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Cluster Analysis of Fear of Childbirth, Anxiety, Depression, and Childbirth Self-Efficacy

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ABSTRACT

Objective: To identify clusters of women based on anxiety, depression, fear of birth, and childbirth self-efficacy and factors associated with the clusters.

Design: Cross-sectional survey.

Setting: Online in Sweden.

Participants: Pregnant women ($N = 1,419$).

Methods: We collected data through online questionnaires. We included scales to measure anxiety, depression, worries about and fear of birth, and self-efficacy in a kappa-means cluster analysis. We calculated odds ratios with 95% confidence intervals between clusters and background variables.

Results: We identified 4 clusters based on severity: *Resourceful–Robust*, *Resourceful–Fearful*, *Vulnerable–Fearful*, and *Fragile–Fearful*. Participants in the *Resourceful–Fearful* and *Vulnerable–Fearful* clusters were more likely to report mental health problems than those in the *Resourceful–Robust* cluster. Participants in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters were more likely to report mental health problems than those in the *Resourceful–Robust* cluster. Participants in the *Fragile–Fearful* cluster were more likely to be multiparous, report that their pregnancy was not normal, and prefer cesarean birth than those in the *Resourceful–Robust* cluster.

Conclusions: Women with childbirth fear may be vulnerable to anxiety and depression during the perinatal period, although the severity might vary. Self-efficacy might be a mediator against mental health problems. Findings demonstrated levels of severity, and the one-size-fits-all approach in Swedish health care may benefit from a more targeted approach for women with fear of childbirth.

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In a systematic review and meta-analysis, O'Connell et al. (2017) reported a 14% prevalence of fear of childbirth (FOC) worldwide among pregnant women (16% for nulliparous women and 12% for multiparous women). The content of the fear is multifaceted and includes physiologic, psychological, and social aspects related to labor and birth, including risks for the mother and child (Sheen & Slade, 2018), unbearable pain (Demšar et al., 2018; Dencker et al., 2019; Sheen & Slade, 2018), a lack of emotional capacity to experience childbirth (Dencker et al., 2019; Sheen & Slade, 2018), medical interventions including instrumental births, body changes during or after childbirth (Hamama-Raz et al., 2017; Sheen & Slade, 2018), personal health and safety (Sheen & Slade, 2018), and a lack of support from caregivers (Dencker et al., 2019; Sheen & Slade, 2018). Additionally, pregnant women who have fear of childbirth are more likely to have prolonged labor, obstetric complications, and more birth interventions (Dencker et al., 2019).

Fear of childbirth can also be related to long-term mental health consequences, including depression, anxiety, posttraumatic stress disorder, and mother–infant bonding disturbances (Dencker et al., 2019; Grundström et al., 2022). As such, comorbidity is common, and women with FOC are more likely to experience mental health problems (Hildingsson & Rubertsson, 2022; Lilliecreutz et al., 2021; Rondung et al., 2018; Wikman et al., 2020). In a study conducted in the United Kingdom, Nath et al. (2021) found that 27% of

(Continued)

women with severe fear of birth experienced depression and that 24% experienced anxiety. This relationship existed in women with previous (Rouhe et al., 2011) and current (Andersson et al., 2003) mental health problems. Several initiatives to help women overcome FOC show that nonpharmacologic treatments such as psychoeducation, cognitive behavioral therapy, group discussions, or art therapy may reduce FOC to some extent but have limited effect on women's mental health (O'Connell et al., 2021). Therefore, finding ways for pregnant women to overcome their mental health issues can have important and long-term effects on their well-being and early transition to motherhood.

Research on FOC is growing despite the lack of a standard definition. Areskog et al. (1981, p. 265) defined FOC as "a strong anxiety which had impaired their [the women's] daily functioning and wellbeing."

Zar et al. (2002, pp. 122–130) concluded that FOC is a "specific psychological domain at the end of a continuum." In a classic study, Hofberg & Brockington (2000, p. 83) called FOC "tokophobia," which is an intense anxiety condition in which childbirth is avoided. Other researchers suggested that FOC should be classified as a type of anxiety because of its long-lasting distress toward a future threat (Rondung et al., 2016). Sometimes FOC is defined using screening tools, such as the Fear of Birth Scale (FOBS; Haines et al., 2011; Hildingsson et al., 2017). Furthermore, FOC can be divided into two types: primary and secondary. Primary FOC occurs in women who have not previously given birth, whereas secondary FOC occurs in women who have given birth, often in relation to a previous negative and/or traumatic birth experience (Swedish Society of Obstetrics & Gynecology [SFOG], 2017).

Fear of childbirth has been categorized from mild to phobic (SFOG, 2017). In Sweden, midwives are recommended to approach women with questions about their feelings toward the forthcoming birth, and in some regions, women are screened for FOC. However, in the guidelines written by the SFOG (2017), what constitutes a mild, moderate, or severe FOC is not described. Instead, this determination is usually up to the antenatal midwife, followed by referral to a counseling clinic or a psychologist for those with severe FOC. It is estimated that FOC affects around 20% of pregnant women in Sweden (SFOG, 2016).

Fear of childbirth is associated with anxiety and symptoms of depression, but the mediating effect of self-efficacy is largely unexplored.

Self-efficacy is defined as a person's belief in their ability to control their functioning and events that affect their lives (Bandura, 1977), including cognitive, emotional, and behavioral components that are interrelated and affect each other. Self-efficacy is a potent predictor of behavior (Bandura, 2004) and therefore theoretically might serve as a mediator or moderator against stress. This means that self-efficacy is important to how people think, feel, and motivate themselves, which can affect their choices and behaviors (Bandura, 2004). Childbirth self-efficacy relates to pregnant women's perceptions of their cognitive readiness to manage labor and birth (Lowe, 2000). Findings from research on pregnant women with FOC showed that self-efficacy affected their coping abilities and experiences of childbirth: women with low self-efficacy experienced more FOC, more fear of pain during birth, and more fear of losing control during birth than women with high self-efficacy (Lowe, 2000). Similarly, a lower efficacy expectancy (e.g., lower confidence in own capability to perform helpful behaviors during birth) was associated with greater FOC (Lowe, 2000; Salomonsson et al., 2013a).

Researchers have demonstrated an association between FOC and mental health and identified that a large number of women with FOC also experience mental health problems, such as anxiety and depression (Hildingsson & Rubertsson, 2022; Lilliecreutz et al., 2021; Rondung et al., 2018; Wikman et al., 2020). Self-efficacy is less often studied in the context of FOC but might mediate the relationship between anxiety and depression and FOB; however, there is limited understanding about the relationships between these variables. The aim of the study was to identify clusters of participants based on anxiety, depression, fear of birth, and childbirth self-efficacy as well as factors associated with the clusters.

Methods

Design

We conducted a cross-sectional study using an online survey. This study is part of a larger project

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aimed at developing a support program for parents facing FOC. We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for observational studies. The study was approved by the regional ethical board (Dnr 2021-03759).

Setting

Antenatal care in Sweden is provided in outpatient clinics in the primary health sector, and midwives are the primary caregivers. The uptake of antenatal care is almost 100%. During an uncomplicated pregnancy, eight to nine visits to the midwife are recommended (SFOG, 2016). The midwife consults an obstetrician in case of complications. Almost all births occur in hospital-based labor wards in which midwives are independently responsible for uncomplicated births and work in collaboration with obstetricians when complications arise. Pregnant women with severe FOC are offered counseling for FOC in all Swedish hospitals with specially trained midwives whom they meet on two to four occasions (Larsson et al., 2016). When other mental health problems are present, a referral to a psychologist is recommended.

Participants

Women were eligible to participate if they were 18 years or older, living in Sweden, and could complete the questionnaire in Swedish or English.

Data Collection

We conducted the study in six different hospitals in five different regions in Sweden from February 2022 to September 2022. Information about the study was available on posters and folders at the ultrasound clinics where most women undergo routine screening in midpregnancy. Folders were also available at the counselling clinics (for fear of birth). Information about the study was also available on social media (Facebook and Instagram) through targeted paid advertisements. The advertisements were targeted at women with FOC. Women were informed that their participation was voluntary and that their answers were anonymous, and they consented online before filling out the questionnaire. Women who were interested in participating were directed to a Web page where a description of the study was provided together with a QR code linked to the online questionnaire. Participants consented to the online questionnaire when entering the Web platform, which was distributed through Research Electronic Data Capture (REDCap), hosted at Uppsala University. REDCap is a secure, Web-based software platform designed to support data capture for research studies (Harris et al., 2009, 2019).

Measures

The survey included items related to sociodemographic, obstetric, and mental health characteristics and violence. The sociodemographic items included age (19–30, 31–35, 36–53 years), civil status (living vs. not living with a partner), country of birth (Sweden vs. other), residential area (city, lager community, smaller village), and level of education (high school or lower vs. university). The obstetric items included parity (no previous children, have children); obstetric history (live birth, stillbirth, miscarriage, abortion); and current pregnancy, including gestational weeks (≤18, 19–36, ≥37), status (normal vs. not normal), and preferred mode of birth (vaginal, cesarean birth, don't know). The mental health items included self-reported previous and current mental health problems, such as previous or current depression, anxiety, generalized anxiety, eating disorder, obsessive–compulsive disorder, posttraumatic stress symptoms, and posttraumatic stress disorder. Any of these conditions was considered a mental health problem.

The violence items included previous or current exposure to violence. Further questions about types of violence were included (emotional, physical, sexual, material, and financial). Any of these conditions were considered as an exposure to violence.

Fear of Birth

We assessed FOC using the FOBS (Haines et al., 2011; Hildingsson et al., 2017). The FOBS consists of two 100-mm visual analog scales. When completing the scales, study participants were asked to respond to the question, "How do you feel right now about the approaching birth?" and were instructed to place a mark on the two scales that had anchors *calm/worried* and *no fear/strong fear.* The Cronbach's alpha value of the two items was .92. We also asked about women's self-rated fear of birth. The question was worded, "Do you experience fear of childbirth right now?" with a 4-point Likert scale from 1 = *yes, to a very large extent* to 4 = *no, not at all*. For the analysis, we categorized responses into 1 = *yes, to a very large extent* and *to a large extent* and 0 = *to a small extent* and *not at all.*

Maternal Mental Health

The Hospital Anxiety and Depression Scale (HADS) is a self-report questionnaire that is used

Table 1: Participant Characteristics (N = 1,419)

Characteristics	*n* (%)
Age, years	
19–30	306 (21.8)
31–35	660 (47.1)
36–53	436 (31.1)
Civil status	
Living with a partner	1,350 (95.3)
Not living with a partner	67 (4.7)
Country of birth	
Sweden	1278 (90.1)
Other country	141 (9.9)
Level of education	
High school or lower	245 (17.3)
University education	1,171 (82.7)
Residential area	
City	970 (68.5)
Larger community	239 (16.9)
Smaller village	208 (14.7)
Obstetric history[a]	
Previous live birth	699 (49.3)
Previous stillbirth	17 (1.2)
Previous miscarriage	332 (23.4)
Previous abortion	297 (20.9)
Currently pregnant	
Yes	1,095 (77.3)
No	322 (22.7)
Gestational age, weeks	
≤18	263 (24.7)
19–36	591 (55.5)
>37	210 (19.7)
Status of current pregnancy	
Normal	959 (89.6)
Not normal	111 (10.4)
Self-reported fear of birth	
To a very large extent/large extent	595 (49.5)
Moderate/small/not at all	607 (50.5)
Preferred mode of birth	
Vaginal	732 (68.6)
Cesarean	179 (16.8)
Don't know	156 (14.6)
Previous mental health problems	
Yes	702 (56.5)
No	540 (43.5)
Current mental health problems	
Yes	382 (30.8)
No	858 (69.2)
Violence exposure	
Yes	220 (17.8)
No	1,016 (82.2)

Note. All calculations are based on valid percentages for each category, not in the total number of participants.
[a]Multiparous participants only.

to detect current mental health problems in community samples (Zigmond & Snaith, 1983), including pregnant women. The HADS consists of 14 items: 7 are used to assess anxiety, and 7 are used to assess depression. Some examples from the questionnaire include "Worrying thoughts are coming" (anxiety) and "I still appreciate the same things as before" (depression). Each subscale was kept on a continuous scale in the present study. Each item has a 4-point Likert scale that ranged from 0 = *no mental health problems* to 3 = *high mental health problems*. The current study showed high internal consistency, and the Cronbach's alpha value was .87.

Childbirth Self-Efficacy

We measured self-efficacy using the six-item short form (Romppel et al., 2013) of the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). We modified some of the questions slightly for the purpose of the study by adding the words "during labor and birth." One example was, "Thanks to my resourcefulness, I know how to handle unforeseen situations." The response alternatives on the 4-point Likert scales ranged from 1 = *totally disagree* to 4 = *totally agree*, and higher scores indicated greater self-efficacy. The Cronbach's alpha was .85.

Analysis

We used descriptive statistics to describe participants' background characteristics. We calculated the mean, standard deviation, and range for

Interventions to reduce fear of childbirth and improve maternal mental health may not always be clinically meaningful.

the HADS–Anxiety, HADS–Depression, FOBS–Worries, FOBS–Fear, and Self-Efficacy scales. The scales were transformed into *z* scores. Thereafter, we conducted a kappa-means cluster analysis, a method to identify groups in data (Landau & Chis Ster, 2010). Data are grouped based on similarities, and the goal is to gain homogeneity within clusters and heterogeneity between clusters (Hair et al., 2006). We examined two-, three-, and four-cluster solutions, and the four-cluster solution provided the most affordable and interpretable description. We labeled each cluster according to the grouping and direction of its items. First, we used analysis of variance to detect differences in mean values between the clusters. We thereafter calculated odds ratios with 95% confidence intervals (CIs) between the clusters and the explanatory variables (demographic, pregnancy related, and mental health related). We used the *Resourceful–Robust* cluster as the reference category.

Results

A total of 1,419 participants completed the survey. Most were 31 to 35 years of age, lived with partners, and were born in Sweden. Half of the participants were multiparous. Most had university educations and lived in a city. More than one in five participants had a previous miscarriage or a previous abortion. Of the participants with previous pregnancies, 44% reported high levels of fear during a previous pregnancy. Most multiparous participants gave birth vaginally in the past and experienced the most recent birth as positive or with mixed feelings. More than three fourths of participants were currently pregnant. Nearly half of the women self-reported elevated levels of fear in the current pregnancy (see Table 1). Most self-reported histories of previous mental health problems, and anxiety and depression were most prevalent. Almost one third of participants reported current mental health problems. Exposure to violence was reported by nearly 18%. Emotional violence occurred most frequently, followed by physical, sexual, material, and financial violence.

We noted a few differences between primiparous and multiparous women. Multiparous participants were more likely to be older ($p < .001$) and less likely to live in a city ($p < .001$) and to be pregnant ($p < .001$). They more often self-reported fear of birth ($p = .002$) and previous mental health problems ($p = .008$) compared to primiparous participants.

We identified four distinct clusters in the cluster analysis (see Figure 1). Only those who completed all items in all scales were included in the cluster analysis. The first cluster, *Resourceful–Robust* ($n = 138$), was characterized by low levels of anxiety, symptoms of depression, worries, and fear of birth and high levels of self-efficacy. The second cluster, *Resourceful–Fearful* ($n = 250$), was characterized by low levels of anxiety and symptoms of depression and moderate levels of worries, fear, and self-efficacy. The third cluster, *Vulnerable-Fearful* ($n = 222$), was characterized by high levels of worry and fear, some anxiety and depression, and low self-efficacy. The fourth cluster, *Fragile–Fearful* ($n = 168$), was characterized by high levels of anxiety, symptoms of depression, worries, and fear of birth and low self-efficacy. We found the highest levels of anxiety, symptoms of depression, worries, and fear of birth and the lowest levels of self-efficacy in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters. We found no statistically significant differences in any of the clusters based on the demographic variables. Table 2 shows that the clusters differed statistically in all scales measuring anxiety, fear of childbirth, and self-efficacy.

We found differences in the pregnancy-related and mental health variables among clusters (see Table 3). Participants in the *Resourceful–Fearful* cluster were more likely to report current mental health problems (*OR* = 2.17, 95% CI [1.19, 3.96]) compared to those in the *Resourceful–Robust* cluster. Participants in the *Vulnerable–Fearful* cluster were less likely to be in late pregnancy (*OR* = 0.47, 95% CI [0.23, 0.40]) and were less likely to report their pregnancies as being normal (*OR* = 0.38, 95% CI [0.15, 0.98]) compared to those in the *Resourceful–Robust* cluster. Participants in the *Vulnerable–Fearful* cluster had greater odds of preferring cesarean birth (*OR* = 9.84, 95% CI [4.72, 21.68]) and were more likely to present with current mental health problems (*OR* = 4.29, 95% CI [2.38,7.74]) compared to those in the *Resourceful–Robust* cluster. Participants in the *Fragile–Fearful* cluster were more likely to be multiparous (*OR* = 1.70, 95% CI [1.07, 2.68]), less likely to report their pregnancies as being normal (*OR* = 0.26. 95% CI [0.10, 0.67]) or not being pregnant (*OR* = 0.38,

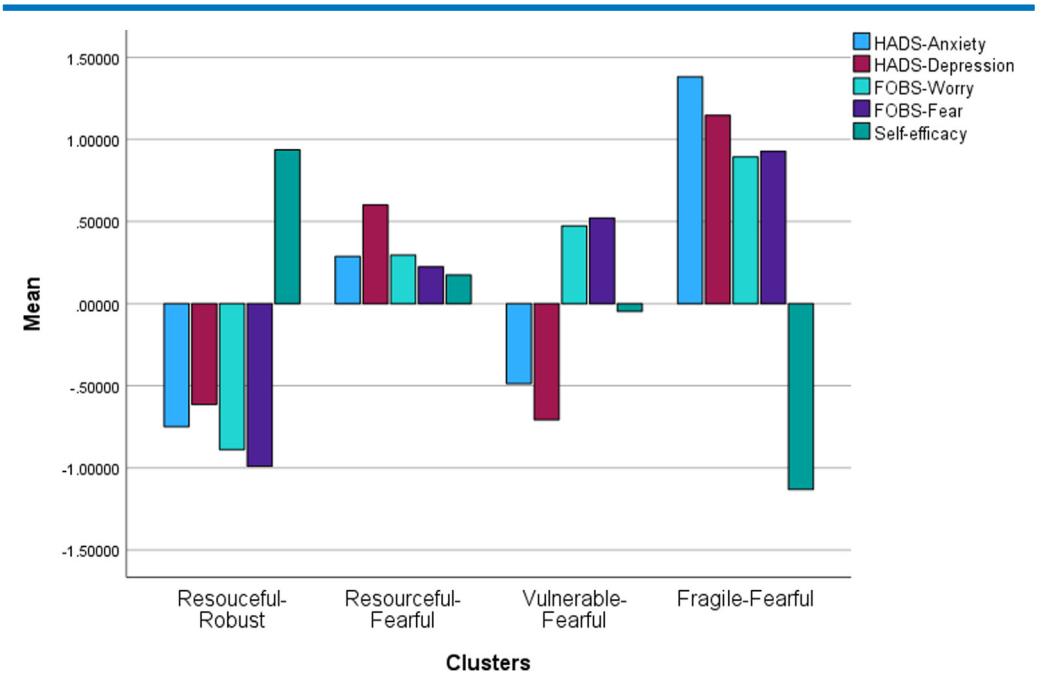

Figure 1. Clusters based on anxiety, depression, worry and fear of birth, and self-efficacy, with *z*-transformed mean scale scores. FOBS = Fear of Birth Scale; HADS = Hospital Anxiety and Depression Scale.

95% CI [0.20, 0.78]), more likely to prefer cesarean birth (*OR* = 6.57, 95% CI [2.89, 14.90]), and more likely to report current mental health problems (*OR* = 18.51, 95% CI [9.97, 34.36]) than those in the *Resourceful–Robust* cluster.

Discussion

Among the four distinct clusters identified, self-reported mental health problems, pregnancies perceived as not normal, and a preference for caesarean birth were common in participants in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters. Comorbidity between FOC and mental health problems was frequently reported, and self-reported mental health problems occurred in all clusters with elevated levels of FOC. Our finding aligns with previous studies in which researchers found that comorbidity was common in women with FOB (Hildingsson & Rubertsson, 2022; Lilliecreutz et al., 2021; Rondung et al., 2018; Wikman et al., 2020). The World Health Organization (2022) has emphasized the urgent need for evidence-based mental health support with early identification and management of maternal mental health problems. Therefore, we looked at categories of women to try to determine which group(s) had more negative experiences and whether self-efficacy was protective against FOC.

Midwives have shown interest in providing perinatal mental health support to pregnant women but reported that they lacked confidence, knowledge, and training (Coates & Foureur, 2019; McCauley et al., 2011). In a synthesis of 30 studies, Coates & Foureur (2019) found that a key barrier to delivering mental health care was lack of access to training and education for midwives, which resulted in limited mental health skills. In addition to a lack of competence and confidence, midwives reported a range of organizational barriers that hindered their ability to incorporate mental health care into practice, such as heavy workload, lack of time, lack of privacy, lack of continuity of care, and priority conflicts within organizations (Coates & Foureur, 2019). Despite a recognition of the significance of perinatal mental health, women often do not receive proper care. Responsibility issues have also been reported as an obstacle, because it might be unclear if maternity care or mental health care services are responsible (Howarth & Swain, 2019).

Participants in the *Resourceful–Fearful* cluster differed only on one variable compared to those in the *Resourceful–Robust* cluster: participants in the prior cluster more often reported current mental health problems. It is possible that participants in the *Resourceful–Fearful* cluster might

Interventions that address childbirth fear may be more effective if tailored to severity.

be able to manage their fear of birth because of a high self-efficacy with or without current mental health problems. The concept of self-efficacy includes self-regulation, self-care, self-monitoring, and self-management, and it has been explained as a predictor of health behavior change and health maintenance (Bandura, 1977). High self-efficacy has been shown to serve as a mediator against stressors such as mood disorders, anxiety, symptoms of depression, and FOC (Lowe, 2000; Salomonsson et al., 2013b; Schwartz et al., 2015).

We found major differences among the *Resourceful–Robust* cluster compared to the *Vulnerable–Fearful* and *Fragile–Fearful* clusters. Participants in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters, characterized with low self-efficacy and elevated levels of fear and worry, anxiety, and symptoms of depression, were six and nine times more likely to prefer cesarean birth, respectively. Schwartz et al. (2015) reported similar findings in that women with low childbirth self-efficacy were more likely to prefer elective cesareans. In addition, Shorey & Lopez (2021) reported that women with low self-efficacy needed a greater dosage of analgesics during childbirth.

Several attempts have been made to increase women's self-efficacy during childbirth. Demirci et al. (2023) found, in a systematic review and meta-analysis, that the content of prenatal education, including coping strategies regarding physiologic and psychological changes related to childbirth, positively affected outcome expectancy (which refers to a belief that a particular behavior could help women cope during labor) and efficacy expectancy (confidence in the ability to use the coping strategy). In addition, in a metasynthesis, Miyauchi et al. (2022) described that pregnant women who had mentally and physically prepared for childbirth by taking antenatal classes were more likely to be better able to cope with childbirth when they had learned what to expect of the birthing process.

Table 2: Summary of Scale Results by Cluster (n = 778)

	Cluster				
Scale	*Resourceful–Robust*	*Resourceful–Fearful*	*Vulnerable–Fearful*	*Fragile–Fearful*	*p*
n	138	250	222	168	
HADS–Anxiety					
M (*SD*)	5.42 (2.57)	6.38 (2.41)	8.33 (2.41)	14.03 (2.96)	
Range	1–13	1–13	2–15	5–21	.001
HADS–Depression					
M (*SD*)	3.62 (2.90)	4.34 (2.94)	5.30 (2.90)	11.40 (3.22)	
Min–Max	0–11	0–13	0–12	5–21	.001
FOBS–Worries					
M (*SD*)	37.55 (18.32)	73.33 (12.41)	85.73 (12.17)	89.92 (11.50)	
Min–Max	0–84	25–100	45–100	41–100	.001
FOBS–Fear					
M (*SD*)	27.81 (15.53)	66.73 (14.58)	82.40 (14.38)	85.84 (17.54)	
Min–Max	0–72	0–100	27–100	6–100	.001
Self-Efficacy					
M (*SD*)	18.05 (3.21)	16.92 (2.09)	12.53 (2.54)	11.82 (3.58)	
Min–Max	7–24	12–24	6–18	3–23	.001

Note. FOBS = Fear of Birth Scale; HADS = Hospital Anxiety and Depression Scale; Max = maximum; Min = minimum.

Table 3: Obstetric, Mental Health, and Violence Variables by Cluster ($n = 778$)

	Cluster, *n* (%)						
	A	B	C	D			
Variable	*Resourceful–Robust*	*Resourceful–Fearful*	*Vulnerable–Fearful*	*Fragile–Fearful*	B vs. A, *OR* [95% CI]	C vs. A, *OR* [95% CI]	D vs. A, *OR* [95% CI]
n	138	250	222	168			
Parity							
No previous children	83 (60.1)	142 (56.8)	110 (49.5)	79 (47.0)	Reference	Reference	Reference
Have children	55 (39.9)	108 (43.2)	112 (50.5)	89 (53.0)	1.14 [0.75, 1.75]	1.53 [0.99, 2.36]	1.70 [1.07, 2.68]*
Previous miscarriage							
Yes	33 (23.9)	72 (28.8)	53 (23.9)	41 (24.4)	1.28 [0.79, 2.07]	0.99 [0.60, 1.64]	1.02 [0.60, 1.73]
No	105 (76.1)	178 (71.2)	169 (76.1)	127 (75.6)	Reference	Reference	Reference
Previous abortion							
Yes	25 (18.1)	62 (24.8)	56 (25.2)	39 (23.2)	1.49 [0.88, 2.50]	1.52 [0.89, 2.58]	1.36 [0.77, 2.39]
No	113 (81.9)	188 (75.2)	166 (74.8)	129 (76.8)	Reference	Reference	Reference
Currently pregnant							
Yes	124 (89.9)	232 (92.8)	189 (85.1)	130 (77.4)	1.45 [0.70, 3.02]	0.64 [0.33, 1.25]	0.38 [0.20, 0.78]*
No	14 (10.1)	18 (7.2)	33 (14.9)	38 (22.6)	Reference	Reference	Reference
Gestational week							
<18	25 (20.2)	51 (22.1)	48 (25.7)	25 (19.4)	Reference	Reference	Reference
19–36	67 (54.0)	140 (60.6)	110 (58.8)	71 (55.0)	1.02 [0.58, 1.79]	0.85 [0.48, 1.51]	1.06 [0.55, 2.02]
>37	32 (25.8)	40 (17.3)	29 (15.5)	33 (25.6)	0.61 [0.31, 1.19]	0.47 [0.23, 0.04]*	1.03 [0.49, 2.15]
Status of current pregnancy							
Normal	118 (95.2)	210 (90.5)	167 (88.4)	109 (83.8)	0.48 [0.19, 1.23]	0.38 [0.15, 0.98]*	0.26 [0.10, 0.67]**
Not normal	6 (4.8)	22 (9.5)	22 (11.6)	21 (16.2)	Reference	Reference	Reference
Birth preference							
Vaginal birth	108 (93.1)	167 (88.8)	85 (57.8)	76 (67.3)	Reference	Reference	Reference
Cesarean birth	8 (6.9)	21 (11.2)	62 (42.2)	37 (32.7)	1.69 [0.72, 3.97]	9.84 [4.72, 21.68]**	6.57 [2.89, 14.90]*
Previous mental health problems							
Yes	78 (56.5)	130 (52.0)	148 (66.7)	109 (64.9)	0.83 [0.54, 1.26]	1.53 [0.99, 2.38]	1.42 [0.89, 2.25]
No	60 (43.5)	120 (48.0)	74 (33.3)	59 (35.1)	Reference	Reference	Reference

(Continued)

Table 3: Continued

Variable	Cluster, *n* (%) A *Resourceful–Robust*	B *Resourceful–Fearful*	C *Vulnerable–Fearful*	D *Fragile–Fearful*	B vs. A, *OR* [95% CI]	C vs. A, *OR* [95% CI]	D vs. A, *OR* [95% CI]
Current mental health problems							
Yes	16 (11.6)	55 (22.2)	80 (36.0)	119 (70.8)	2.17 [1.19, 3.96]*	4.29 [2.38, 7.74]**	18.51 [9.97, 34.36]**
No	122 (88.4)	193 (77.8)	142 (64.0)	49 (29.2)	Reference	Reference	Reference
Exposed to violence							
Yes	17 (12.4)	47 (18.8)	44 (19.8)	34 (20.4)	1.63 [0.98, 2.97]	1.75 [0.95, 3.19]	1.80 [0.95, 3.39]
No	120 (87.6)	203 (81.2)	178 (80.2)	133 (79.6)	Reference	Reference	Reference

Note. Some calculation are based on answers in each category, not the total sample because not all participants were pregnant.
*$p < .01$. **$p < .001$.

In Sweden, all primiparous women and, in some regions, multiparous women are offered parent education classes during antenatal care, with preparation for birth and parenthood, although the content and the focus of the classes might differ among clinics (Shorey et al., 2022). Despite the large number of antenatal visits during pregnancy and the parent education classes offered, 12% to 20% of women in Sweden still have FOC (Hildingsson et al., 2017; O'Connell et al., 2017), suggesting that a novel approach is needed for this group of women.

Multiparous participants in this study were more likely to belong to the *Fragile–Fearful* cluster compared to primiparous participants, which suggests that participants who have given birth before might be more affected by severity of FOC. We do not know the reason behind this but suspect it is related to a previous negative birth experience, which is a major reason for FOC (Dencker et al., 2019). Primiparous women, on the other hand, might fear the unknown that a birth entails, which is also a commonly reported reason behind FOC (Dencker et al., 2019). Some researchers argued that parity is a weak predictor of FOC (Rondung et al., 2018), but others found that primiparous women reported more severe fear of childbirth and lower self-efficacy than multiparous women (Shakarami et al., 2021).

Pregnant participants in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters were less likely to report that their pregnancies were normal. Because the data were self-reported, we do not know if these women had more complicated pregnancies. However, in a recent metasynthesis, Johansson et al. (2023) showed that women who preferred cesarean birth could develop their own rationales for medical indications, even if this was not the health care provider's view.

We found varying degrees of severity concerning mental health problems and fear of birth, as evidenced by the cluster analysis. Internationally, there have been several attempts to treat women with FOC. Antenatal support programs for pregnant women with FOC have reported an increase in childbirth self-efficacy (Calpbinici & Özçirpan, 2023; Demirci et al., 2023; Miyauchi et al., 2022; Striebich et al., 2018; Toohill et al., 2014) and a reduction in fear (Calpbinici & Özçirpan, 2023; Striebich et al., 2018; Toohill et al., 2014). Such support programs included psychoeducation through telephone counseling, which was effective in reducing severe FOC and increasing childbirth confidence (Toohill et al., 2014). Another program was based on motivational interviews, and researchers reported a reduction in FOC and increased childbirth self-efficacy (Calpbinici & Özçirpan, 2023).

Limitations

This study is compromised by the observational design, the self-selection of participants, and the underrepresentation of foreign-born participants

and those without computer access. Recruitment through hospitals and social media might have affected the participation rate. Another important notion is that we targeted women with FOC to join the study, which means that it was never meant to be a representative sample. One important ethical issue is the use of the terms *vulnerable* or *fragile* because these terms may imply that participants in these clusters are responsible for their fear. This was not the intention; rather, we meant to show groups with different characteristics related to FOC and mental health issues.

Implications

The current approach in Sweden with hospital-based counseling for women with FOC might not be appropriate for all. The findings indicate a need for a more targeted treatment based on levels of worry and fear, mental health problems, and women's level of self-efficacy. Through early detection, women with FOC with additional support needs can be referred to the right level of care. Maternity psychosocial care should be equal, safe, effective, and delivered with high quality (World Health Organization, 2022). In 2020, approximately 10% of all pregnant women in Sweden received supportive counseling related to FOC. However, there are large discrepancies in who accesses this support, with pregnant women with previous children, those with a high level of education, and those of Swedish origin being more likely to receive additional support (National Board of Health and Welfare, 2022). In the present study, around half of the women self-reported FOC. This is greater than previously reported. One explanation might be the differences in definitions and measurements previously noted (SFOG, 2017). Future research should focus on targeted support and treatment based on women's levels of fear, their mental health, and their own resources.

Conclusions

Women with FOC may be fragile and vulnerable to anxiety and depression during the perinatal period, although the severity of fear and mental health might vary, and self-efficacy might be a mediator against fear and mental health problems. Participants in the *Vulnerable–Fearful* and *Fragile–Fearful* clusters were six to nine times more likely to prefer cesarean and 4 to 18 times more likely to report current mental health problems. Our findings demonstrate that there are levels of severity, and probably the one-size-fits-all approach in Swedish health care would benefit from a more selective strategy that offers targeted support.

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CONFLICT OF INTEREST

The authors report no conflicts of interest or relevant financial relationships.

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