refusing a health-risk message (Witte, 1992). To date, however, it has not been used to reduce unnecessary caesarean births, but research suggests that this model can and does work under certain conditions (Witte, 1992; Witte, 1996; Witte, 1997). Fear can be a barrier to behavior change, such as when audiences are so frightened that they cannot act, so they deny the treat and engage in fear control. However, they can be motivated to change if they are taught to appraise their abilities and the efficacy of the message so that, when they perceive a risk, they are motivated to reduce it. From a public health standpoint, it was of great importance to determine, prior to the research, whether the participants were already engaged in danger or fear control processes. This determination was essential so that we could be able to assess during planned interventions whether or not if the messages had the intended effect. At some critical point, perceptions of threat may exceed perceptions of efficacy, and people will shift into fear control processes and begin focusing on how to deter their fear instead of thinking about the threat (Witte, 2001). Briefly, the recommendations contained in a health-risk message are accepted when danger

control dominates, and they are rejected when fear control dominates (Figure 1).

The aim of this study was to determine the effect of childbirth education based on the Extended Parallel Process Model on decreasing the rate of caesarean births among Iranian women. The present study was performed in Shahroud, a populous city in northeastern Iran where there has been an increasing trend of caesarean births over the past decade. In Shahroud, the CS rate was 57.5% in 2010, and elective caesarean births contributed to a significant proportion of this percentage (Statistical report of registered births of hospitals in Shahroud, 2011).

2. Material and Methods

2.1. Study design

The present research is a field study that included three sequential collections of data from antenatal clinics in Shahroud. The first step was a formative evaluation to determine participants' knowledge and perceptions of threat and efficacy using a structured inventory based on EPPM. The second step comprised the random allocation of clinics as clusters to the experimental and control groups. Then, childbirth education was conducted for the experimental group by trained birth educators. In the third step, we evaluated our educational interventions regarding participants' intention to give birth vaginally and the actual mode of birth as outcome variables using post-test questionnaires between the two study groups.

2.2. Study population

The participants in our study were pregnant women who sought prenatal services at one of 10 outpatient clinics affiliated with the Shahroud University of Medical Sciences. Based on Witte's recommendation (Witte, 2001), we needed at least 150 participants in order to assess the relationship between the variables of the questionnaire. Hence, by means of the maternal health information provided by the clinics, women who met the inclusion criteria were recruited. At the time of the visit, the aims of the study were described to eligible women, and willing participants entered into the study and completed the questionnaires after they provided signed, informed-consent forms. The inclusion criteria are outlined in Table 1. Gestation times exceeding the twenty-first week were considered because the probability of an abortion or a miscarriage is reduced significantly after this time. Also, since vaginal birth rarely, if ever, is performed in Shahroud and many other cities in Iran after there has been a previous caesarean surgery, we had to exclude women who had an earlier caesarean birth. Participants had the right to withdraw from the study

at any time for any reason, and they were reassured concerning the confidentiality of the data that were collected.

Table 1- Inclusion criteria of the study

Low risk pregnancy with any diagnosed prohibition for vaginal delivery
Maternal age : 20-40 years
Gestational age: 21th–28th weeks' gestation
having singleton pregnancy
negative history of previous CS
ability to read and write in Persian

2.3. Measurement instrument

We used the Risk Behavior Diagnosis (RBD) Scale in this study (Witte, 2001) to identify whether the participants were engaged in a fear control process or a danger control process. The RBD Scale is a 12-item survey that is theoretically grounded in the EPPM. The original scale asks three basic questions/phrases about the participants' perceptions of susceptibility, severity, response efficacy and self-efficacy on a 7-point scale ranging from "1-strongly disagree" to "7-strongly agree." The questionnaire used in the study consisted of two separate parts for measuring the data, i.e., Demographic and EPPM items. The EPPM items included perception of threat (severity, susceptibility) with five statements in each domain and perception of efficacy (response efficacy, self-efficacy) with six and seven phrases. In addition, we assessed the participants' knowledge of modes of birth and the mode they intended to use with nine and five phrases, respectively. In this study, "threat" was defined as such common caesarean complications as higher probability of post-partum hemorrhage, infection, readmission of mother/baby to the hospital, impaired maternal attachment, and delay in breast feeding. Likewise, "Efficacy" was described as feasible and effective coping behavior skills that promote women's self-efficacy for childbirth and coping ability in reducing anxiety and pain during labor. Since validation of the scale in judgment was based on quantitative evidence (Yaghmaie, 2003), inclusion of at least five to 10 experts was useful for reviewing and judging the appropriateness of items to the domain of content using a content validity index (CVI) (Polit, 2007). The group members consisted of nine experienced faculty members who had specialized in the subjects related to our study. They evaluated and rated items based on relevance, clarity, and simplicity on a four-point scale. In the next step, in order to improve the clarity of the responses, the remaining items were presented to 25 pregnant women from two different health centers to obtain a convenient sampling. However, few revisions were

conducted. Finally, we tested the internal consistency of the EPPM inventory using Cronbach's alpha and correlation. For this purpose, the inventory was given to 50 pregnant women with different socioeconomic characteristics and gestational ages from another health center. Cronbach's α coefficients were 0.71, 0.76, 0.78, 0.70, 0.69, and 0.81 for Susceptibility, Severity, Response efficacy, Self-efficacy, Knowledge, and Intention sub-scales, respectively.

2.4. Data collection and interventions

At the beginning of the first step, in order to decrease the likelihood of bias in the selection and to minimize information exchange between the participants in order to have a clean intervention, five out of 10 clinics were assigned randomly to the experiment, and the other five clinics were assigned to the control group. We conducted continuous sampling that lasted from November 2010 to March 2011, and 300 eligible, pregnant women completed the pre-test questionnaires to provide a formative evaluation (150 persons in each group). The women completed the pre-test questionnaires in a private room at the health centers. Then, the women in the experimental group participated in antenatal childbirth education and were trained by certified and experienced birth educators. They attended six sessions in one of the five experimental clinics, and one session was allocated to providing education for the fathers. In this single session, the educators dealt with addressed the mothers' physiological and mental health during pregnancy, the childbirth process, and parenthood in order to achieve more support by their spouses. The courses related to preparation for childbirth were held with 8-10 pregnant women for a period of 60-90 minutes. The central content of the training classes was allocated to presenting the evidence-based information about potential risks of unnecessary CS as a major surgery and presenting the benefits of normal birth for both mother and the newborn. This approach was utilized to provide realistic information that indicated that unnecessary CS could be regarded as a potential threat that should induce rational fear. Following that, in order to avoid rejection of the messages and motivate audiences to avert the threat, health messages were presented mainly to introduce coping behavior skills, such as non-pharmacological pain-reduction skills during labor and birth. The participants practiced the feasible birth skills (breathing exercises, self-massage, guided imagery, and relaxation) at the end of each session under supervision of the trainers. Finally, similar to the pre-test questionnaires, the posttests were completed by participants at the sixth session of the class, using five statements to assess the women's intentions to have a normal birth. All

sessions were conducted by means of a lecture, asking and responding teaching methods, and watching training films.

The participants of the control group received routine pregnancy care. They were given the pre-test questionnaire at the twenty-first through the twenty-eighth weeks of gestation, and they completed the post-test questionnaire at least eight weeks after the pre-test questionnaire was completed and before the thirty-seventh week of pregnancy. All participants received necessary maternal care at the time of their appointments, and they were controlled for maternal-neonatal general health during pregnancy and were referred to an obstetrician in case of any threatening health symptoms. The researcher followed up the study by proceeding to explore any problems and to support trainees with their method of delivery by making phone calls to each participant and also to the birth trainer in each health center.

2.5. Ethics review committee approval

Ethical approval was obtained from the ethics committee of the institution (i.e., Shahroud University of Medical Sciences' Ethics Committee) concerned with code 890/07 on 2/15/2011. Meanwhile, while awaiting receipt of Ethics Committee's approval for the study, 10 midwives in the targeted settings were trained for the recruitment of the eligible women and for the collection of data. We considered the following important points with respect to the collection of data:

- 1- All of the participants were assured that their responses would be kept confidential.
- 2- Participants were informed that their participation was voluntary and that they could withdraw at any time.
- 3- Any participant who needed emergency care would be referred to emergency obstetrics services immediately.

2.6. Statistical analysis

Descriptive statistics including means, standard deviations, and X² techniques were used to assess the components of the questionnaire and compare the variables between the groups. Evaluations of outcomes (intention to have NVD or CS delivery) were compared using the paired t-test and the chi-squared technique for group comparisons.

3. Results

Table 2 outlines the participants' characteristics and the significance values associated with the chi-squared assessment that evaluated differences between the experimental and control groups. The groups did not differ significantly in any of the demographic measures, indicating that the

sample allocation procedure that was used was effective.

Table 2. Sample characteristics and baseline measures between two study groups

characteristics	Experiment N(%)	Control N(%)	X2, P value
Age groups			
20-24	66 (45.5)	62 (44.6)	3.6,p=0.721
25-30	66 (45.5)	65 (46.7)	
>30	13 (9.0)	12 (8.9)	
Education level			
Primary school	30 (20.7)	27(21.1)	2.98, p=0.81
High school	76 (52.5)	69(49.6)	
College	39 (26.8)	43 (30.9)	
Occupation			
Housewife	105 (72.4)	98(70.5)	9.13, p= 0.13
employee	40 (27.5)	41(29.5)	
spouse's education level			
Primary school	51(35.2)	48 (34.5)	8.12, p= 0.1
High school	69 (47.6)	68 (49)	
College	25 (17.2)	23(16.5)	
spouse's occupation			
Official employee	39 (26.9)	44(31.6)	11.27, p= 0.257
Self employee	106 (73.1)	95(68.4)	
Number of pregnancies			
primigravidae	119 (82.1)	112 (80.6)	0.63, p= 0.88
multigravidae	26 (17.9)	27 (19.4)	
Gestational age groups(weeks)			
21-24	84 (57.9)	79 (56.8)	10.21, p= 0.266
25-28	61 (42.1)	60(43.2)	

Table 3. Detail of the EPPM scale between experimental and control groups before intervention

Variable (number of items)	Possible range	E group	C group	t, P.value
	<i>M ± SD</i>	<i>M ± SD</i>		
Susceptibility(5)	5-35	21.51 ± 5.7	21.6 ± 4.3	1.34 (p=0.12)
Severity(5)	5-35	26.7 ± 5.21	26.34 ± 5.11	1.59 (p= 0.09)
Response efficacy(6)	6-42	36.51± 3.89	36.01 ± 3.21	1.68(p=0.092)
Self efficacy(7)	7- 49	39.84 ± 5.99	39.04 ± 5.62	1.64 (p= 0.1)
Knowledge(9)	0-9	5.69 ± 1.67	5.43 ± 1.87	1.74(p=0.082)
Intention(5)	0-5	28.36 ± 3.48	28.78 ± 3.75	-1/38(p=0. 16)

The participants were 25 ± 3.9 years old on average and most of them were housewives who had a high school diploma and were pregnant for the first time. Table 3 demonstrates the mean scores obtained by the participants of the two groups of study from the pre-test variables and before the training interventions were initiated. Two independent sample t- tests showed that there were no statistically significant differences between the groups according to the variables' mean scores. Moreover, we calculated the critical points (discriminating value) in the two groups by subtracting the "threat perception"

from "efficacy perception." Comparing the critical value revealed no significant difference between the study groups. The fact that this value was positive means that the perceived efficacy exceeded the perceived threat (resulted in danger control processes). However, perceptions of susceptibility in both groups were lower than the perceptions of severity.

Within a period of interventions, 145 women in the experimental group completed the study, while three dropped out for medical reason and two withdrew, and 139 in the control group

completed the study, while 11 were excluded. Therefore, 284 women completed the post-test questionnaires. Reasons for excluding participants included constant breech-birth presentation (3), placenta previa (2), pre-term labor (4), diabetes mellitus (2), and missing data (3).

Table 4. Comparison of the scores concerning intention to have vaginal delivery between the experimental and control groups.

Group/ Scale	Mean \pm SD P.value	paired t-test ,
Experiment		
Pre-test	28.35 \pm 3.48	t= -14.25 , p<0.001
Post-test	31.61 \pm 3.02	
Control		
Pre-test	28.78 \pm 3.75	t= 0.84 , p= 0.39
Post-test	28.12 \pm 3.58	

Follow-up pairwise comparisons using the paired t-test between the comparative groups indicated significant statistical changes for the outcome variable, i.e., intention to have a vaginal birth, from the pretest to posttest in the experimental group's score ($p < 0.001$, 95% CI = -3/7- -2/8), but such a finding was not observed in the control group (Table 4). In addition, Table 5 suggests that the rate of normal delivery in the experimental group was significantly more than in the control group, and the odds of caesarean birth in the control group were up to 2.1 times greater than in the experimental group (X², $P = 0.001$, 95% CI = 1.41- 2.76). The caesarian birth rate among the first-time pregnant mothers was significantly greater than among multigravid women (X², $P = 0.003$). This finding remained significant when adjusted for social characteristics using the Mantel-Hansel procedure. In addition, the elective CS rate was greater in the control group than in the experimental group; however, this difference was not statistically significant.

Table 5. Comparison of mode of childbirth between the two study groups

Group	Mode of birth		X ² value
	NVD N (%)	CS N (%)	
Experiment (n=145)	96 (66.2)	49 (33.8)	X ² , P=0.001 OR= 2.1
Control (n=139)	67 (48.2)	72 (51.8)	
Total (n=284)	163(57.4)	121(42.6)	

4. Discussions

The results of this study showed that using methods based on the logic model of fear appeal is more effective than existing birth-training programs for decreasing the women's intention to have caesarean births. Although fear appeals tend to be viewed with doubt in health education, the results of this and some other experimental studies reflect the fact that using such models will be efficient under special conditions (Witte, 1997; Barnett, 2009; Basil, 2008). In the other words, fear appeals work when accompanied by high efficacy messages. We found that there was no difference between comparable groups before the interventions and that women tended to see themselves as invulnerable to undesired outcomes (post-caesarean complications), but they were aware of the severity of the negative consequences of such major surgery. It has been stated that "when perceptions of threat are high, a minor stimulus may be needed to initiate action" (Redding, 2000). Also, at the beginning of the study, our participants demonstrated higher confidence (efficacy), indicating great acceptance of proposed messages. It implied that women believed that they had the ability to perform the coping responses and that these responses were effective in minimizing the risk. They exhibited a confident manner concerning their intention to plan a safer delivery.

As childbirth has been described as a painful event that induces fear and anxiety (Cheung, 2007), various methods have been introduced to reduce the level of anxiety and pain associated with labor and childbirth, including childbirth education. Using the fear appeal theory, we attempted to shift the existing fear of normal birth into the fear of complications following unnecessary surgical birth, while dominantly emphasizing positive messages on the promotion of self-efficacy and the feeling of being in control during childbirth. Therefore, the perception of efficacy was reinforced by effective coping behaviors. Feeling that one is an active participant in labor and birth instead of a passive object, increases her self-confidence and helps her promote the feeling of being in control over a painful childbirth (Ip, 2009). Since both self-accomplishment and vicarious experience enhance the perception of self-efficacy (Bandura, 1977), our intervention provided an opportunity for pregnant women to develop and experience their coping skills and to be appreciated and admired by their trainers and peer group.

In some situations, inter-individual interactions and learning together with other counterparts cause a sharing of experiences and mental and emotional perspectives between the learners that can effectively change the attitudes and

beliefs of the participants concerning healthy behavior (Wang, 2011).

The finding that the experimental group demonstrated greater intention to have vaginal births than the control group after learning coping skills was supported by former studies that also ascertained a more positive behavior toward normal childbirth (Saisto, 2001; Wang, 2011; Fathian, 2007). In addition, the lower incidence of caesarean delivery in the experimental group than in the control group confirmed similar results from previous studies, which indicated that prenatal instructions, especially group education, provided support to women during childbirth and contributed significantly to reducing initial birth by CS (Campero, 2004; Wang, 2011). The effectiveness of using these coping strategies for pain relief during labor was not measured in the experimental group; nevertheless, improved intention to have a vaginal birth and actual increases in the rate of vaginal births compared with the same intent and decisions in the control group implied that programs that concentrate on the fear appeal theory, accompanied mainly by raising the individual's self-confidence, were appropriate and effective.

Although we found no significant relationship between women's social characteristics and their preferred method of delivery, the results of a few Iranian studies and studies conducted abroad indicate that the prevalence of caesarean births increases when socio-economic status improves (Campero, 2004; Ahmad-Nia, 2009; Angega, 2006). This study was limited by the fact that we did not perform individual randomization; however, we made that decision in order to minimize the probability of information leakage among participants who attended the same clinic.

In sum, the results reported in this paper indicate that structured childbirth education based on EPPM can work effectively either to improve maternal intention to have a normal birth and to decrease the rate of caesarean births. The findings also suggested that the probability of inclination to have a normal birth increased when programs specifically designed to prepare women for childbirth promoted the mothers' self-awareness and self-confidence. The results of this study raise questions about the existing components of prenatal education and how midwives can be involved to plan innovations in antenatal programs and act as childbirth educators more effectively than before. It is important for maternity caregivers to be aware of the benefits of empowering women by providing them with coping strategies they can use during labor. Further experimental investigations must be conducted to establish whether community education based on fear appeal models can lead to reductions in

unnecessary caesarean births and the negative health complications that such births may induce.

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References

1. Ahmad-Nia, S., Delavar B. Eini-Zinab H. Kazempour K. Mehryar A.H and Naghavi M. 2009. Caesarean section in the Islamic Republic of Iran: prevalence and some sociodemographic correlates. *Eastern Mediterranean Health Journal* 15(6): 1389-1398.
2. Angega AC, W.A., Vargas JE, Gomes R, Rojas I, Caughey AB. 2006. Chilean women's preference regarding mode of delivery: which do they prefer and why? *BJOG: an International Journal of Obstetrics and Gynaecology* 113(11): 1253-8.
3. Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review* 84:191-215.
4. Barnett, D., Balicer,R., Thompson, C., Storey, . Omer,S. et al., 2009. Assessment of Local Public Health Workers' Willingness to Respond to Pandemic Influenza through Application of the Extended Parallel Process Model. *PLoS ONE* 4(7): e6365. doi:10.1371/journal.pone.0006365.
5. Bascom, A., 2002. Complementary and alternative therapies in occupational health.Part 11—Specific therapies. *AAOHN J* 50(10): 468–474.
6. Basil, D.Z., Ridgeay, N.M, AND Basil, M.D, 2008.Guilt and Giving: A Process Model of Empathy and Efficacy. *Psychology & Marketing* 25(1): 1-23.
7. Campero, L., Hernandez, B., Osborne, J., Morales, S., Ludlow, T., Munoz,C., 2004. Support from a prenatal instructor during childbirth rates of caesarean section in a Mexican study. *Midwifery* 20: 312-323.

8. Cheung, W., Ip, W., Chan, D., 2007. Maternal anxiety and feelings of control during labour: A study of Chinese first-time pregnant women. *Midwifery* 23(2): 123-130.
9. Fathian Z, S.G.R., Hasanzadeh A, Fathian Z., 2007. Study of the effects of Behavioral Intention Model education on reducing the cesarean rate among pregnant women of Khomeiny-Shahr, Isfahan. *Tabib-e- Shargh* 9(2): 123-31.
10. Fraser, W., Maunsell, E., Hodnett, E., Moutquin, JM., 1997. Randomized controlled trial of a prenatal vaginal birth after cesarean section education and support program. *American Journal of Obstetrics and Gynecology* 176(2): p. 419-425.
11. Gagnon, M., Légaré, F., Labrecque, M., Fremont, P., Pluye, P., Gagnon, J., et al., 2009. Interventions for promoting information and communication technologies adoption in healthcare professionals. *Cochrane Database of Systematic Reviews* (1) Art. No.: CD006093. DOI: 10.1002/14651858.CD006093.pub2.
12. Information Technology & Statistics Office, 2010. Statistical report of registered births of hospitals in Shahroud. Health and Research Deputy, Shahroud University of Medical Sciences, Iran.
13. Ip, W., Tang, CSK. and Goggins, WB. 2009. An educational intervention to improve women's ability to cope with childbirth. *Journal of Clinical Nursing* 18,(15): 2125-2135.
14. Leone, T., Padmadas , SS., Matthews, Z., 2008. Community factors affecting rising caesarean section rates in developing countries: An analysis of six countries. *Social Science & Medicine* 67: 1236–1246.
15. Ministry of Health, 2010. Maternal Health Office. National program for maternal health in The Forth Program of socio-economic and cultural Development . [<http://www.fhp.hbi.ir>] (last accessed on 21/12/2011).
16. Polit, FB., CT., Steven, VO., 2007. Is the CVI an Acceptable Indicator of Content Validity? *Appraisal and Recommendations. Research in Nursing & Health* 30: 459–67.
17. Redding, C., Rossi, JS., Rossi, SR., Velicer, WF., and Prochaska, JO., 2000. Health Behavior Models. *The International Electronic Journal of Health Education* 3:180-93.
18. Saisto, T., Salmela-Aro, K., Nurmi, JE., Könönen, T., Halmesmäki, E., 2001. A Randomized Controlled Trial of Intervention in Fear of Childbirth. *Obstetrics & Gynecology* 98(5, Part 1): 820-826.
19. Scarella A, Chamy, V., Sepúlveda, M., Belizán, JM., 2011. Medical audit using the Ten Group Classification System and its impact on the cesarean section rate. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 154(2): 136-140.
20. Tork Zahrani, S., 2008. Commentary: Childbirth education in Iran. *The Journal of Perinatal Education* 17(3): 51-4.
21. Wang, H.-H., .Lin, M-L., Yang, Y-M., Tsai, H-M., T., Huang, J-J., 2011. The effects of group health education on childbearing knowledge, attitude, and behaviour among Southeast Asian immigrant women in Taiwan. *Midwifery* Available online 13 September 2011. article in press.
22. Witte, K., 1992. Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs* 59: 329-349.
23. Witte, K., 1994. Fear control and danger control: A test of the Extended Parallel Process Model (EPPM). *Communication Monographs* 61: 113-134.
24. Witte, K., 1997. Preventing teen pregnancy through persuasive communications: realities, myths and the hard-fact truths. *Journal of Community Health* 22(2): 13-154.
25. Witte, K., 1998. A theoretically based evaluation of HIV / AIDS prevention campaigns along the trans-Africa highway in Kenya. *Journal of Health Communication: International Perspectives* 3(4): 345-63.
26. Witte, K., Meyer, G., Martell ,D., 2001. *Effective Health Risk Messages: A Step-By-Step Guide* SAGE Publications, Inc.
27. Yaghmaie, F., 2003. Content validity and its estimation. *Journal of Medical Education* 3(1): 25-27.

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