Prenatal fear of childbirth and anxiety sensitivity

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Abstract

Objective. Fear of childbirth (FOC) or what is historically referred to as tokophobia (a phobic state where a woman avoids childbirth despite desperately wanting a baby), is known to complicate the delivery process. In this study, the relationship of Anxiety Sensitivity (AS) to FOC was examined given that AS is a risk factor for other fears. Specifically, the contribution of three AS dimensions (physical, psychological or social concerns) relative to other factors (e.g., parity of the mother, trait anxiety) in accounting for FOC was explored.

Methods. Women in their final 4 months of pregnancy (n = 110) completed the Anxiety Sensitivity Index, the State-Trait Anxiety Inventory-Trait Scale and the Wijma Delivery Expectancy/Experience Questionnaire.

Results. Most demographic variables were non-significant in predicting FOC with the exception of participants’ parity. Multiple regression analysis revealed that AS-physical concerns significantly predicted elevated FOC even after controlling for parity and trait anxiety; higher levels of AS-physical concerns, higher trait anxiety, and expecting a first child all independently predicted greater FOC.

Conclusion. Variance in FOC is explained, in part, by AS-physical concerns. Further, AS-physical concerns are distinct from trait anxiety in predicting FOC. Similar to other fears, the results support the possibility that AS may be a risk factor for elevated FOC.

Keywords: Fear of childbirth, tokophobia, anxiety sensitivity, trait anxiety, pregnancy, parity, pregnancy complications

Introduction

Fear of childbirth (FOC) is conceptualised along a continuum, with women who are almost free of fear at one end, and those women with severe or disabling fear at the other [1]. Roughly 33% of women admit to being fearful of childbirth [2], with anxiety peaking during the last trimester [3]. Between 11 and 14% of women present with severe FOC [4,5] that can be highly disabling [6]. Some women avoid becoming pregnant, others opt for abortion, and still others request an elective caesarean section (CS) or undergo emergency CSs because of severe FOC [5]. The positive relationship between FOC and CSs is an important one. Although the rates of maternal death are no different for Canadian women undergoing planned vaginal delivery versus planned CS, the risks of severe maternal morbidity (e.g., postpartum risks of cardiac arrest) remain significantly higher for women who undergo a planned CS [7].

Beyond the increased risk of CSs among women with elevated fear, there are other reasons to attend to FOC. For instance, FOC is associated with increased fear during labour [8], which subsequently leads to an increased need for pain relief during labour [9]. Likewise, women with elevated fear who do not undergo counselling appraise the birth experience more negatively than those who seek guidance from a midwife [10]. Women with FOC who have a negative birth experience have been found to suffer from post-natal depression, symptoms of PTSD, and delayed bonding with their infant [11]. Theoretically, alleviating severe FOC can assist women with achieving greater satisfaction during pregnancy and childbirth. Indeed, researchers have found that women with severe FOC who initially desired an elective CS...
benefited from individualised psychological and obstetrical support, with 40% subsequently able to undergo vaginal delivery [12].

Predictors of fear of childbirth

Predictors of FOC are manifold. FOC differs among women who have previously given birth (parous) when compared with women who are expecting their first child (nulliparous). Specifically, nulliparous women report higher levels of FOC on average than parous women [1,9], which may be because of a lack of experience with childbirth [9]. Interestingly, the relationship between maternal parity and FOC is slightly different when we examine categories of FOC severity (e.g., moderate, severe). Moderate FOC appears to be more common among nulliparous women; however, severe FOC and a request for CSs appears more common among parous women [13]. Moreover, severe FOC in parous women has been associated with earlier traumatic delivery experiences, such as an emergency CS [14] or vacuum extraction [15].

Personality may also predict FOC in pregnant women. Specifically, trait anxiety or the relatively stable disposition to be anxious [16], has been linked to FOC [1,4]. Consequently, moderate to extreme FOC has been related to a number of anxiety disorders and phobias, including PTSD, blood phobia, animal phobia and agoraphobia without a history of panic disorder [5].

Beyond these two fundamental variables of previous childbirth and trait anxiety, specific characteristics such as fear of pain and low pain tolerance have been cited as common reasons for FOC [17]. Lack of social support or expressed dissatisfaction with one’s partner is also predictive of FOC [18]. Other women fear the physical consequences of childbirth, such as a fear of rupturing [15,19] and fear of injury to themselves [19] or to the unborn child [20]. Yet others cite fear of death [19,20], fears of the unknown, fear of losing control or fear of appearing silly during the delivery as reasons for FOC [17].

Anxiety sensitivity and fear of childbirth

To date, the relationship between anxiety sensitivity (AS) and FOC has not been examined. AS is the fear of anxiety-related bodily sensations (e.g., heart palpitations, dizziness) that result from beliefs that these sensations or anxiety experiences have harmful somatic, psychological or social consequences [21]. The expectancy model of fear maintains that there are three fundamental fears (or fears of stimuli that are inherently aversive) that include fear of injury, fear of negative evaluation and fear of anxiety [21]. This model predicts that holding such fundamental fears may predispose individuals to other common fears. Of the three fundamental fears, fear of anxiety (or AS) has received the most attention by researchers. It is thought that high AS people acquire common fears (e.g., of spiders, flying) more readily than others because exposure to such commonly-fearred objects and situations may be expected to lead to the anxiety-related sensations high AS people find so aversive.

To date, research on this aspect of the expectancy model has been supported. For instance, severity of AS has been correlated with the intensity and number of fears that a person holds [22,23]. Moreover, AS has been found to play an important role in panic attacks [24], panic disorder [25] and PTSD [26]. Such findings are consistent with the position that AS is a risk factor for the development of fear, anxiety and panic.

Factor analytic research on the most widely used measure of AS, the Anxiety Sensitivity Index [22], has established that AS is both a hierarchical and multidimensional construct consisting of a higher-order factor (global AS), and three lower-order AS factors of physical, psychological and social concerns [27]. AS-physical concerns refer to the fear of bodily sensations because of the belief that these symptoms are indicative of physical illness. AS-psychological concerns refer to fears of cognitive dyscontrol because of the belief that these symptoms are indicative of mental illness whereas AS-social concerns refer to fears of publicly observable anxiety reactions because of the belief that display of anxiety may result in public embarrassment or social rejection [28].

It seems important to examine AS and its relationship to FOC for several reasons. First, AS is associated with high levels of pain during labour, including both sensory and affective components of pain [29], and AS has been shown to exacerbate avoidance of pain-related activities [30]. Moreover, AS has been found to prime fear reactivity to bodily sensations [31], and may predict subjective distress and reported symptoms in response to procedures that induce strong physical sensations [32]. In the context of pregnancy, women with high AS may perceive natural childbirth and associated procedures as a painful activity fraught with unpleasant bodily sensations. Consequently, pregnant women with high AS may engage in pain-avoidance activity and reject vaginal birth. Instead, they may seek CSs unnecessarily by scheduling an elective CS or by undergoing an emergency CS [7].

It also seems useful to examine how the lower-order AS factors might relate to FOC. For example, individuals who fear the physical symptoms of anxiety may be fearful of childbirth, given the numerous somatic sensations associated with the delivery process. Similarly, those who fear the social consequences of anxiety symptoms (e.g., being
embarrassed) may experience FOC because they are afraid of how they will present themselves to others during the delivery [17]. Finally, women who are afraid of the psychological symptoms of anxiety (e.g., fear of going crazy) may experience FOC because of an inappropriate fear of losing control [17] or of being unable to cope psychologically with the delivery.

The purpose of this study was to specifically examine the relationship between AS and FOC to explore whether there is support for the hypothesis that AS is a risk factor for FOC. We were interested in examining the relationship between AS and FOC after controlling for the effects of background variables. Furthermore, we explored the possibility that trait anxiety would not be a significant predictor of FOC if AS was controlled for. The rationale for this is that AS is regarded as a fundamental fear that predisposes individuals to other common fears. It was hypothesised that all lower-order AS dimensions would significantly predict prenatal FOC over-and-above prior childbirth history and trait anxiety.

Method

Participants and procedure

A sample of 110 women from Regina, Saskatchewan, Canada between the ages of 18 and 42 years (M = 29.4) and in the final 4 months of their pregnancy, participated in the study. Both parous (n = 66) and nulliparous (n = 44) women were included in the sample. To ensure variability in the sample, half of the participants (n = 55) were recruited from community obstetric practices and the remaining participants (n = 55) were recruited from a clinic specialising in the treatment of pregnant women with previous or current pregnancy complications. Participants were asked to indicate if they had any complications with a previous or current pregnancy and to list said complication(s). Thirty-four of the 110 women reported having a complication with the current pregnancy that had already manifested at the time of enrolment in the study. Complications that women listed included gestational diabetes, bleeding and obstetric cholestasis. Forty-two of the 110 participants reported having a complication with a previous pregnancy, and those listed included miscarriage(s) and CS. Seven of the 110 women reported using assisted reproductive technologies to become pregnant, including in vitro fertilisation and follicle stimulation. No category was large enough to permit analyses of predictors of FOC within specific subcategories of complication type or assisted reproductive method type.

Participants were asked to complete a set of questionnaires, consisting of the Anxiety Sensitivity Index (ASI), State-Trait Anxiety Inventory-Trait Subscale (STAI-T), and version A of the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ).

Measures

Anxiety sensitivity. The ASI is a 16-item self-report measure of AS with items rated on a five-point Likert scale ranging from zero (very little) to four (very much) [22]. The ASI consists of three subscales: physical, psychological and social concerns [27]. The ASI has test–retest reliability in the 0.71 to 0.75 range and is a well-established predictive measure of fearfulness [22]. The internal consistency coefficients in this study were 0.88 for the physical concerns, 0.85 for the psychological concerns and 0.61 for the social concerns subscales.

Trait anxiety. The STAI-T is a brief self-report inventory designed to measure trait anxiety [16], defined as individual differences in the frequency and intensity with which anxiety, apprehension and tension manifests itself over time [33]. The STAI-T consists of 20 statements describing how people generally feel rated on a four-point frequency scale ranging from almost never to almost always. The STAI-T has good reliability and validity [16]. The internal consistency coefficient for the STAI-T was 0.94 for the present study.

Fear of childbirth. The W-DEQ (version A) is a 33-item form assessing FOC based on the respondent’s cognitive appraisal and expectancies about delivery [34]. Responses are rated on a six-point Likert scale. Items focus on how the participant imagines the pending labour and delivery. The W-DEQ was found to have good internal consistency and split-half reliability in a sample of 196 pregnant women [34] and considerable evidence supports its validity [5]. In this study, the internal consistency coefficient for the WDEQ was 0.91.

Results

Fear of childbirth and demographic variables

Ten women or 9.1% of our sample met criteria for FOC in the severe range using the cut off score of ≥85 on the W-DEQ [4]. Prior to hypothesis testing, we examined the relations between background variables and FOC. Pearson correlation coefficients were calculated to examine the relationship between FOC and continuous variables and point-biserial correlations were calculated to examine the relationship between FOC and dichotomous variables. As can be seen in Table I, FOC was significantly greater among participants who were expecting their first child. FOC was not, however, significantly greater among older participants, those who were further
along in their pregnancy, those who had complications with the current or an earlier pregnancy or those who attended a specialty clinic.

**Regression analysis**

A hierarchical multiple regression was conducted with W-DEQ scores as the dependent variable (see Table II for the regression table). This regression consisted of three steps. In the first step, we entered whether the woman was expecting her first child because this was the only background variable identified as related to FOC in the above correlations. At the first step, as one would expect we found that expecting a first child was a predictor of FOC; that is women who were expecting their first child reported greater FOC. In the second step, scores on ASI subscales were entered and there was a significant increase in variance explained. AS-physical concerns were identified as a significant predictor of FOC in addition to expecting a first child. In the third and final step, we examined whether trait anxiety would explain variance in FOC above-and-beyond parity and AS dimensions. There was a statistically significant increase in variance explained in FOC. In the final model, FOC was found to be greatest among women who were expecting their first child ($\beta = 0.25, p < 0.01$), who had greater trait anxiety ($\beta = 0.44, p < 0.01$) and also who had higher AS-physical concerns ($\beta = 0.25, p < 0.03$).

**Discussion**

The present research focussed on FOC, which is estimated to be a concern for as many as 33% of women [2], and of severe intensity in as many as 11–14% of pregnant women [4,5]. FOC is an important construct to understand especially because of its relationship to negative birth experiences and postnatal distress [11] and also its relationship to elective and emergency CSs, which can be both risky and often unnecessary compared to a vaginal birth [7]. In the current sample, severe FOC was identified in ~9% of women, which is comparable to rates found by previous researchers using the W-DEQ [4,5].

* $p < 0.05$; ** $p < 0.001$. 

| Table I. Correlations among variables studied. |
|---|---|---|---|---|---|---|---|---|---|
| Age | Weeks pregnant | Pregnancy complications | Recruit site | ASI-physical concerns | ASI-psych. concerns | ASI-social concerns | STAI-T anxiety | W-DEQ fear of childbirth | Parity |
| Age | – | 0.15 | 0.16 | 0.06 | 0.11 | – | – | – | – |
| Weeks pregnant | – | – | – | – | – | – | – | – | – |
| Pregnancy complications | – | – | – | – | – | – | – | – | – |
| Recruit site | – | – | – | – | – | – | – | – | – |
| (0 = community; 1 = specialty) | | | | | | | | | |
| ASI physical concerns | – | – | – | – | – | – | – | – | – |
| ASI psychological concerns | – | – | – | – | – | – | – | – | – |
| ASI social concerns | – | – | – | – | – | – | – | – | – |
| STAI-T anxiety | – | – | – | – | – | – | – | – | – |
| W-DEQ fear of childbirth | – | – | – | – | – | – | – | – | – |
| Parity (0 = not first child; 1 = first child) | – | – | – | – | – | – | – | – | – |

* $p < 0.05$; ** $p < 0.001$. 

| Table II. Parity, anxiety sensitivity and trait anxiety as predictors of prenatal fear of childbirth. |
|---|---|---|---|---|---|
| Dependent variable | $\beta$ | $t$ | $p$ | $R^2$ | Adj$R^2$ | $\Delta R^2$ |
| Fear of childbirth | | | | | | |
| Step 1 | | | | | | |
| Expecting first child | 0.25 | 2.67 | 0.01 | 0.06 | 0.05 | 0.06 |
| Step 2 | | | | | | |
| Expecting first child | 0.27 | 3.23 | 0.00 | 0.29 | 0.26 | 0.23 |
| AS-physical concerns | 0.38 | 2.93 | 0.00 | | | |
| AS-psychological concerns | 0.17 | 1.48 | 0.14 | | | |
| AS-social concerns | –0.06 | –0.56 | 0.58 | | | |
| Step 3 | | | | | | |
| Expecting first child | 0.25 | 3.23 | 0.00 | 0.40 | 0.37 | 0.17 |
| AS-physical concerns | 0.25 | 2.01 | 0.04 | | | |
| AS-psychological concerns | 0.05 | 0.47 | 0.64 | | | |
| AS-social concerns | –0.13 | –1.28 | 0.20 | | | |
| STAI-trait | 0.44 | 4.45 | 0.00 | | | |
In examining the relationship between FOC and AS, it was found that considerable variance in FOC can be accounted for by whether a woman is expecting her first child, AS-physical concerns and trait anxiety. The findings confirm previous research demonstrating that expecting a first child is associated with higher levels of FOC [1,2,9,17] and that elevated trait anxiety may increase the likelihood that a woman will experience FOC [18,35]. However, this study refines earlier work by specifically examining AS. By taking AS into account, further variance in FOC was explained in addition to women’s parity and level of trait anxiety. This is particularly interesting in light of the expectancy model of fear [21], which suggests that AS is a fundamental fear that should be considered in understanding the development of other fears. However, the evidence suggests that AS should not replace consideration of trait anxiety in models that attempt to predict specific fears. With that said, the findings remain consistent with earlier research indicating that AS may be a risk factor for fearfulness [22], given that AS was a significant predictor of FOC, even after accounting for effects of trait anxiety.

Limitations

This study did not examine AS in the context of other variables (e.g., social support, socioeconomic status, fear of pain) that may be important in the development of FOC. Furthermore, data regarding obstetrical outcomes was not collected; thus it is not known whether women high in FOC requested a CS, if they were granted their delivery preference, or how these women with elevated FOC coped during their pregnancy, in childbirth or the post-natal period. Given that this is the first study that has sought to explore the relationship between AS and FOC directly, it remains for future research to develop and test more comprehensive models for understanding this fear. This study suggests, however, that AS-physical concerns should be included in such models given that it contributes to the prediction of FOC even when considered along with trait anxiety and parity of the mother.

A second and important limitation of this study was the use of the original ASI. This tool has well-established psychometric properties as a measure of AS [36], but the reliability of the social concerns scale, although acceptable, was nevertheless lower than other scales used in this study. Future research on this topic should assess AS using the ASI-3 [37] – a longer measure with higher internal consistencies for the three lower-order factors.

Clinical implications

It is important to note that not all fears of childbirth are irrational, and thus it is essential for clinicians who are working with mothers who appear to have FOC to conduct a careful physical and psychological examination. Particularly important during this assessment is to ensure that physical complaints are, indeed, a symptom of the fear or heightened sensitivity to normal physical sensations rather than a result of a pregnancy complication [11].

This appears exceptionally important, considering the current study’s results suggesting that AS predicts FOC primarily because of fear of physical symptoms, rather than fear of social consequences of anxiety symptoms (e.g., being embarrassed) or of psychological symptoms of anxiety (e.g., fear of going crazy or losing control). Thus, careful consideration and liaison between the treating obstetrician and psychologist or psychiatrist, is necessary when assessing FOC.

If FOC is found to be a problem after a thorough assessment is conducted, treatment of AS-physical concerns may prove to be beneficial. Previous research suggests that AS-physical concerns can be reduced successfully with exposure to physiological symptoms [38] – a technique referred to as ‘interoceptive exposure’ [39]. In addition, past research has shown that treating AS in a brief intervention involving a combination of psychoeducation, cognitive restructuring and interoceptive exposure is effective not only for reducing high AS levels, but also for lowering high AS women’s fear of pain [39]. It would be valuable for future research to explore whether similar methods may be helpful for reducing FOC, particularly for women with high scores on the AS-physical concerns subscale.

Ultimately, we hope that a better understanding of FOC will lead to enhanced treatment of this type of fear. There are multiple benefits that could potentially arise from treating FOC. Namely, successful treatment of FOC may allow women to make a decision about undergoing an elective CS with fears of childbirth having a diminished influence on their preference. Moreover, treatment of FOC has potential to result in increased satisfaction with delivery and may reduce the postnatal distress experienced by some women [11]. This, in turn, could positively impact the quality of life of mothers and their children and ultimately reduce the likelihood that more debilitating psychological disorders will develop.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

References

Current knowledge on this subject

- Fear of childbirth (FOC) is known to complicate the delivery process (e.g., increasing risk for caesarean section). Roughly 33% of women admit to being fearful of childbirth, with anxiety peaking during the last trimester. Between 11 and 14% of women present with severe FOC that can be highly disabling. Predictors of FOC are manifold. FOC differs among women who have previously given birth (parous) when compared with women who are expecting their first child (nulliparous). Specifically, nulliparous women report higher levels of FOC than parous women. Trait anxiety, or the relatively stable disposition to be anxious, also has been linked to FOC. Consequently, moderate to extreme FOC has been related to a number of anxiety disorders and phobias, including PTSD, blood phobia, animal phobia and agoraphobia without a history of panic disorder.

What this study adds

- To date, the relationship between anxiety sensitivity (AS) and FOC has not been examined. AS is the fear of anxiety-related bodily sensations (e.g., heart palpitations, dizziness) that result from beliefs that these sensations or anxiety experiences have harmful somatic, psychological or social consequences. In the current sample, severe FOC was present in ~9% of women, which is comparable to rates found by previous researchers using the W-DEQ. Furthermore, findings of the present study confirm previous research demonstrating that nulliparous women report higher levels of FOC than parous women and that trait anxiety may predispose a woman to experience FOC. However, this study refines earlier work by specifically examining AS in addition to trait anxiety. By taking AS into account, further variance in FOC was explained in addition to women’s parity and trait anxiety. This finding is important and specifically may suggest that, to effectively treat FOC, attention should be given to AS.