

## Effect of Physiologic Delivery Education on Mental Health of Pregnant Women

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**Background:** Pregnancy and postnatal period are associated with significant psychological and physiological changes, which might sometimes induce pathological variations, as well. This study aimed to evaluate the effect of physiologic delivery education on mental health of pregnant women.

**Methods:** This clinical trial was conducted on 50 pregnant women, who were referred to three healthcare centers and Motazedi Hospital of Kermanshah, Iran, in 2015. The samples were selected through simple random sampling and divided into two groups of intervention and control. The intervention group received eight 90-minute sessions, whereas no intervention was administered to the control group. The data collection tools consisted of a demographics form and Goldberg's General Health Questionnaire (GHQ-28), which were filled out by the participants in a pretest-posttest design. Data analysis was performed in SPSS, version 20, using analysis of covariance.

**Results:** Given the difference in mean scores of the intervention and control groups before (23.6) and after (20.55) the intervention, it could be concluded that reduction of three scores after the training sessions was indicative of improved mental health of the participants. Thus, physiologic delivery education could enhance mental health of pregnant women ( $P < 0.01$ ).

**Conclusion:** Physiologic delivery education improved mental health in pregnant women.

**Keywords:** Physiologic delivery education, Mental health, Pregnant women

## Introduction

Mental health is the mainstay of health evaluation in various societies and plays an important role in ensuring the dynamism and efficiency of societies (1). Mental health of pregnant women has a significant impact on fetal health, and lack of attention to mental state of women during pregnancy can have dire consequences. Mental health involves domains of depression, anxiety, physical symptoms, and social performance.

Depression in pregnant women can lead to stillbirth, suicide, and possibility of low birth weight neonates. In addition, depression could be associated with maternal mental health disorders, preventing full care of themselves and their fetus. All the mentioned factors can disrupt the ability of women to perform their daily activities, significantly affecting their quality of life and mental health (2). On the other hand, it seems that in addition to significant changes in maternal physical and mental health, pregnancy can adversely affect social performance and vitality of women. Therefore, quality of life and mental health of pregnant women are assumed to be lower, compared to other women of the society (20).

Oates ascribed that anxiogenic situations during pregnancy not only affect mental health during infancy, but also they bring about mental health problems in adults, which strongly influence individuals' lives (3). Physical diseases can chemically and physiologically cause mental disorders. In addition, physical disease can lead to chemical and hormonal changes in the body, causing mental disorders in patients. For instance, hypothyroidism or decreased level of thyroid hormone (thyroxine) diminishes serotonin, which leads to incidence of depression (4).

In this regard, several studies indicated that pregnant women start talking to their fetus during pregnancy and are concerned about fetal growth and development. Therefore, pregnant women might feel that their control over resolving their own problems has decreased, which increments their sense of isolation, reduces their social activities, and deteriorates the social power of a woman, paving the way for mental disorders in the

domain of social performance during pregnancy (5). Holding physiologic delivery educational courses can be a suitable solution for this critical social problem.

Physiologic and safe delivery is defined as natural delivery without administering any interventions, drugs, or routine procedures in hospitals (6). Pregnant women participate in physiologic delivery courses to be prepared for pregnancy and delivery, assume an effective role in their own delivery process, and overcome their fear and concern. This preparation includes education, relaxation, concentration, massage, breathing techniques, and physical exercises (7). Therefore, holding such classes can help future mothers to be prepared for better pregnancy and delivery and minimize the complications of delivery, tensions to the body during pregnancy, and false mindsets about labor pain (7).

A wide range of mental disorders in pregnant women are rooted in their lack of awareness about the natural changes in the body and the soul caused by pregnancy. In addition, these women have imprecise information as to pregnancy and delivery (8). Lack of knowledge or incorrect and incomplete information about pregnancy and its impacts can generate mental confusion. Changes in mood and appetite, occasional vomiting, as well as changes in interests and tastes can independently result in some problems in pregnant women (9). Thus, the young and pregnant society members require education to raise their knowledge and change their attitude towards delivery techniques (10).

Relaxation elevates endorphin secretion and diminishes the secretion of adrenaline (11), creating coordination between mind and the body and allowing a deep connection with the fetus (12).

Massage therapy assuages pain through blocking impulses to the brain or localized relaxation by endorphin (13). Furthermore, massage therapy can induce calmness, stimulate blood flow, boost body defense, and create a sense of well-being in the individual (7).

In the breathing technique with deep inhalation, more oxygen is obtained by the infant's body. The body becomes calm with

slow exhalation, leading to higher secretion of endorphin in the body and acting as a natural coping mechanism against mental pressure (14). Exercise and physical activity elevate serotonin hormone, which is secreted in the brain and has an impact on behavioral regulation and reduction of depression and anxiety (15).

High social support (family and society) is associated with declined cortisol level in the blood and anxiety (16). Tisher et al. (17) demonstrated that training for pregnant women significantly decreased anxiety. Accordingly, these types of classes are recommended for eligible pregnant women. With this background in mind, this study was performed to determine the effectiveness of physiologic pregnancy education in mental health of pregnant women.

### Methods

This semi-experimental study was carried out in the form of a clinical trial with a pretest-posttest design and a control group. First, the necessary arrangements were made with the Deputy of Research and official permissions were obtained from the University of Medical Sciences, Motazedi Hospital, and healthcare centers of Kermanshah, Iran. Thereafter, sampling was performed by the researcher after referring to the selected settings and explaining the study procedure to the respective authorities.

The study population consisted of pregnant women attending physiologic delivery education classes at Motazedi Hospital and healthcare centers of Kermanshah. From those with medical records at these centers, 50 women were randomly selected using a table of random numbers. Afterwards, an equal number of cards coded as A or B (A for the intervention and B for the control group) were placed in an envelope, such that the codes were not visible. Cards were numbered from 1 to 50 and each participant took a card and gave it to the research assistant. Given the selection of a sample size of larger than the standard one, subject attrition had no impact on the analysis. Therefore, intention to treat technique was applied for sample loss.

Research setting was selected based on the likelihood of making the necessary arrangements for classes and having access to

the subjects at Motazedi Hospital and three healthcare centers of Haj Daei, Etesam, and Shahid Motahari in Kermanshah. At first, the demographic characteristics form was completed by midwives of the mentioned centers and the participants were entered into the study with respect to the inclusion and exclusion criteria.

The inclusion criteria were nulliparous women with 18-35 years of age, gestational age of 20 weeks, and lack of unwanted pregnancy, disorders (e.g., hypertension, gestational diabetes, placenta previa, multiple gestations, rupture of membrane, and threatened miscarriage symptoms), smoking, drug abuse, mental problems, or marital discords. On the other hand, the exclusion criteria were unwillingness to participate, absence from the classes for more than three sessions, occurrence of the aforementioned pregnancy disorders, detection of abnormalities, and fetal death.

Following the evaluation of the intervention group regarding the mentioned criteria, we recruited those with health certificates provided by gynecologists or midwives of the healthcare centers indicating no contraindication for physiologic delivery education and pregnancy exercises. Written informed consent was obtained from the participants. In total, a maximum of 10 pregnant women, along with their companions, were participated in these classes. The training sessions were held in the form of six sets of eight 90-minute sessions.

In the first training session, an educational book about pregnancy period and preparedness for delivery, along with a CD, were provided to the participants. At the beginning of each session, the pregnant women were asked about any signs of pregnancy complications (cardiovascular diseases, respiratory diseases, bleeding, strabismus, runny nose, headache, and blurred vision). The participants were emphasized to notify the instructor if any of the mentioned symptoms occurred. In addition, fetal heartbeat was heard by Sony kit, and blood pressure of the participants was gauged.

Following that, educational content was provided at the beginning of each session with a focus on the class dynamics and

participation of mothers in hands-on education, where pregnant women performed physical exercise for 20 minutes in a proper place. Afterwards, relaxation and breathing techniques were performed with the help of the instructor in lying position. In addition, mothers and their companions were recommended to perform the breathing technique, physical exercises, and relaxation methods at home. These teachings were provided by midwives of physiologic delivery section of Motazedi Hospital and research experts, who had successfully passed the related courses based on the protocol of the Ministry of Health. Moreover, scientific contents, posters, and videos were provided in some sessions to better comprehend the subject.

The first questionnaire was completed by the intervention group at the beginning of the first session, and the mothers participated in classes based on schedule. The theoretical contents were explained again for those who were absent for one session. However, absence for more than three sessions led to the exclusion of the subjects from the study, although they could still participate in the classes. The second questionnaire (GHQ-28) was completed by the participants at the end of the eighth session.

At the end of the training course, pregnant women of the intervention group and their companions received a certificate for completing the course. The control group was simultaneously assessed at the selected healthcare centers. The first questionnaire was filled out by the control group at the same time with the intervention group when they attended the routine classes at the selected healthcare centers.

The control group received no education regarding physiologic delivery and only learned about the routine care during pregnancy. In the end, when the intervention group completed the second questionnaire (GHQ-28), the pregnant women of the control group were invited to participate in routine classes, in which information about newborn

health and breastfeeding, as well as tips for choosing a hospital were provided for the participants. In these classes, the second questionnaire was filled out by the subjects. To acknowledge the control group, films and pamphlets related to breastfeeding and fetal nutrition were distributed among them.

The data collection tools were Goldberg's General Health Questionnaire, which was designed in 1972, and a screening inventory in the form of self-report. In a study by Chen and Chen (1983), Multidimensional Personality Questionnaire was applied to assess the concurrent validity of the questionnaire. Results were indicative of the correlation coefficient of 0.54.

In an evaluation by Goldberg and Williams (1998), split-half reliability of the questionnaire was reported to be 0.95. Internal consistency was also established by Cronbach's alpha of 0.93 in the studies by Chen (1985) and Ki Sen (1984). In addition, Yaghubi (1995) reported the sensitivity and specificity of this questionnaire to be 0.86% and 0.82%, respectively. On the other hand, Bahmani and Asgari (2006) evaluated the four-factor structure of this test through confirmatory factor analysis (CFA).

On account of scoring the questionnaire, the items of A to D were scored zero to three. Therefore, the score of each individual in each subscale ranged from 0 to 21, and the total score of the questionnaire could range between 0 and 84. Score of each participant for each scale was separately calculated, and scores of the four subscales were added up to obtain the total score. In this questionnaire, lower scores were indicative of higher mental health (18).

#### **Demographic characteristics form**

This questionnaire was developed by the researcher to obtain some information about the participants, including gestational age (week), occupation of pregnant women and their spouses, educational level of pregnant women and their spouses, age of pregnant women, and parity; in this respect, the samples were homogenized.

**Physiologic delivery education course schedule**

<b>Time</b>	The content of the sessions (theoretical and practical) for mothers and their companions
The first session weeks 20-23	Introduction to the principles and goals of physiologic delivery education, method and date of classes, introduction of mothers, anatomic and physiologic changes during pregnancy, personal hygiene with emphasis on anatomy and physiology, compatibility with the physiological changes during pregnancy, prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation
The second session weeks 24-27	Nutrition during pregnancy with an emphasis on food intake and explanation of food pyramid, prenatal modification, skeletal and muscular exercises, breathing exercises and relaxation
The third session weeks 28-29	Mental health, role of the spouse, changes in mood during pregnancy, fetal growth and development, method of communication with the fetus, prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation
The fourth session weeks 30-31	Warning signs, recognition of natural and unnatural pains during pregnancy, bleeding, spotting, headache, fetal movement, runny nose and rupture of the membrane, edema of the limbs, prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation
The fifth session weeks 32-33	Planning for delivery, selection of route of delivery, different pain control techniques during the delivery process, selection of delivery setting and necessary items needed for delivery, visit of the delivery room of a hospital (if possible), prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation
The sixth session weeks 34-35	Familiarization with the process of delivery and signs of labor pain, familiarization with the first, second, and third stages of delivery and self-care at each of these stages, role of hormones during pregnancy, compatibility with pain during delivery, showing delivery film or animation, prenatal modification, skeletal and muscular exercises, breathing exercises and relaxation
Seventh session week 36	Postnatal health and care, postpartum warning signs, postpartum depression and the baby blues, breastfeeding education, postnatal exercises, prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation
The eighth session week 37	Infant health with an emphasis on general characteristics of infant during birth and infancy, newborn care (method of bathing and changing cloths), breastfeeding education, newborn warning signs, showing films on breastfeeding and child care, prenatal modification, skeletal and muscular exercises, breathing exercises, and relaxation

## Results

According to descriptive results of GHQ questionnaire, as presented in Table 1, mean scores of the intervention group at the pretest and posttest stages were 23.6 and 20.55, respectively. The results were indicative of a three-score reduction in the intervention group after physiologic delivery education. Therefore, it seems that physiologic delivery education had a positive impact on mental health.

As to the subscales of mental health in this study, the mean scores of physiologic signs in the intervention group were 5.909 and 5.9090 at the pretest and posttest stages, respectively, indicating 0.5 points reduction in the mean score of the intervention group after physiologic delivery education.

In terms of anxiety and insomnia, mean scores of the intervention group at the pretest and posttest stages were 7.4091 and 6, respectively, demonstrating the impact of

physiologic delivery education on anxiety of women at posttest.

In addition, the difference between mean scores of the intervention group at the pretest (8.6364) and posttest (7.8636) stages was indicative of a reduction of 0.7728 points in the intervention group after physiologic delivery education. Therefore, it could be concluded that physiologic delivery education influenced the reduction in social functioning of women at the posttest stage.

Depression scores of the intervention group at the pretest (2.7727) and posttest (2.2273) stages indicated that after the physiologic delivery education, a 0.5 point decline was observed in this group. Therefore, it seems that physiologic delivery education ameliorated depression. In total, a reduction of three scores was observed in the mean score of the intervention group at the posttest stage (in this study the total score of mental health was considered).

**Table 1. Descriptive statistics of the subjects regarding the impact of physiologic delivery education on mental health of pregnant women**

Mental health				
Groups	N	Mean ± sd	Minimum	Maximum
Pretest (intervention)	20	23.6 ± 6.6443	14	39
Pretest (control)	21	23.1905 ± 6.9254	15	36
Posttest (intervention)	20	20.55 ± 13.7438	10	73
Posttest (control)	21	32.381 ± 9.1294	19	52

Based on Table 2, results of analysis of covariance (ANCOVA) reflected a significant difference between mean scores of mental health at the pretest and posttest stages ( $P < 0.05$ ). Thus, it could be proposed that physiologic delivery education had an impact

on mental health of pregnant women. The effect size was 0.306, meaning that 0.306 personal difference was determined in the control and intervention groups by group membership. In addition, the statistical power was reported to be 0.988, suggesting that the sample size was sufficient for evaluation of this hypothesis.

**Table 2. Results of analysis of covariance regarding the impact of physiologic delivery education on mental health of pregnant women at the posttest stage**

Variables	Mean square	Degree of freedom	F	Level of significance	Impact	Statistical power
Pretest	1498.839	1	15.825	0.000	0.274	0.973
Group membership	1753.761	1	18.516	0.000	0.306	0.988

## Discussion

Herein, the evaluated hypothesis was the effect of physiologic delivery education on mental health of pregnant women. According to this hypothesis, the study groups were compared based on their obtained scores from GHQ at the pretest and posttest stages to determine any significant difference in the score of mental health before and after the educational sessions.

According to the results of the present study, it can be concluded that physiologic delivery education had a positive impact on mental health of pregnant women. In line with our findings, results of a study indicated that 2-6% of pregnant women had acute to severe symptoms, such that likelihood of requiring hospitalization due to mental disorders was 20 times higher during and after pregnancy compared to two years before pregnancy (19). In this regard, results obtained by Wang et al. (2013) demonstrated that during pregnancy women start talking to their fetus and being concerned about fetal growth and development. Therefore, pregnant women might feel that their control over their own personal problems has decreased. Consequently, they feel isolated and their social activities decrease along with daily contacts and social power, deteriorating their mental health in the domain of social functioning during pregnancy. The results of the mentioned study are in congruence with our findings, demonstrating a relationship between mental health and social performance of pregnant women (20). In another study conducted to assess the association between mental health and quality of life of pregnant women, it was indicated that pregnancy was assumed as a period of vulnerability by women, imposing new hardships to mothers (21).

According to the results obtained by Davis (2007), maternal education led to positive attitudes toward delivery, decreased anxiety, and enhanced self-confidence. Compared to the control group, the subjects of the intervention group had lower anxiety levels and committed themselves to being active during pregnancy (22). In a study by Delaram et al. (2012), which aimed to assess mental health of women during pregnancy and determine its effective factors, the potential mothers were identified, and

occurrence of disorders in the participants was prevented through mental care during and after pregnancy (23).

Hosseini Nasab et al. (2010) evaluated the effect of education during pregnancy on the level of anxiety of pregnant women. At first, the anxiety level of the mothers participating in educational sessions on pregnancy were matched and compared with the control group. Results of Mann-Whitney U test demonstrated that with regard to the calculated Z and U scores and level of significance ( $P < 0.01$ ), which was considerably smaller than the acceptable maximum level to confirm the hypothesis ( $P = 0.05$ ), it was concluded that the difference between the scores of the two groups was significant and level of anxiety was lower in the intervention group, compared to the control group.

This difference was so great that it was even confirmed at confidence level of 99% (24). Another study was carried out to evaluate the effect of physical activity education during pregnancy on the amount of physical activity of pregnant women. In that study, healthcare providers were recommended to design interventions to promote these exercises among pregnant women (25).

The results of all the mentioned studies are consistent with our findings, which is indicative of the necessity of attention to mental health of pregnant women and implementing the necessary educational programs for pregnant women.

## Conclusion

Results of the present study can play a significant role in future measures of Ministry of Health and Medical Education of Iran to focus more attention to psychological aspects of physiologic delivery education in order to prevent different fetal complications and pregnancy and postpartum disorders.

Results of the current study can help promote health of the future generation. However, for this purpose the necessary education should be provided for healthcare providers, especially midwives, who can have a positive impact on providing care during pregnancy and holding physiologic delivery education. Along with

pregnancy cares (as a part of the routine programs during pregnancy), psychologists can contribute to health and treatment of pregnant women by establishing counseling clinics.

Furthermore, to enrich physiologic delivery classes, adopting various methods, such as spiritual therapy approach, are recommended, such that therapists are encouraged to address important spiritual issues of patients at the appropriate time during the treatment process along with using the potential power of faith in the treatment process (26).

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