The effect of long-distance education on the mothers' anxiety and stress than childbirth method in primipara mothers

Fahimeh Ganjali

PhD student of Educational Management, Medical Sciences University of Dezful, Dezful, Iran

Fahim.ganj@yahoo.com

Mohammad Hossein Bahairaei

Assistant Professor, Islamic Azad University, Tehran South Academic Unit, Tehran, Iran.

h.bahiraey@yahoo.com

Abstract

Objective: One of the appropriate programs to reduce the elective cesareans is the education of women during pregnancy. There are several studies in this regard that indicate the effect of education during pregnancy on the readiness for childbirth. The purpose of this study was to investigate the effect of long-distance education on the anxiety and stress of pregnant mothers arising from childbirth method.

Method: This was a quasi-experimental study with pre-test and post-test of experiment and control groups. The available sampling method was conducted among the primipara mothers between 22 to 35 weeks in Dezful County. The Number of 100 people having entry criteria were randomly divided into two groups of experiment (50 people) and control (50 people). The experiment group was under the long-distance education during eight weeks and one session in a week. Data analysis was performed using SPSS software and covariance test.

Results: The findings of this study showed that there was a significant difference between the average of anxiety scores (F = 4.29, P = 0.05) and stress scores (F = 4.02, P = 0.02), childbirth method selection scores (F = 26/14, P = 0.001), and pre-test and the post-test of the experiment and control group.

Conclusion: The results show that long-distance education is effective on anxiety and stress of mothers than choosing the childbirth method. Therefore, using this educational method can be applied as an effective strategy in order to improve their knowledge and empowerment in choosing the childbirth method.

Keywords: distance education, anxiety, stress, primipara mothers, childbirth method.

Introduction:

One of the important achievements of new information technologies is the impact and application of the Internet in education, creation of long-distance education and electronic education and learning (Afzal Nia, 2014). Long-distance education is considered as a telecommunication factor, which provides learning opportunities for anyone, in anywhere and in anytime (Afzal Nia, 2014).The use of information and communication technology in the provision of healthcare services refers to the

electronic health. European Union (2003) defines the electronic health as the use of modern information technology to meet the needs of citizens, patients, healthcare professionals, providers of health services andpolicymakers.

Experts are trying to make the most effective use of electronic learning as a scientific innovation for improvement in all matters. One of these areas, which is very important for humans, is the health and medical affairs sector that the importance of better providing services in this area is not covered by anyone (World Health Organization, 1997).Anxiety and stress during pregnancy can have long-term implications for the fetus and intrauterine stress causes immaturity and precocious childbirth as well as vascular diseases in adulthood (Shojaeezadeh et al., 2011). The high level of anxiety in the mother at the end of pregnancy period is associated with reduced mental development at age two (Solchani et al., 2003).Pregnancy mental disorders have a significant impact on the physical and mental health of the mother as well as how they interact with her child after childbirth (World Health Organization, 2008).About the mother's right to choose a childbirth method, it is said: The purpose of knowingly and freely choosing is that specialist explains all the benefits and disadvantages of both childbirth methods to the sick and empowers the mother during pregnancy with educating and giving information so that she chooses herself (Khodakarami, 2014).During these educations, the mother must be able to have a proper mentality of childhood pain, and at the time of childbirth, she can control her pains voluntarily through special exercises (Hassanzadeh and Kiani Asiabar, 2012).In order to provide security, relaxation, reducing fear and anxiety caused by childbirth pain, increasing mothers' motivation to normal childbirth and easy and desirable childbirth, education of childbirth readiness should be done for the mother (Karimi et al., 2015).One of the measures taken in recent years by the Ministry of Health to reduce the rate of cesarean is to raise the awareness of pregnant women about childbirth methods, which this issue reduces the effect of different variables on the amount of awareness. Since the prevalence of cesarean childbirth in each country is one of the indicators for assessing the performance of mothers' health programs, according to the results of the researches and suggestions proposed in this regard, it is hoped that an effective step is taken in the development and promotion of mothers' health status in the country, in addition to reducing the prevalence of cesarean, (Turk Zahrani, 2010).Normal childbirth is a physiologic and natural process that has amazing benefits for the mother and baby. In contrast, Caesarean method has many risks for the mother and baby (Wheeler, Calour, 2007).Liferman and Evenson (2003) conducted a study on about 9,000 pregnant women to determine the outcomes of exercise in pregnancy and childbirth, weight of the baby and its birth time. The findings showed that these women consciously selected natural childbirth because they felt enough self-confident to deal with pain. Also, the length of childbirth is much shorter, and the light-weight baby is rarely seen.Robert's research (2007), published in 2006, which lasted for two years, was about pregnancy period educations conducted on 2000 mothers. He believes that in these classes, the mother learns the problem-solving technique and deals with childbirth as a solvable problem.Despite the intense interest of the woman to become pregnant, at first

childbirth, she suddenly finds herself uncomfortable with the unknown risks of pregnancy, childbirth pain and childbirth process, and the emergence of contradictory reactions of pleasures and antipathy among them is common (Bazrafshan and Ghorbani, 2010).The impact of pregnancy period educations is justified in such a way that in order to enter an unfamiliar and frightening environment, the existence of a familiar and trusted attendant and prior knowledge to the considered environment is necessary. According to this theory, the training the mothers creates a positive attitude in them toward childbirth and childbirth personnel and increase their confidence and trust. They also need to participate in this course with aware of how and duration of pains and learning different techniques and practices (Yang Wes, 2006).Establishing educational classes to inform mothers of a natural and healthy childbirth, providing educational materials, including films, brochures, and educational pamphlets on the facilitation of childbirth and awareness of families, in particular, women in this regard, mother's mental and physical support and respect for her beliefs and wishes during childbirth pain and the accompaniment of a mother by one of the attendants, educational items, can be a supportive dimension for pregnant mothers. Mother's awareness level is one of the important factors in determining the attitude type, so that with increasing awareness level, positive attitude toward contraceptive methods has been increased (Bergeshtrum and Kyler, 2014).Despite the scientific advances in the field of physical problems of pregnancy period, mental problem is also an important topic in the health of pregnant women. Pregnancy often brings great joy to parents. But some studies have shown that the pregnancy experience in women's lives creates a type of psychological crisis and, in some women, causes anxiety, depression and stress. On the other hand, panic and anxiety create instability status in a pregnant woman. So that this period can be so stressful that it provokes mental illnesses (Jannati et al., 2005).Anxiety and stress during pregnancy on childbirth method may have long-term implications for the fetus, and intrauterine stress can lead to immaturity and precocious childbirth and vascular diseases in adulthood (Shojaeezadeh et al., 2011). The results of the study showed that the level of anxiety and clinical problems during pregnancy can reduce the mental and physical health of the baby (Panamaki et al., 2006). Anxiety and stress are a natural mechanism for coping with the mother's mental concern about childbearing that on the one hand, can prepare the mother for pregnancy and on the other hand, can develop a form of illness and becomes so intense that it affects the pregnant mother's mental health (McFarland, 2011).Training to raise awareness and improve the mental health of the pregnant mother (reducing stress and anxiety), creates more motivation and trend in her toward applying health behaviors during pregnancy, such as quiting smoking and alcohol, proper nutrition, exercise, continued pregnancy cares, the desire to know the embryo and participating in the classes for childbirth method, increased breastfeeding, all of which leads to the satisfactory outcome of pregnancy and the promotion of maternal and baby health (Lindern et al., 2010). Other studies have shown that prenatal care education, especially in the high risk populations and sub-groups of pregnant women, reduces the risk of childbirth and its subsequent problems (Liboos and Sibel, 2008).It seems necessary to consider the factors that

influence the decision of mothers on the choice of childbirth type. In this regard, training the skills required to choose the childbirth method suitable for pregnant women and their spouses has been emphasized (Yazdi Zadeh et al., 2012; Sharifi Rad et al., 2015).Electronic and long-distance learning occurs when teacher and learner are physically distant from one another and they communicate with each other by different technologies, such as print, telephones, radio, TV, computer and the Internet. It is hoped that conducting these trainings solves the problems that mothers will face in their care of the newborn, the anxiety and stress of the childbirth in order to make a right decision for the childbirth method. So far, the trainings have been investigated in form of verbal and in the classroom and the possibility of attending classes is not possible for all. On the one hand, despite the position of virtual education and scientific technologies and its effective results, this research seeks to address the influence of long-distance education on the anxiety and stress of mothers on the childbirth method.

The criteria for entering samples in the research include: 1. The first pregnancy 2. Lack of illness or threatening problem of mother and fetus health, such as: severe heart disease, chronic hypertension, uterus mouth insufficiency, diabetes or gestational diabetes. 3. Not having acute or chronic mental disorder 4. Satisfaction of participating in research 5. The intervention group that has not previously been trained. The criteria for exiting samples in the research include: 1. Not willing to attend in training sessions 2. Having severe psychiatric disorders requiring immediate treatment 3. Use of psychotropic medicines or drugs 4. Participating in pregnancy education classes.

Measurement tools used in this research include:

Research tools

Measurement tools used in this research are tools used to measure dependent variables that include mental health questionnaires, childbirth method, anxiety and stress.Goldberg Mental Health Questionnaire: short-scale form of Goldberg's general health Questionnaire (1972) has been used to measure mental health that its questions include 28 questions and include four subscales of physical complaints, anxiety, depression and social inefficiency. The validity coefficient of this scale ranged from 1.67 to 0.76 and its behalf reliability was 0.83 and retest reliability was 0.85 and its correlation coefficient has been reported with metacognition questionnaire by $r = 0.46$ ($p < 0.01$) (Taghavi, 2002).Spilberger's Anxiety Questionnaire: This questionnaire consists of two distinct but dependent scales that are adjusted based on self-reporting and are composed of 40 substances, of which 20 substances measure state anxiety and other 20 substances measure state anxiety. Its validity and reliability have been determined by Sharifi et al. (2004). This questionnaire has been standardized in Iran (SpilBurger et al., 1983). Cronbach's alpha coefficient for this test is calculated to be 0.90. In a research conducted by Rahmati Alahi quoted from Masoumi, content validity method was used to evaluate the validity of the scale and a re-test was used to determine its reliability. Its reliability was reported as 90% (Dehdari et al., 2006).Standard Perceived Stress Questionnaire: This questionnaire was developed by Cohen et al. (1983). The perceived stress scale included 14 statements that surveyed people's thoughts and feelings during the past month. In this

research, version 14 of the article was used. Content validity of these questionnaires was confirmed by 10 expert professors of Medical Sciences University of Mashhad. This questionnaire was developed by Amin Yazdi (1999) Poursid (2011). During the research, this scale was reported desirable according to the Cronbach's alpha coefficient of questionnaire reliability. The reliability of the Persian version has been calculated by Bastani et al by the internal consistency method its Cronbach's alpha coefficient has been gotten 74% (Gorbani et al., 2002).Awareness Questionnaire (Determining the Method of Childbirth): In this researcher-made questionnaire, a checklist contains demographic information, 12 items' individual specifications and 26-question awareness measurement indicators. Scoring is done based on encoding the options between zero to two. Questions 1 to 12 and 22, 23, 24, 25, 26 are multiple choice (correct answer = 2 scores, no answer and false answers = zero scores), questions 17, 18 and 19 are explanatory (correct answer = 2 scores, incomplete = 1 score, no answer and false answer = zero score. In questions 13, 14, 15, and 16 (correct answers = 2 scores, I do not know = 1 score, and false = zero score). Questions 20, 21 depending on the selection method, are scaled between zero (wrong selection) and 2 (right selection). Total scores 20-24 means good knowledge, 10-14 average awareness, less than 10 poor awareness.

Research methodology

The present study was a quasi-experimental, from type of pre-test and post-test with control group. In the present study, the studied population include primipara pregnant women, between 35-35 weeks of Dezful County in 1394. This population entered into the next stage after controlling the sanitary book from point of physical health and entrance criteria. The researcher then asked the mothers to enroll if they like to cooperate while providing the necessary explanations and research goals. Among the registered people, the mental health test was taken. After identifying the study conditions, 100 samples were randomly divided into two groups of 50 individuals. After that, the mothers completed the questionnaires, then 50 individuals entered the training plan.Samples were selected based on available data and randomly divided into two groups of 50 experimental and 50-person groups. The training sessions content in 6 weeks, 8 sessions has been provided in Table 1. A book was given to each person using the educational book along with the DVD of the educational book (Emami Afshar et al., 1394). Personal blog - designed for tutorials are: mobile software of Niniban, CD containing clips and animations on childbirth, site introduction includes: The health comprehensive film bank, National system of health electronic education, and the site of health mobile library. Website includes ninisite.com and mamasite.ir. For the people who did not have access to the Internet, the blog contents were copied on the CD and they were trained. By emphasizing that the meetings would be held with the group, and to ensure the study of each session, at the end of each session, before the start of the next session, the session if question and answer was conducted through Wattsapp, and those who did not have access to the Internet with SMS. During the education, communication was only through mobile and email in cyberspace.During this period, the control group did not receive the intervention program and received routine cares from the health center. Then, two groups were taken post-test. It should be

noted that during the training period and the post-test, 7 people refused to continue cooperation (from the groups under training 4, and from the control group 3). Regarding the consideration of normal distribution of scores and homogeneity of variances, covariance analysis method was used and data were analyzed by SPSS 19 software.

Table 1 - Summary of the implemented manual of the training sessions according to the ministry approved plan

Session	Title
First	Descriptions on physiological childbirth, anatomical and physiological changes, common complaints, encouraging to the stretching, respiratory and relaxation exercises
Second	Nutrition during pregnancy, childbirth pain and familiarity with various ways of reducing childbirth pain, screening videos of pain relief methods, encouraging to the stretching, respiratory and relaxation exercises.
Third	Mental health, nutrition during pregnancy, fetus growth and development, spouses' training, encouraging to the stretching, respiratory and relaxation exercises.
Fourth	A review of common complaints and anatomical and physiological changes, the importance of pregnancy cares, danger symptoms and individual health, encouraging to the stretching, respiratory and relaxation exercises.
Fifth	Nutrition during pregnancy, childbirth pain and familiarity with various methods of reducing childbirth pain, screening videos for pain relief, encouraging to the stretching, respiratory and relaxation exercises.
Sixth	The importance of normal childbirth and a review of pain reduction methods and childbirth procedures, role of attendant, planning for childbirth, encouraging to the stretching, respiratory and relaxation exercises.
Seventh	Signs of pregnancy risk, postpartum care and danger symptoms after childbirth, breastfeeding training, encouraging to the stretching, respiratory and relaxation exercises.
Eighth	A review of childbirth planning, family adjustment, training for spouses, taking care of the baby and risk signs for baby, encouraging to the stretching, respiratory and relaxation exercises.

Running post-test from all samples at the end of the sessions

Findings

In this research, the effectiveness of long-distance education on the anxiety and stress of primipara pregnant mothers was investigated. 100 primipara pregnant mothers (50 experimental and 50 control groups) were evaluated. The percentage and frequency of demographic characteristics of the primipara pregnant mothers are presented in Table 2.

Table 2- Frequency distribution and percentage of primipara pregnant mothers according to demographic characteristics

Demographic information index		Control (n= 50)		Experiment (n= 50)	
		Frequency	Frequency percentage	Frequency	Frequency percentage
Age	Under 20 years old	10	20	7	14
	Between 20 and 25 years	20	40	23	46
	Between 26 and 30 years	14	28	15	30
	Between 31 and 35 years old	6	12	5	10
education	Under diploma	2	4	3	6
	Diploma	30	60	16	32
	Assistant-Bachelor	14	28	26	52
	Masyer-Ph.D	4	98	5	10
Smartphone access (software installation)	Yes	46	92	47	94
	No	4	8	3	6
Internet access	Yes	47	94	46	92
	No	3	6	4	8
Employment	Employed (employee-free)	15	30	18	36
	housewife	35	70	32	64

Demographic data related to the sample group include the number of people at age, employment, academic status and access to the smartphone in two groups of experiment and control are presented in Table 2.

Table 3 presents the average and standard deviation of anxiety and stress components by group and tests.

Table 3: The average and standard deviation of anxiety and stress components in two evaluation stages of primipara pregnant mothers

Component	Control (n=50)		Experiment (n=50)	
	Pre-test	Post-test	Pre-test	Post-test
Anxiety	92.92 ± 17.20	91.92 ± 18.85	99.21 ± 8.32	94.89 ± 9.08
Stress	37.83 ± 9.37	38.00 ± 9.41	40.73 ± 3.90	35.96 ± 3.68

The comparison of the studied groups according to Table 3 shows that the average scores of the pre-test of experimental group is higher than the average scores of the control group in components of anxiety (99.21 ± 8.32) and the stress variable (40.73 ± 3.90). In the post-test stage, as shown in the above table, the scores of the experiment group were significantly different in the components of anxiety and stress. But in the control group, the pre-test

and post-test scores are not significantly different.

Table 4- Levin's test results based on the assumption of equality of variance in both the experiment and control groups

Component	F	Degree of freedom 1	Degree of freedom 2	Significance level
Anxiety	22.90	1	73	0.00
Stress	1.16	1	89	1.28

Levin's test results based on the assumption of equality of variances are presented in the above table. As can be seen, Levin's assumption is validated in two dependent variables. After assuring the assumptions, the Multivariate Analysis of Covariance (Mancova) was used. Examining the results of Table 4 shows that the significance level obtained is greater than 0.05, therefore, the assumption of the variances homogeneity is confirmed. In this step, this test was used to determine in which one of the dependent variables, there is a significant difference between the experiment and control groups. The results are presented in Table 5.

Table 5- The results of the covariance analysis test to assess the difference between the experiment and control groups (post-test) by the anxiety and stress variables.

The dependent variables	Total squared	D_f	Squared mean	F	The Significance level
Anxiety	167.10	1	167.10	4.29	0.05
Stress	4772.94	2	2386.47	4.02	0.02

Based on the results of multivariate covariance analysis, after moderating pre-test scores, the effect of long-distance education on anxiety (F = 4.29, P <0.05) and stress, F = 4.02, P <0.02). The results of Table 5 show that in post-test, the anxiety and stress variables of the control and experimental groups are significantly different.

Table 6. The average and standard deviation of childbirth method component in two assessment stages of primipara pregnant mothers

Component	Control (n=50)		Test (n=50)	
	Pre-test	Post-test	Pre-test	Post-test
Childbirth method	25.22 ± 4.71	26.92 ± 4.48	26.74 ± 5.44	31.22 ± 5.31

Comparison of the studied groups according to Table 3 shows that the average post-test scores of the experiment group were higher than the average post-test scores of the control group in the component of the childbirth method (26.74 ± 5.4). In the post-test stage, as shown in Table 6, the experiment group scores increased in the childbirth method component. But in the control group, the pre-test and post-test scores are not significantly different.

Table 7: Levin's test results based on the assumption of equality of variance in two groups of experiment and control

Component	F	Degree of freedom 1	Degree of freedom 2	Significance level
Childbirth method	0.01	1	28	0.97

Levin's test results based on the assumption of equality of variances are presented in the above table. As can be seen, Levin's assumption is validated in two dependent variables. After ensuring assumptions, the covariance analysis test was used. The results of Table 7 show that the significance level obtained is greater than 0.05. Therefore, assumption of the homogeneity of variances is confirmed. In this step, this test was used to determine in which one of the dependent variables, there is a significant difference between the test and the control group.

Lateral findings

Long-distance education in pregnancy affects the kind of childbirth. In order to study the effect of long-distance education on the choice of childbirth type, independent group T-test was used after the necessary revisions on the relevant variables. The results are explained as follows.

Table 8 - T-test results of independent groups of childbirth type

Component		Average	Number	The statistics t	The degree of freedom	Significance level
Pre-test	Normal	54.1	48	0.79	98	0.42
	Cesarean	46.1	52			
Post-test	Normal	63.1	59	3.17	98	0.00
	Cesarean	32.1	41			

Studying the results of T-test of independent groups presented in Table 8 indicate that in the pre-test score of childbirth type (t = 0.79), there is no significant difference between the average scores of the experiment and control groups at the significance level of 0.05, while in the post-test score of the childbirth type (t =17.3), there is a significant difference between the average scores of two experiment and control groups at a significant level of 0.05. Also, according to the averages, it can be concluded that after long-distance education, most mothers have tended to have normal childbirth.Therefore, it can be said that the level of anxiety in the long-distance education group after the intervention was significantly improved compared to the control group, and also, the stress and anxiety level of the under long-distance education group after the intervention and compared with the control group has been significantly declined. The current study aimed to investigate the effectiveness of long-distance education on the anxiety and stress of pregnant women to childbirth method. The results showed that long-distance education significantly reduced the mothers' anxiety and stress level arising

from the childbirth method and caused the choice of natural childbirth method.

Discussion and conclusion

The current study was conducted to investigate the effectiveness of long-distance education during pregnancy on the anxiety and stress of mothers towards childbirth method. The results showed that long-distance education done in the experiment group has been able to reduce their anxiety and stress. While the control group scores were unchanged and the results also showed that there is a significant difference between the average scores of both the experiment and control groups, and the difference between the average scores of mothers' anxiety and stress arising from childbirth in the pre-test and post-test in the experiment group and control group is significant.This means that long-distance education has been effective in reducing mothers' anxiety symptoms arising from childbirth method. This finding is consistent with the researches (Firuzbakhte et al., 2012; Toghyani et al., 2007; Mehdizadeh et al., 2010; Systo & Hamsmaki, 2007; Davis, 2007).The positive impact of pregnancy education is justified by the need for prior knowledge to enter an unfamiliar and frightening environment. According to this theory, educating mothers creates a positive attitude toward childbirth and childbirth staff and increases their confidence and trust. These mothers have less fear and anxiety compared to the control group and they are required to actively participate in the childbirth department (Robert, 2007; Liferman & Evanson, 2003; Young Wess; 2006; Systo & Homsmaki; 2007; Young Wes, 2006). In a study, the positive effects of psychological practices such as relaxation and stretching and respiratory exercises in reducing childbirth anxiety have been reported (Davis, 2007). The study found that proper and adequate education increases the awareness of the mother and enables her to use correct problem-solving strategies in the area of pregnancy issues.Also, results showed that pregnancy long-term education have a positive effect on the mothers' stress arising from childbirth method. The results showed that there is a significant difference between the average scores of the two experiment and control groups, and the difference of the average scores of mothers' stress arising from the childbirth method in the pre-test and post-test between the experiment group and control one is significant. This means that long-distance education has been effective in reducing the mothers' stress arising from childbirth. This finding is consistent with the researches (Firozbakht et al., 2012; Shojaei Zadeh et al., 2011; Taghaddosi Nejad & Sadeghi, 2011; House, 2013; Sharifirad et al., 2014).Also, results showed that long-distance education have a positive effect on mothers' awareness from childbirth method. Long-distance education will increase the mothers' awareness from childbirth. The results showed that there is a significant difference between the average scores of two experiment and control groups, and the difference of the average scores of mothers' stress arising from the childbirth method in the pre-test and post-test in the experiment group and control group is significant. This shows the significant effectiveness of long-distance education in relation to awareness increase. The findings of this study are in line with the results of previous researchers (Emami Afshari, 2012; Libos et al., 2011). The results of this study showed that increased knowledge and short-term skill during the pregnancy will increase their self-confidance, knowledge and subsequent decisions about their childbirth, which in the long term will reduce the complications of light-weight baby (Arizer et al. ,

2011).Unfortunately, in addition to prenatal preparation classes, the placement of mental health education for pregnant women is empty. Since, the mental health of pregnant mothers is as important as their physical health, and can even affect it, and given the adverse and dangerous side effects that anxiety and stress can cause to a pregnant woman and her baby or baby, therefore, providing accurate and enough information from a reliable source about effects of anxiety and stress on mother and fetal health and the outcome of pregnancy can lead to timely action to eliminate stress and prevent dangerous effects. Therefore, it is a step toward the increase of mothers and babies health and subsequently the health of the family and society (Shojaeizadeh et al., 2011).High costs, lack of time and difficult access to samples and self-reporting data, lead to the lack of attention to effective behaviors. Also, the following strategies are recommended: The design of an accessible and official website and up-to-date scientific resources, under the supervision of the Mothers' Health Office, design of a communicative telephone system for answering mothers' questions during the training and education of midwifery staff in health centers are used.

Acknowledgments

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