

Original Article

The association between antenatal anxiety and fear of childbirth in nulliparous women: a prospective study

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Abstract

BACKGROUND: This study aimed to examine the association of state and trait anxiety with fear of childbirth to explore whether there was any support for the hypothesis that state and trait anxiety are risk factors for the fear of childbirth or not.

METHODS: In this prospective study, 156 pregnant women referred to the health centers of Qom. The study samples selected using simple random sampling method. Anxiety and fear of the childbirth in nulliparous women were measured using Spielberger's state-trait anxiety inventory and childbirth attitudes questionnaire (CAQ) at gestational age of 28 and 38 weeks respectively. The data were analyzed using Pearson correlation, t-test, logistic regression and software SPSS₁₆.

RESULTS: Pearson correlation test indicated a positive and statistically significant association between fear of childbirth scores and state and trait anxiety ($p < 0.05$). Logistic regression analysis showed that state and trait anxiety at gestational age of week 28th increased the risk of fear of childbirth (odds ratio [OR] 2.7, 95% confidence interval [CI] 1.69-4.35) ($p = 0.03$) ([OR] 2.8, 95% [CI] 1.17-6.80) ($p = 0.02$) respectively. It also indicated that state and trait anxiety increased the risk of fear of childbirth at gestational age of week 38th ([OR] 2.7, 95% [CI] 1.03-6.80) and ([OR] 5.4, 95% [CI] 1.75-16.76) ($p = 0.04$) ($p = 0.003$) respectively.

CONCLUSIONS: The results support this possibility that state and trait anxiety could be considered as risk factors for the fear of childbirth. Hence, considering other included biological and medical factors, measurement and control of psychological factors in pregnancy is recommended.

KEY WORDS: Anxiety, fear, childbirth, pregnancy, women.

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One in five pregnant women would experience moderate fear of childbirth, and 6%-13% of the pregnant women would experience severe and disabling fear of childbirth¹.

The fear associated to pregnancy may result in anxiety and stress manifestation as changes in emotions, behavior or physical symptoms.² Fear of childbirth in general has been associated with proneness to anxiety or may occur to someone who had familial predisposition to anxiety disorder.³ Some studies have shown a rising tendency for fear and anxiety following

the advancing pregnancy. Fear is manifested mainly through anxiety, nightmares and physical symptoms.⁴ In addition, general anxiety, lack of social support^{5,6} and unemployment are common risk factors for fear of childbirth and anxiety of the pregnancy.⁵

The theory that claimed anxiety can interfere with the delivery process during pregnancy has been supported by some certain prospective studies. Consequently, such interference can occur directly through psycho-physiological pathways. Pharmacologically, epinephrine has been associated with enervating uterine con-

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tractility, and norepinephrine with intensifying uterine contractility. Prolonged second stage of labor has been observed in women with higher catecholamine concentrations.³

Thus far, no studies have been reported the fear of childbirth associated with maternal anxiety among nulliparous women in Iran. Examining maternal anxiety and its relationship with fear of childbirth for several reasons seems necessary. First, some previous studies have suggested that maternal anxiety was related to pregnancy outcomes,⁷ high anxiety levels were related to somatic complaints in pregnancy, high risk of premature delivery; lower infant birth weight, cranial perimeter⁸ and length of the labor, preeclampsia, prolonged labor and forceps delivery and using anesthesia during the delivery.⁹ Then, several studies have reported that fear of childbirth was associated with anxiety in pregnant women⁵⁻¹⁰ and fear of childbirth often lied behind the mothers' request for caesarean section and, if untreated, this can lead to unnecessary caesarean section without medical indication⁴. Ryding et al found that severe fear of childbirth can also lead to emergency caesarean sections^{9,11} Considering that cesarean section rate in Iran has a high prevalence (above 40%).¹² In some studies, the most common cause of caesarean section in primiparous women was the fear of childbirth.^{13,14} Since no study has ever been done about association of anxiety and fear of delivery in pregnancy in Iran, conducting some studies in this regard seems necessary.

This study aimed to examine the association of state and trait anxiety and fear of childbirth to see whether there was any support for the hypothesis that state and trait anxiety which were risk factors for fear of childbirth or not.

Methods

This was a prospective analytical design. The independent variables were state anxiety, and trait anxiety. The dependent variable was fear of childbirth and anxiety and fear of childbirth were measured using Spielberger's state-trait anxiety inventory (STAI) and childbirth attitudes questionnaire (CAQ) at gestational age of weeks 28th and 38th.

The present study was a prospective analytical study to assess the association between fear of childbirth and state and trait anxiety during pregnancy on 160 primigravid women referred to the health centers in Qom. After selecting ten health care centers, the subjects were chosen with simple random sampling method from all the ten centers. Pregnant women with gestational age of 28-30 weeks who had experienced their first pregnancy were recruited to this study. Inclusion criteria included single fetus, no drug history, no chronic disease, no infertility, no high risk pregnancy and no history of psychiatrist visit. All the subjects were given written consent form and then answered to the questions of research questionnaire. Four of 160 subjects did not participate at the second interview. Therefore, those four subjects were excluded from the study. Statistical analysis conducted using SPSS¹⁶. Probabilities were two-tailed and significance was obtained as the following: $p < 0.05$.

Data were collected using self-administered questionnaires which included state-trait anxiety and childbirth attitudes questionnaire. A demographic questionnaire was developed by the researchers in order to collect the data of the subjects' age, gestational age, economic, occupation, educational situation, and obstetric history. The state-trait anxiety level was measured using the Persian version of the Spielberger's state-trait anxiety inventory (STAI). The STAI scale consisted of 40 statements describing various emotional states, which have been translated into Persian, and its reliability and validity were acceptable. Twenty of these statements demanded the study subjects to describe their emotional reactions in terms of anxiety at a particular moment or period of the time (state anxiety). Statements were scored on a 4-point Likert scale of increasing intensity, from "never" to "very often" (with scores of 1-4 respectively). The other 20 items demanded the subject to describe how they generally feel and response to the threatening situations (trait anxiety). These items were also scored on a 4-point intensity scale, from "almost never" to "almost always". For the both parts, possible cumulative scores

for each scale ranged from 20 (not anxious) to 80 (high anxiety).^{15,16}

The cronbach's alpha for the state-trait anxiety obtained 0.91 and 0.90 respectively.¹⁷

To evaluate fear of childbirth, Hartman's questionnaire of attitudes of childbirth has been used which had been reviewed by Lowe.¹⁸ The childbirth attitudes questionnaire (CAQ) consisted of 14 Likert-type items, scored on a 4-point scale, ranging from never (1) to very often (4), therefore, the scores ranged from 14 to 56. High scores indicated high fear and the scores of over 28 were considered as fear of childbirth. According to the research studies conducted in Iran during 2009, the reliability of this questionnaire with Cronbach's alpha obtained .84 and its content validity has been established¹²

Statistical analysis was conducted using SPSS¹⁶ (statistical package for the social science for windows, Chicago, Ill,USA).

The data were analyzed using independent t-test to explore differences in fear of childbirth scores between anxious and non-anxious groups. In addition, the association between trait anxiety, state anxiety and fear of childbirth were assessed. Pearson correlation coefficients used to examine the association between fear of childbirth and continuous variables. Logistic regression was conducted with (CAQ) scores as the dependent variable (Table 3).

Results

The mean age of the total participants was 22.87 years (SD = 3.9; range = 15-34 years). The education level of the subjects was in high school diploma degree (71.4%) and 97% of the mothers were housewives.

Mean scores of fear of childbirth in anxious women were significantly more than non-anxious women with state anxiety and trait an-

xiety at gestational age of week 28th ($p < 0.01$) and ($p < 0.001$) respectively. In addition, mean scores of fear of childbirth in anxious women were significantly more than non-anxious women with state anxiety and trait anxiety at gestational age of week 38th ($p < 0.01$) and ($p < 0.001$) respectively.

Pearson correlation coefficients were used to examine the association between state and trait anxiety and fear of childbirth. The study hypotheses were in accordance with Pearson correlation because two study variables -state and trait anxiety- at gestational age of weeks 28th and 38th were positively associated with fear of childbirth ($p < 0.001$) (Table 1).

Logistic regression analysis showed that state and trait anxiety at at gestational age of week 28th increased the risk of fear of childbirth (odds ratio [OR] 2.7, 95% confidence interval [CI] 1.69-4.35) ($p = 0.03$) ([OR] 2.8, 95% [CI] 1.17-6.80) ($p = 0.02$) respectively. It also indicated that state and trait anxiety increased the risk of fear of childbirth at gestational age of week 38th ([OR] 2.7, 95% [CI] 1.03-6.80) and ([OR] 5.4, 95% [CI] 1.75-16.76) ($p = 0.04$) ($p = 0.003$) respectively (Table 2).

State and trait anxiety at gestational age of week 28th and state and trait anxiety at gestational age of week 38th were found to be associated with fear of childbirth ($P < 0.05$).

Discussion

In this study, anxiety was significantly associated with fear of childbirth among nulliparous women. These findings were in accordance with some studies in which anxiety, depression or low self-esteem were reported to be associated with fear of childbirth.^{19,9}

In study of Johnson et al, they found a significant relationship between trait and state anxiety and the fear of childbirth at gestational age of

Table 1. Correlations between state-trait anxiety and fear of the childbirth

	1	2	3	4	5	6
1 STAI-SAt gestation week 28	-	0.71*	0.33*	0.56*	0.62*	0.31
2 STAI-T At gestation week 28		-	0.31*	0.51*	0.74*	0.29*
3 (CAQ)At gestation week 28			-	0.28**	0.25**	0.65*
4 STAI-S At gestation week 38				-	0.70*	0.42*
5 STAI-T At gestation week 38					-	0.37*
6 (CAQ) At gestation week 38						-

a. Correlations performed on variables; (STAI)=State-Trait Anxiety Inventory.(CAQ)= Childbirth Attitudes Questionnaire;* $P < 0.001$, ** $p < 0.01$.

Table 2. Effect of state-trait anxiety (STAI) on the risk of fear of childbirth.

	OR, 95%CI ^a	P
STAI-S-1 At gestation week 28	1.7 (0.69-4.35)	n.s.
STAI-T-1 At gestation week 28	2.8 (1.17-6.80)	0.02
STAI-S-2 At gestation week 38	2.7 (1.03-6.80)	0.04
STAI-T-2 At gestation week 38	5.4 (1.75-16.76)	0.003

a, 95% confidence interval.

week 32nd.⁹ The results were similar to the findings of the present study. In addition, Spice K et al showed a significant association between the trait anxiety in the late sixth month of pregnancy and fear of childbirth particularly among nulliparous women which in accordance with the results of the present study. In trait anxiety, specific features of a person can anticipate the fear of childbirth.²⁰ In the present study, trait anxiety indicated a significant association with fear of childbirth.

In the study of Szeverenyi et al, more than 80% of the low-risk pregnant women experienced fear of childbirth.²¹ In the present study, participants reported 81% of fear of childbirth at gestational age of week 28th and 82% of fear of childbirth reported at gestational age of week 38th. In this regard it was very similar to the results of the mentioned above study.

Saisto et al in their study, reported 278 Finnish women of any parity and at low obstetric risk, fear of childbirth was associated with the general anxiety and low self-esteem.⁵ Zar M et al, also found a high correlation between fear of childbirth and anxiety in pregnant women.¹⁹ In addition, Heimstad R et al and Söderquist J et al confirmed the findings of the present study that was an association between general anxiety and fear of childbirth.⁶⁻²²

One of the limitations of the present study was that state anxiety and trait anxiety were not examined in the context of other variables (e.g. social support, socioeconomic status and etc) that may be important in the development of the fear of childbirth.

Conclusion

Anxiety symptoms are frequently reported by the pregnant women and are often considered by midwives and obstetricians as part of the normal psychic experiences of the pregnancy, particularly if the focus is on the health of the infant or on maternal competencies.²³

The present findings also indicated that these symptoms should not be neglected, and results of this study declared that anxiety is a risk factor for fear of childbirth. Importance of fear of childbirth to the maternal health during pregnancy, childbirth, vaginal delivery and development of the primary relationship of mother and infant is so clear. Fear associated with pregnancy and childbirth may have serious consequences. Fear of childbirth during the third trimester of pregnancy is associated with increase of emergency cesarean section and maternal request for caesarean section.^{4,9,11,12} Study of Gambel et al on cesarean showed the importance of establishing services for the expression of the special needs of women who had anxiety about labor or are afraid to be highlighted.²⁴ Therefore, to reduce fear of childbirth and to prevent its consequences, the causing factors in fear of childbirth should be determined and also health workers and midwives in the field of psychological and emotional problems during pregnancy women should be trained to reduce unwanted side effects of anxiety and fear of childbirth.

The authors declare no conflict of interest in this study.

Contribution to authorship

ZA planned the project, ML and EH advised in the design, EH did the data management, the statistical analyses. ZA article with tips ML has written.

Ethical Consideration

This study was approved by the Ethics Committee of Tarbiat Modares University, Iran and informed consent was received from all the subjects.

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