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## General Health and prenatal education

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### ABSTRACT

Serious physiological and psychological changes may be accompanied during pregnancy. Antenatal education reveals numerous effects on women's general health. It is important to survey interventions being used to educate primiparous women about their general health during this time. So, this study was conducted to determine the effect of the Fordyce Cognitive-behavioral happiness training on pregnant women's general health. This quasi-experimental study with the pretest-posttest design was performed on 74 primiparous women referred to Zahedan health centers in 2015. The subjects were selected through random convenient sampling method and divided into two groups of intervention and control. Data was collected using standard Goldberg General Health Questionnaire (28- GHQ). After six weeks training, the GHQ was completed by groups. The data was analyzed using descriptive statistics, chi-square test, independent t-test, paired t-test and covariance analysis of SPSS software version 16. Total means the score of the general health of the experimental group and the control group before the intervention was  $(19.89 \pm 7.63)$  and  $(19.94 \pm 7.90)$  respectively, and after the intervention, the respective scores were  $(17.78 \pm 5.50)$  and  $(21.64 \pm 7.21)$ . Although after the intervention control groups showed a significant decreased level of general health, the difference in general health between both groups after the intervention was significant in the experimental group ( $P < 0.05$ ). Our results showed the effectiveness of the Fordyce Cognitive-behavioral happiness Training on pregnant women's general health. It is recommended that this educational method is used in the routine prenatal training programs by healthcare professionals.

**Key words:** Cognitive behavioral therapy, General health, primiparous women

### INTRODUCTION

The issue of health is an important topic in the modern industrial society and there are different points of view about the definition of health and its various dimensions. Mental health is defined by the World Health Organization as one of the mandatory criteria for general health. WHO experts define health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" and consider mental health as "the process of enabling people to increase control over and to improve their health" [1] pregnant women are considered among vulnerable groups of the society, a great emphasis is placed on supporting their physical, mental and social health, since studies have shown a lower level of mental health in pregnant than in non-pregnant women [2-4]. Pregnant women are in fact vulnerable to different types of stressors [5], so that the rate of depression and anxiety is three times higher in these women than in others [5]. In addition, maternal fear and anxiety during pregnancy can affect the mother's general health and cause adverse pregnancy outcomes [3]. In Iran, Zafarmandi et al. [2005] reported the mean prevalence of anxiety in pregnant women as 23% [6]. Some of the negative effects of anxiety and fear on the mother and her fetus include depression during pregnancy and postpartum, an increased risk of preterm delivery, low birth weight, asthma and behavioral problems in the offspring in adulthood, hyperactivity, schizophrenia and preference for cesarean delivery in the mother [7-8].

Studies conducted on the impact of poor maternal mental health on pregnancy outcomes have reported negative effects on quality of life, social functioning, maternal sleep, intrauterine death and the choice of the method of delivery [9-13].

Issues such as the individual's economic and social status, the lack of emotional support from the spouse, the lack of self-confidence, domestic violence, single parenthood and even planned or unplanned pregnancies can affect maternal mental health during pregnancy. Maternal fear in previous pregnancies also predisposes the mother to mental health disorders manifesting themselves in future pregnancies in the form of anxiety, fear and depression [7 and 14].

Many studies conducted across the world are indicative of poor mental health among women during pregnancy. In their study of 3051 pregnant women in the US state of Wisconsin, Witt et al. found 7.8% of their participants to suffer from poor mental health [13]. In a study conducted in Brazil, researchers found that, of the 1447 pregnant women examined, 28.8% suffered from depression and 16.9% suffered from anxiety while 24.9% suffered from different types of stress [5]. In a study conducted on 15143 women in France, 12.6% of the women had experienced different types of mental stress [5]. In a study conducted in Pakistan on 273 pregnant women, the prevalence of mental disorders was reported as 44.3% in early pregnancy, while in a study of 108 pregnant Japanese women, the prevalence of these disorders was reported as 17% in the first trimester of pregnancy and as 13% in the third trimester [15].

Many studies have also been conducted in Iran to examine general health with an emphasis on mental health during pregnancy, including the one by Forouzandeh et al. [2002] on mental health during pregnancy and its contributing factors, which reported the prevalence of mental disorders as 29.7% in the first, 28.6% in the second and 39.6% in the third trimester and found depressive disorder and anxiety to be the most common ones among them [16].

Nonetheless, it appears that identifying and treating pregnancy-related mental disorders are of particular importance due to the impact of these disorders on maternal health and pregnancy outcomes [17]. Pharmacological as well as non-pharmacological treatments have been recommended for the control of these problems. Due to complications such as postpartum hemorrhage, pharmacological treatments are less commonly used during pregnancy [18]. Non-pharmacological methods that affect different dimensions of health, however, do not cause such complications and include yoga, exercise and cognitive behavioral therapy techniques such as Fordyce's Happiness Training [19-20]. Cognitive behavioral therapy is an effective method of treatment with proven effectiveness for different problems, such as substance abuse disorder, schizophrenia, depression, anxiety disorders, sleep disorders, personality disorders, pain and fatigue, pregnancy anxiety and women's hormone imbalance [21-22]. Cognitive behavioral therapy can be held in the form of numerous training sessions either individually or in groups [23].

Happiness training is a cognitive behavioral therapy inspired by Fordyce that has been effective in increasing happiness, reducing migraine symptoms and enhancing sexual satisfaction and quality of marital life [24-26]. Fordyce is an expert in the psychology of happiness who prepared a series of instructions called "happiness training". This series consists of 14 cognitive and behavioral principles. At the cognitive level, principles are presented that can increase happiness if put into action; the behavioral domain of these principles encompasses a number of behavioral techniques. Fordyce believes that, in addition to the influence of different factors such as genetics, personality, social and economic class and level of education on individuals' happiness, other special conditions such as happiness training can also lead to the acquisition of happiness. The underlying structure of Fordyce's happiness training is that one can be happy like other happy people if one wants to be [27-28].

In explaining the effectiveness of happiness training on general health, it can be said that, by learning to acquire happiness and logical thinking power, the individual gets to understand her problems and learns strategies to deal with them; that is, through this method of therapy, the individual learns to better take advantage of her capacities and capabilities and endure the stresses of life and ultimately experiences an increased general health [29]. Studies have also shown that happiness is one of the factors that reduce depression, relieve stress, improve physical health, increase the power to make decisions, encourage a cooperative spirit and lead to a higher life satisfaction [26 and 28].

Paying greater attention to the general health of pregnant women can therefore lead to an enjoyable pregnancy and prevent adverse pregnancy outcomes. The present study was conducted to investigate the effect of Fordyce's cognitive-behavioral happiness training on general health in primiparous women presenting to healthcare centers in Zahedan, Iran.

## MATERIALS AND METHODS

### Procedure:

The present quasi-experimental study with a pre test - post test design was conducted on 74 primiparous women presenting to health centers in Zahedan, Iran, in 2016, selected through convenience sampling. The sample size was determined as 31 subjects per group and as 62 overall based on the study by Rabiei et al. [28] and using the following equation at a confidence interval of 95% and a statistical power of 80%; to take account of a potential sample loss of 20%, sample size was raised to 37 subjects per group and 74 overall.

$$n = \frac{(s_1^2 + s_2^2)(z_{1-\frac{\alpha}{2}} + z_{1-\beta})^2}{(\bar{x}_1 - \bar{x}_2)^2}$$

The study inclusion criteria consisted of age 18 to 40, gestational age of 22 weeks, singleton fetus, reading and writing literacy and no history of mental and physical diseases. The study exclusion criteria consisted of any problems occurring during the study (hemorrhage due to placental abruption, preterm delivery and preeclampsia) and more than two sessions of absence from the therapy sessions. A demographic data questionnaire and a general health questionnaire were used to collect data on the participants. The demographic data questionnaire used inquired about participants' age, ethnicity, level of education, occupation, planned or unplanned pregnancy, fetal gender, history of infertility and economic status. The General Health Questionnaire (GHQ) used was developed by Goldberg and Hillier (1979) and consisted of 28 items within four subscales, each with seven items. The questionnaire incorporates four subscales: Somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. Items 1 to 7 measure somatic symptoms, 8 to 14 anxiety and insomnia, 15 to 21 social dysfunction and 22 to 28 severe depression. The items are scored based on a 4-point Likert scale (0-1-2-3, from the right to the left). The respondent receives a separate score for each subscale. Adding the subscale scores at the end yields the total score, which ranges from 0 to 84 [29-30]. Obtaining a score of 0 to 27 indicates good general health, 28 to 55 indicate relatively good general health and 56 to 84 indicates relatively poor general health. Obtaining a score of 14 to 21 in each subscale indicates the severity of the respondent's condition in that factor. Lower scores indicate a better mental health [31].

In a study conducted by Palahang et al. for assessing the validity of the GHQ-28, the reliability coefficient (test-retest reliability) was 0.91 [31]. The validity of this questionnaire in Iran was also assessed and confirmed in Shiraz in a study entitled "Validity and reliability of the General Health Questionnaire" and its reliability was reported using two methods, namely the test-retest method (0.70) and Cronbach's alpha coefficient (0.90); [32]. In the present study, the overall Cronbach's alpha and the Cronbach's alpha of the subscales of the questionnaire were calculated as 0.83, 0.63, 0.70, 0.53 and 0.79, respectively, thereby confirming its reliability.

The participants were briefed on the study objectives and ensured of the researchers' respect for ethical considerations before submitting their written consent forms for participation in the study. They were then randomly divided into two groups: An intervention group and a control group. The intervention consisted of six 60-to-90-minute group sessions of Fordyce's cognitive-behavioral training program held in healthcare centers twice a week [26 and 33]. The intervention began from week 22 of gestation and lasted for approximately three weeks. The second trimester of pregnancy is the best time for training pregnant women due to the changes occurring during this period, such as feeling a need to be part of a group of peers, an increased sense of attachment to the fetus and pleasant feelings along with reduced nausea and vomiting compared to early pregnancy [34].

The syllabus of the training sessions was:

First session: Introducing the participants to each other, establishing the initial relationship, getting to know the principles and objectives of the session, preliminary discussion about happiness and its contributing factors and teaching a technique for expressing emotions.

Second session: Teaching a technique for increasing optimism, activity and becoming more active.

Third session: Teaching techniques for increasing social relationships and closeness

Fourth session: Teaching techniques for increasing creativity, decreasing expectations and being one-self.

Fifth session: Teaching techniques for planning and organizing and living in the moment.

Sixth session: Teaching techniques for avoiding worrisome thoughts and giving priority to happiness.

The content of the therapy sessions was taught using teaching aids, including a white board and slides, and some homework was also assigned to the participants at the end of each session. A summary of each session was also presented to the participants in the form of a booklet. The posttest was carried out after 6 weeks [28 and 35]. The

control group took a pretest just as in the intervention group; after the end of the waiting period (about 2 months), this group completed the questionnaire once again (the posttest). During this period, the control group had received only the routine training and care provided by the center's midwife.

Data were analyzed in SPSS-16 using descriptive (frequency, percentage, mean, standard deviation, etc.) and inferential (the Chi-square test and the independent t-test) statistics. The level of statistical significance was set at 0.05.

## RESULTS

A total of 74 primiparous women presenting to healthcare centers in Zahedan were selected for the study and were then divided into an intervention and a control group. Fordyce's group cognitive-behavioral training sessions were held by the researcher through visiting the select healthcare centers from 28 January, 2016, to the end of 9 May, 2016. Each group consisted of 37 participants. To achieve the objectives of the study, the collected data were tabulated (Table 1-3). Table 1 examines the demographic characteristics of the participants; according to this table, the majority of the subjects were at the age range of 18 to 33. The independent t-test also showed no significant differences in the mean age of the participants. The Chi-square test showed the lack of statistically significant differences between the two groups in terms of ethnicity, occupation, and economic status, level of education, history of abortion, planned or unplanned pregnancy and fetal gender ( $P \geq 0.05$ ).

**Table 1: The demographic characteristics of the intervention and control groups**

Variable		Intervention	Control	Test Results
		Number (Percentage)	Number (Percentage)	
Level of Education	High school diploma or below	18 (48.6%)	24 (64.9%)	0.241
	Above high school diploma	19 (51.4%)	13 (35.1%)	
Employment Status	Employed	6 (16.2%)	9 (24.3%)	0.564
	Housewife	31 (83.8%)	28 (75.7%)	
History of Abortion	Has a history of abortion	4 (10.8%)	6 (16.2%)	0.736
	No history of abortion	33 (89.2%)	31 (83.8%)	
Ethnicity	Baluch	14 (37.8%)	15 (40.5%)	0.510
	Sistani	13 (35.1%)	16 (43.2%)	
	Other Iranian ethnic groups	10 (27.0%)	6 (16.2%)	
Economic Status	Good	9 (24.3%)	10 (27.0%)	1.000
	Average	28 (75.7%)	28 (73.0%)	
Planned or Unplanned Pregnancy	Planned	35 (94.6%)	36 (97.3%)	1.000
	Unplanned	2 (5.4%)	1 (2.7%)	
Fetal Gender	Female	18 (48.6%)	12 (32.4%)	0.236
	Male	19 (51.4%)	25 (67.6%)	
Age		23.97±4.26	23.78±4.60	0.855

Regarding the main objective of the study, that is, comparing the mean changes in the general health score of primiparous women between the intervention and control group, the findings showed that the mean and standard deviation of the general health score was  $19.89 \pm 7.63$  in the intervention group and  $19.94 \pm 7.90$  in the control group before the intervention; however, after the intervention, this score reached  $17.78 \pm 5.50$  and  $21.64 \pm 7.21$ . The mean changes in the general health score were reported as  $-2.10 \pm 5.52$  in the intervention group and as  $1.70 \pm 4.56$  in the control group. The independent t-test showed that, despite the lack of statistically significant differences between the two groups before the intervention ( $P=0.976$ ), a significant difference emerged between them after the intervention ( $P=0.012$ ). This test also showed a significant difference in the mean and standard deviation of changes between the two groups ( $P=0.002$ ). Table 2 presents the mean and standard deviation of the general health score.

**Table 2: A comparison of the mean and standard deviation of the general health score of the pregnant women in the intervention and control group before and after the intervention**

Group	Time	Before the Intervention	After the Intervention	Changes
		Mean and Standard Deviation	Mean and Standard Deviation	Mean and Standard Deviation
Intervention		$19.89 \pm 7.63$	$17.78 \pm 5.50$	$-2.10 \pm 5.52$
Control		$19.94 \pm 7.90$	$21.64 \pm 7.21$	$1.70 \pm 4.56$
Independent T-Test Result		0.976	0.012	0.002

The findings showed the lack of significant differences between the two groups of pregnant women in terms of the mental health score in the four subscales of somatic symptoms ( $P=0.421$ ), anxiety and insomnia ( $P=0.613$ ), social dysfunction ( $P=0.400$ ) and severe depression ( $P=0.266$ ) before the intervention, as the two groups were homogenous in terms of these dimensions of their mental health score before the intervention. The independent t-test showed a statistically significant difference between the two groups of pregnant women in terms of the mean and standard deviation of changes in the mental health scores in the subscales of anxiety and insomnia ( $P=0.030$ ) and severe

depression ( $P=0.006$ ) after the intervention; however, this test showed no statistically significant differences between the two groups in terms of their mental health scores in the subscales of somatic symptoms ( $P=0.235$ ) and social dysfunction ( $P=0.347$ ).

Table 3 presents the mean and standard deviation of participants' scores in the different subscales of mental health.

**Table 3: A comparison of the mean and standard deviation of participants' scores in the different subscales of mental health before the intervention and their changes by group**

Dimension	Before the Intervention			Changes (Pretest-Posttest)		
	Intervention Group	Control Group	P	Intervention Group	Control Group	P
	Mean $\pm$ Standard Deviation	Mean $\pm$ Standard Deviation		Mean $\pm$ Standard Deviation	Mean $\pm$ Standard Deviation	
Somatic Symptoms	5.10 $\pm$ 2.74	5.62 $\pm$ 2.71	0.421	-0.51 $\pm$ 2.10	0.10 $\pm$ 2.35	0.235
Anxiety and Insomnia	6.29 $\pm$ 2.97	5.91 $\pm$ 3.42	0.613	-0.70 $\pm$ 2.44	0.48 $\pm$ 2.15	0.030
Social Dysfunction	6.86 $\pm$ 2.35	7.32 $\pm$ 2.31	0.400	0.027 $\pm$ 1.73	0.56 $\pm$ 3.00	0.347
Severe Depression	1.62 $\pm$ 2.00	1.08 $\pm$ 2.13	0.266	-0.91 $\pm$ 1.89	0.54 $\pm$ 2.50	0.006

## DISCUSSION

Given the high prevalence of mental health disorders during pregnancy, especially among primiparous women, the present study was conducted to determine the effect of Fordyce's cognitive-behavioral happiness training on general health in primiparous women. The results showed a significant difference between the two groups in the overall score of general health after the intervention. Given the lower mean score in the intervention group than in the control group ( $P<0.05$ ), it can be concluded that Fordyce's cognitive-behavioral happiness training has enhanced the general health of primiparous women. This finding is consistent with the findings of a study by Sadeghi et al. on the effect of muscle relaxation on general health in pregnant women [36]. The results of a study by Mehdizadeh et al. on the effect of childbirth preparation classes on maternal and neonatal health showed that attending prenatal training classes plays an important role in the health of pregnant women and their new born [37]. Moreover, since physical, spiritual, mental and social health as well as the overall quality of life undergo multiple changes during pregnancy [38], recent studies have come to focus on the effect of cognitive-behavioral training on general health. Among these methods of therapy, Fordyce's happiness training has been used in several studies; however, it has never been examined in terms of its effect on the general health of pregnant women. This novelty distinguishes the present study from the other ones conducted on the subject in Iran.

Happiness affects people's lives in different ways; for example, it leads to a positive attitude, increases self-confidence and improves mental health [39]. Moreover, according to Fredrickson's broaden-and-build theory of positive emotions (2009), positive emotions (happiness) provide the individual with sustainable resources in order to face a wide range of conflicts in life and in turn increase the level of life satisfaction. Consequently, those who are trained to achieve happiness are happier and achieving internal peace affects their judgment of life and improves their life satisfaction [40-41].

In the present study, six sessions of Fordyce's cognitive behavioral training led to significant mean changes in two subscales of general health, including anxiety and insomnia and severe depression, compared to before the intervention. Nevertheless, the two subscales of somatic symptoms and social dysfunction showed no significant differences between the two groups even after the intervention. The lack of changes in these two subscales does not signify that the training provided has been ineffective, as the other two subscales and the general health score differed significantly between the two groups after the intervention. In explaining the lack of a significant difference in the subscales of somatic symptoms and social dysfunction, it can be argued that other studies have also reported a higher mean score of disorder in these two subscales than in the other subscales [38, 42 and 43]; these two subscales are affected by other factors and happiness training alone cannot improve them; it is therefore essential to identify the other factors affecting them. In view of the main objective of this study, i.e. examining the overall score of general health in mothers, the findings can be said to be consistent with the results of the study by Karami et al, who found that a cognitive-behavioral training program organized for pregnant women improves their general health score as well as the scores of the subscales of somatic symptoms, anxiety and insomnia and severe depression, but does not affect the score of the social dysfunction subscale [5]. The difference in the significance of changes in the somatic symptoms subscale can be attributed to the lower gestational age of women in Karami's study (as gestational age increases, so does the prevalence of mental disorders) and the differences in the training methods used.



Moreover, the results of the present study are consistent with the results obtained by Mazaheri, who found that cognitive-behavioral training can reduce the general health score in people with depression and even recommends the use of this method of therapy in developing countries such as Iran for an effective cure for depression and for improving mental health in employees and patients [44]. In a study entitled "The effect of group therapy with a logo therapeutic approach on general health in women affected by earthquake", Ghanbari et al. found that therapy enhances the subscales of general health, including somatic symptoms, anxiety and insomnia and severe depression, but does not lead to significant changes in the subscale of social dysfunction [45]. In support of this finding, Kati et al. believe that teaching a positive understanding of one-self helps individuals overcome disturbing emotional states such as anxiety through positive thoughts [46]. The present findings are also consistent with the results of studies conducted by Salsman, Micks and Morell (2003), who found that positive psychological states lead to an enhanced performance and an increased level of health in the individual [47]. A study conducted in Iran by Yousefi Looyeh et al. (2009) showed that happiness training enhances general health among university students as well [48].

A study conducted to investigate pregnant women's perceptions of prenatal training programs found that most mothers have a positive assessment of these programs. Training programs that challenge women with problems related to all the dimensions of their health are crucial during pregnancy, labor and childbirth as well as throughout life [49-50].

It therefore appears that although happiness training cannot change a person's life or promote her social resources, by changing the individual's understanding and belief, reducing her expectations, emphasizing the importance of being her true self, purposefulness in life and the avoidance of worrisome thoughts and encouraging her to build social relationships and closeness and to express her feelings, this training helps promote the individual's personal or internal resources. Training can be used as a behavioral intervention to change inappropriate lifestyles and to encourage the choice of a correct lifestyle and the control of stress. The sense of happiness can thus be used to treat mental disorders, increase life expectancy, and endeavor to improve living standards among healthy people, improve the defense against stress and prevent different conditions so as to enhance the level of mental health [51].

Fordyce's cognitive-behavioral training is a cognitive restructuring that improves people's cognitive functioning. The methods used in this model include reducing expectations, eliminating concerns, strengthening optimistic thoughts, living in the moment, prioritizing happiness and strengthening one's social presence; the person who uses these methods promotes her physical and psychological health [35].

The results of this study are indicative of the effect of Fordyce's cognitive behavioral happiness training on general health and some of its main subscales, including anxiety and insomnia and social dysfunction, among primiparous women. To update its treatment protocols, in 2014, the Center for Mental Health in the UK proposed the use of psychotherapy and cognitive therapy for improving prenatal and postnatal mental health as an economical option available [52]. This method of therapy can therefore be used in the form of workshops to help solve psychological problems during pregnancy. It is therefore recommended to incorporate this training into prenatal care programs in order to move toward a health-based approach and improve maternal mental health.

## CONCLUSION

Future studies are recommended to be conducted on the effects of this type of training as well as other methods of cognitive-behavioral therapy on pregnant women of all gestational ages and with larger sample sizes, so as to compare the effectiveness of this method with the other ones assessed.

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