

Fear of childbirth and risk of cesarean section: a cohort study in six European countries

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ABSTRACT: Background: Few studies have examined mode of birth among women with fear of childbirth, and the results are conflicting. The objective of this study was to assess the association between fear of childbirth and cesarean section in North European women. **Methods:** A longitudinal cohort study was conducted of 6,422 unselected pregnant women from Belgium, Iceland, Denmark, Estonia, Norway, and Sweden. Fear of childbirth was measured by the Wijma Delivery Expectancy Questionnaire during pregnancy and linked to obstetric information from hospital records. **Results:** Among 3,189 primiparous women, those reporting severe fear of childbirth were more likely to give birth by elective cesarean, Odds Ratio (OR) 1.66 (1.05–2.61). Among 3,233 multiparous women, severe fear of childbirth increased the risk of elective cesarean, OR 1.87 (1.30–2.69). Reporting lack of positive anticipation, one of six dimensions of fear of childbirth, was most strongly associated with elective cesarean, OR 2.02 (1.52–2.68). A dose-effect pattern was observed between level of fear and risk of emergency cesarean in both primiparous and multiparous women. Indications for cesarean were more likely to be reported as ‘non-medical’ among those with severe fear of childbirth; 16.7% vs 4.6% in primiparous women, and 31.7% vs 17.5% in multiparous women. **Conclusion:** Having severe fear of childbirth increases the risk of elective cesarean, especially among multiparous women. Lack of positive anticipation of the upcoming childbirth seems to be an important dimension of fear associated with cesarean. Counseling for women who do not look forward to vaginal birth should be further evaluated.

Keywords: fear of childbirth, multi-country, cesarean section, Bidens

Introduction

Fear of childbirth is a specific fear in anticipation of a future birth, ranging from inconsequential to very intense. Having severe fear of childbirth has been defined as avoiding becoming pregnant or giving birth or the fear disrupting normal routines or activities (1). Fear of childbirth may, either directly through a request for cesarean section (2) or indirectly through physiological and psychological mechanisms (3), be associated with both elective and emergency cesarean.

Few studies have examined mode of birth among women with fear of childbirth, and the results are conflicting (3-6). The pattern of cesarean section differs between primiparous and multiparous women, and the potential risk of both elective and emergency cesarean among multiparous women is likely to be affected by the mode and experience of previous births (7, 8). Hence the pattern of associations between fear of childbirth and cesarean section is likely to interact with parity.

There has been a continual rise in cesarean section rates (9), and the proportion of deliveries by cesarean (10) and the inclination to perform elective cesarean at maternal request vary among countries. The past decade has seen a rise in services that treat fear of childbirth in order to offer support and, if possible, prepare for vaginal birth. Treatment of fear of childbirth was demonstrated by one randomized study to reduce the cesarean section rate (11). However, even with treatment, the rate of cesarean has been shown to be higher than among the general population (12). In Sweden and Norway, counseling was available at most obstetrical units. Other countries, such as Belgium and Estonia, did not routinely acknowledge maternal request as an indication for cesarean and offered no services for dealing with fear of childbirth at the time of the study. We wanted to explore the impact of fear of childbirth on the cesarean section rate in countries that engage in varying practices.

Studies have not addressed whether the risk of cesarean section increases with severity of fear of childbirth. Nor has the importance of the nature of the fear, such as concern for infant health or anticipation of capacity to give birth, been studied. The Wijma Delivery Expectancy/Experience

Questionnaire (W-DEQ) (13) enables classification of severity of fear of childbirth and assessment of various dimensions of fear.

The aim of the present study was to assess the risk of having fear of childbirth and its association with giving birth by elective or emergency cesarean section among primiparous and multiparous women in six European countries.

Methods

The Bidens study was the result of an EU-funded collaborative project between the Norwegian University of Science and Technology and partners from universities and hospitals in six European countries (Belgium, Iceland, Denmark, Estonia, Norway, and Sweden), which participated in a cohort study of unselected pregnant women. A detailed description of the study sites and participants has been published previously (14).

Recruitment took place between March 2008 and August 2010 at mean gestational age of 24 weeks. Variation occurred due to country-specific healthcare structures, as well as the requirements of the various ethical committees. All women included in the study consented, completed a questionnaire and allowed collection of data concerning childbirth. Belgian, Estonian and Swedish women were approached during antenatal care and generally filled out the questionnaire onsite. Danish, Icelandic and Norwegian women were given information about the study at ultrasound screening and received the questionnaire by post later on. The response rate varied from 50% in Norway to 90% in Estonia.

A total of 7,200 pregnant women were recruited. The population size was determined by the primary aim of the Bidens cohort study, which was to assess the association between emotional, physical and sexual abuse and mode of birth (14). We excluded 216 women who failed to answer seven or more of the 33 questions about fear on the W-DEQ, 114 women who lacked information about parity, 162 women who were expecting twins and 286 women whose mode of birth had not been reported. Of the 6,422 remaining women, 786 were from Belgium, 575 from Iceland, 1,203 from Denmark, 811 from Estonia, 2,154 from Norway and 893 from Sweden. The informational letter

included instructions about whom to contact as needed. Formal approval by the local ethical committee was obtained at each site (14). All women had to have sufficient local language skills to fill out the questionnaire. Estonian women could fill it out in either Estonian or Russian. Belgian, Icelandic and Danish women younger than 18 years were excluded. Only Danish women from the local geographic area were invited. Icelandic, Danish and Norwegian women with major fetal pathology were excluded.

The questionnaire included socioeconomic information and several validated self-assessment scales. Fear of childbirth was assessed by the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ), Version A (13). The W-DEQ is a 6-point, 33-item self-assessment rating scale for a minimum score of 0 and a maximum of 165. It has been used extensively in various countries and demonstrated good validity. Principal component analysis has previously been performed, resulting in four to six different factors (4,15,16). An exploratory factor analysis of the data from the present study resulted in six dimensions of fear of childbirth: lack of self-efficacy, loneliness, negative appraisal, lack of positive anticipation, fear, and fear for the child (17).

Depression was assessed by the 5-item version of the Edinburg Depression Scale (EDS-5) (18). The EDS-5 is a 4-point scale, for a minimum score of 0 and a maximum of 15. It has shown good psychometric properties and may replace the full EDS scale for some scientific purposes (18).

Birth outcome data were collected from electronic patient charts.

Variables

Main exposure

Fear of childbirth, defined as severe (clinical) fear of childbirth at a W-DEQ score of 85 or greater (1) (dichotomous), and as high level of fear (scores in the fourth quartile), moderate level of fear (scores in the second and third quartile), and low level of fear (scores in the first quartile) (19) (ordinal).

Co-variables

Education was coded at three levels: primary school (9 years), secondary school (fewer than 13 years), and post-secondary school (university or college). Marital status was coded as married/cohabiting, single or other. Smoking daily was coded as yes (now) or no (not now). Moderate depression (depressive symptoms) was coded as a score of 7 or greater on the 5-item EDS. Previous cesarean was coded as at least one cesarean and no vaginal deliveries. Preferred mode of birth was assessed by one question with four alternatives. Respondents who indicated that they either definitely or probably wanted a cesarean were classified as preferring cesarean section. A negative or mostly negative experience during the first or most recent birth was coded as a negative experience; a negative or mostly negative experience of the first birth and a positive or mostly positive experience of the most recent birth was coded as a positive experience.

Birth weight was coded as less than 2,500 grams, 2500-4499 grams and greater than or equal to 4,500 grams.

Outcome variable

Cesarean section was coded as either elective or emergency. A cesarean was defined as elective if it had been planned prior to labor (even if performed on an acute basis). A cesarean that was decided on or initiated after onset of labor was classified as emergency. The comparison group was vaginal (including instrumental) births. Indications for cesarean included fetal distress, dystocia, breech presentation, maternal exhaustion, maternal request, psychosocial factors, other obstetric factors and unknown. Cesarean section was defined as non-medically indicated when ‘maternal request’ or ‘psychosocial factors’ were reported. More than one indication could be given.

Statistical analyses

Cross-tabulation was used to study percentages and assess differences in psychological and socio-demographic factors, obstetric characteristics and country of residence. Logistic binary regression analyses were used to estimate the crude odds ratios (ORs) and 95% confidence intervals (CIs) of the association between fear of childbirth, both as a dichotomous and an ordinal variable, and either

elective or emergency cesarean as an outcome. Each of the dimensions of fear found through factor analysis was dichotomized comparing high level of fear (scores in the upper quartile) with moderate and low level of fear. For all analyses of emergency cesarean, women with elective cesarean were removed. Adjusted odds ratios were calculated using country of residence, age, education, and smoking during pregnancy, EDS score greater than or equal to 7 and birth weight in a logistic regression model. Belgium was used as the reference country because it reported the fewest women with severe fear of childbirth. All analyses were stratified for parity and were two-sided at $\alpha = 0.05$. The Predictive Analytic Software 22 was used to perform all analyses.

Results

Maternal age had a mean of 28.4 (standard deviation, SD 4.7) and median of 28 (range 15-54) for primiparous women, and a mean of 31.8 (SD 4.4) and median of 32 (range 16-48) for multiparous women. A total of 49.7% were primiparous. The mean W-DEQ score was 59.1 (SD 21.2) for primiparous women and 54.5 (SD 24.0) for multiparous women. Chronbach's alpha for the W-DEQ score of the entire sample was 0.925. A total of 11.3% of primiparous and 10.9% of multiparous women had severe fear of childbirth ($W-DEQ \geq 85$). Background characteristics are presented in Table 1. Younger women and those with less education reported fear of childbirth more often. Women with fear of childbirth were more likely to smoke during pregnancy, exhibit moderate depressive symptoms ($EDS-5 \geq 7$) and prefer cesarean section. Multiparous women with fear of childbirth were more likely to have undergone a cesarean before. Close to half of them reported a mostly negative experience of the previous childbirth.

Adjusted OR for elective and emergency cesarean are presented in Tables 2 and 3. Primiparous women with severe fear of childbirth had an increased risk of elective cesarean, adjusted OR 1.66, 95% CI 1.05–2.61.

Multiparous women with severe fear of childbirth had an increased risk of elective cesarean. Crude OR was 2.21, 95% CI 1.62–3.03. Adjusting for associated factors had little effect, except that

adding previous cesarean to the model reduced the OR to 1.87, 95% CI 1.30–2.69. Severe fear of childbirth was associated with emergency cesarean among multiparous women, crude OR 1.71, 95% CI 1.10–2.67, but fell below the level of significance in the adjusted models.

Table 4 shows adjusted estimates of associations between level of fear of childbirth and cesarean section. We observed a dose-response relationship between level of fear of childbirth and cesarean. The likelihood of emergency cesarean increased with the level of fear of childbirth in both primiparous women, adjusted OR 1.46, 95% CI 1.05–2.05, and multiparous women, adjusted OR 2.40, 95% CI 1.39–4.14. The risk of elective cesarean increased in multiparous women who scored in the upper quartiles, adjusted OR 2.07, 95% CI 1.39–3.09.

There was no difference in the prevalence of fetal distress, dystocia, breech presentation, exhausted mother, or other medical indications for cesarean section between women with or without severe fear of childbirth (data not shown). A non-medical indication for cesarean was more often included for primiparous women with severe fear of childbirth, 16.7% vs 4.6% without severe fear of childbirth ($P < 0.001$). In multiparous women, a non-medical indication was included for 31.7%, as opposed to 17.5% without severe fear of childbirth ($P = 0.004$). Out of 20 primiparous women without any concomitant medical indication for cesarean, 8 (40%) had severe fear of childbirth. In the multiparous group, 14 (17.1%) out of 61 women without any concomitant medical indication for cesarean had severe fear of childbirth.

The association between the various dimensions of the W-DEQ and elective/emergency cesarean is presented in Table 5. In multiparous women, four out of the six identified factors (lack of self-efficacy, loneliness, lack of positive anticipation, and fear for the child) were significantly associated with elective cesarean. The highest estimate was between lack of positive anticipation and elective cesarean, adjusted OR 2.02, 95% CI 1.52–2.68. This factor was also associated with emergency cesarean, adjusted OR 1.77, 95% CI 1.21–2.58.

Discussion

In this six-country cohort study, having severe fear of childbirth was associated with elective cesarean section among both primiparous and multiparous women. We observed a dose-response relationship between level of fear of childbirth and cesarean. In primiparous women, this association was found for emergency cesarean only. Women with severe fear of childbirth gave birth by cesarean significantly more often on a non-medical indication alone. Lack of positive anticipation was associated with elective and emergency cesarean in multiparous women.

A major strength of this study is the multi-country design – six countries with differing structures and traditions of health care. Another advantage is that the sample is population-based and unselected. Several studies have excluded women with complications or a high-risk pregnancy (6,15). Another merit of the study is the follow-up design. Outcomes in terms of mode of birth were recorded independently of responses during pregnancy. Hence the variation in recording indications for cesarean section was not biased.

In contrast to Laursen's study (6), that assessed fear of childbirth by means of a single question, we used a validated instrument. Previous studies based on the W-DEQ have either used the concept of severe fear, which implies a clinical or pathological level of fear (3,4,20), or divided the population in high, moderate and low fear (15). We wanted to look at both. The association between various W-DEQ factors, i.e. dimensions of fear of childbirth, and cesarean section has not been studied before.

The participation rate was moderate to high and varied among the countries. This may have affected prevalence but is less likely to have affected estimated associations. Socioeconomic characteristics did not indicate any selection bias when compared to information from the official health authorities of the six countries, except that the participants were more educated than the national averages. Thus 13 or more years of education was reported by 59 –72% of the participants. One limitation is that women who were unable to read the national languages were excluded; however, both Estonian and Russian versions of the questionnaire were available in Estonia. Only Flemish-speaking participants were recruited in Belgium.

Emergency cesarean was not significantly associated with severe fear of childbirth, but more common in women with a high level of fear. Other recent studies of W-DEQ scores and emergency cesarean agree with these findings. Neither Johnson (4), Adams (20) nor Heimstad (21) found any relationship between severe fear of childbirth and emergency cesarean. Fenwick, on the other hand (15), found that more primiparous women with “high fear”, underwent emergency cesarean. The group with high level of fear being larger than the group with severe fear of childbirth may have had more statistical power, accounting for the difference in the results.

Only 43 of 100 primiparous women who underwent a cesarean on maternal request in Stockholm, Sweden reported severe fear of childbirth (2). In the present study, 40% of the primiparous women who underwent a cesarean on a non-medical indication alone had severe fear of childbirth, which is comparable to the proportion reported in Sweden. Other reasons, such as negative experience of health care and concern for the baby’s safety, may be important in this group (22), and further research is called for. Among multiparous women, fear of childbirth was associated with elective cesarean. The association remained after adjustment for previous cesarean, the strongest predictor of elective cesarean. Only 17.1% of multiparous women who underwent a cesarean on a non-medical indication alone, had severe fear of childbirth. Negative experience of a previous birth may influence a woman’s preferences and wishes, even when she does not have severe fear of childbirth. Also the partner’s fear of childbirth and preference for cesarean section may play a role (23).

In this study, the most important dimension of severe fear of childbirth was lack of positive anticipation. Women who do not value vaginal birth may be more prone to consider cesarean section, elective or during labor, and their attitude may influence the decision of the obstetrician as to mode of birth. On the other hand, a woman who looks forward to vaginal childbirth will be able to tolerate more risks and difficulties along the way. This is in agreement with a prospective cohort study by Haines (24), who showed that the attitude that “birth is a natural event” was part of the profile of women with an outcome of less elective cesarean. Also, the factors of lack of self-efficacy, loneliness and fear for the child were each associated with elective cesarean among multiparous women. Reducing the risk that a multiparous woman will have an elective cesarean, especially in the absence

of previous cesarean, may depend on strengthening her belief that the birth will be a positive event, that the baby will be safe, that she will be able to cope with the birth and that she will not have to be alone. Continuous support during labor is the only non-medical, evidence-based method of reducing the need for cesarean section (25).

Another pathway by which severe fear of childbirth is associated with cesarean section is that of mental health problems (26). Some 'non-medically' indicated cesareans might be performed on a psychiatric indication when there is concomitant severe fear of childbirth and mental illness. Mental illness has been associated with an increased risk of emergency cesarean (27). In the present study, a higher EDS score among primiparous women was associated with emergency cesarean, adjusted OR 1.62, 95% CI 1.12–2.36. An evaluation of mental health history and psychiatric symptoms among women with fear of childbirth may be important in antenatal care so as to issue referrals to psychiatric clinics when appropriate. The EDS can be used in antenatal care (28,29).

There is no evidence for the best method of counseling or psychotherapy among women with fear of childbirth. Waldenström (5) showed that, after having received counseling, women with fear of childbirth (defined as very negative expectations of giving birth) reported more elective cesarean and the same (mainly) positive experience of childbirth as women without fear of childbirth. Women with fear of childbirth who did not receive counseling for one reason or another had less elective cesarean but significantly worse experiences of childbirth and a tendency towards more cesarean in an emergency. Counseling of women with severe fear of childbirth and previous cesarean should include information about increased risk and preparation for a possible emergency cesarean. Indeed, care of all women who request a cesarean may include an assessment of both medical risks and personal reasons, as well as an offer of supportive counseling or short-term psychotherapy. The intensity of the interventions may vary based on how strong the personal reasons are and the result of the risk assessment (30). The ultimate decision to perform a cesarean should be made between the doctor, who has the medical responsibility and knowledge, and the woman, who is familiar with her own needs and history. The ultimate goal of care for women with fear of childbirth may not be vaginal birth but the best option possible for the mother and baby from both a medical and a psychological point of view.

Conclusions

In this prospective study of 6,422 pregnant women in six countries, we found that severe fear of childbirth was a risk factor for elective cesarean section, especially among multiparous respondents. A higher level of fear of childbirth (the upper quartile) was associated with emergency cesarean. Lack of positive anticipation of birth was more common among multiparous women who subsequently were delivered by either elective or emergency cesarean. Identifying women who do not look forward to vaginal birth may be useful, and cognitive behavioral therapy with cognitive restructuring might be evaluated by future research.

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Table 1 Characteristics of women, those with and without severe fear of childbirth (FOC) N=6422 in the Bidens cohort study, 2008-2010

| | Women without FOC (W-DEQ <85) n=5079 n(%) | Women with FOC (W-DEQ ≥85) n=713 n(%) | P-value |
|--|---|---|---------|
| Age n=6409 | | | 0.002 |
| <25 | 691 (12.1) | 115 (16.2) | |
| 25-30 | 2396 (42.0) | 258 (36.3) | |
| 31-35 | 1847 (32.4) | 248 (34.9) | |
| >35 | 765 (13.4) | 89 (12.5) | |
| Education n=6377 | | | <0.001 |
| ≤ 9 years | 148 (2.6) | 52 (7.4) | |
| 10–13 years | 1365 (24.1) | 228 (32.3) | |
| >13 years | 4159 (73.3) | 425 (60.3) | |
| Parity | | | 0.695 |
| Primiparous | 2830 (49.6) | 359 (50.4) | |
| Multiparous | 2879 (50.4) | 354 (49.6) | |
| Country | | | <0.001 |
| Belgium | 737 (12.9) | 49 (6.9) | |
| Iceland | 526 (9.2) | 49 (6.9) | |
| Denmark | 1096 (19.2) | 107 (15.0) | |
| Estonia | 690 (12.1) | 121 (17.0) | |
| Norway | 1895 (33.2) | 259 (36.3) | |
| Sweden | 765 (13.4) | 128 (18.0) | |
| Daily smoking in pregnancy n=6407 | 228 (4.0) | 45 (6.3) | 0.004 |
| EDS-5 Score ≥7 n=6353 | 403 (7.1) | 160 (22.7) | <0.001 |
| Preferring CS n=6402 | 150 (2.6) | 66 (9.3) | <0.001 |
| Previous CS* n=3233 | 145 (5.0) | 37 (10.5) | <0.001 |
| Negative birth experience* n=3233 | 401 (13.9) | 160 (45.2) | <0.001 |
| Birth weight n=6400 | | | 0.505 |
| <2500 gram | 164 (2.9) | 19 (2.7) | |
| 2500–4499 gram | 5328 (93.6) | 672 (94.6) | |
| ≥4500 gram | 198 (3.5) | 19 (2.7) | |

*multiparous women only

Table 2 Adjusted odds ratios of having an elective or emergency cesarean section among primiparous women n=3189 in the Bidens cohort study, 2008-2010

| | Elective CS n=177 | | Emergency CS n=371 [§] | |
|-----------------------------------|-------------------|------------------|---------------------------------|------------------|
| | n | Adjusted* | n | Adjusted* |
| Severe FOC | | | | |
| No | 149 | Ref | 327 | Ref |
| Yes | 28 | 1.66 (1.05–2.61) | 44 | 1.04 (0.73–1.50) |
| Age | | | | |
| <25 | 26 | Ref | 65 | Ref |
| 25-30 | 77 | 1.10 (0.66–1.81) | 175 | 1.19 (0.85–1.69) |
| 31-35 | 48 | 1.54 (0.88–2.68) | 93 | 1.43 (0.96–2.12) |
| >35 | 25 | 2.57 (1.36–4.88) | 37 | 1.93 (1.18–3.17) |
| Education | | | | |
| ≤ 9 yrs | 3 | Ref | 10 | Ref |
| 10–13 yrs | 45 | 1.68 (0.50–5.71) | 91 | 1.29 (0.62–2.67) |
| >13 yrs | 125 | 1.21 (0.35–4.14) | 266 | 1.08 (0.52–2.24) |
| Country | | | | |
| Belgium | 29 | Ref | 44 | Ref |
| Iceland | 5 | 0.26 (0.09–0.75) | 30 | 1.17 (0.70–1.96) |
| Denmark | 52 | 0.95 (0.57–1.58) | 86 | 1.07 (0.71–1.61) |
| Estonia | 16 | 0.62 (0.33–1.18) | 55 | 1.37 (0.88–2.13) |
| Norway | 45 | 0.65 (0.39–1.07) | 99 | 0.89 (0.60–1.31) |
| Sweden | 30 | 0.75 (0.43–1.31) | 57 | 0.88 (0.57–1.36) |
| Daily smoking in pregnancy | 4 | 0.48 (0.17–1.34) | 12 | 0.66 (0.35–1.25) |
| EDS Score of ≥7 | 13 | 0.74 (0.40–1.38) | 43 | 1.62 (1.12–2.36) |
| Birthweight | | | | |
| <2500 gram | 15 | 2.44 (1.37–4.34) | 45 | 6.25 (4.14–9.44) |
| 2500–4499 gram | 160 | Ref | 308 | Ref |
| ≥4500 gram | 2 | 0.68 (0.16–2.86) | 18 | 3.61 (2.01–6.49) |

*Adjusted for age, education, country, smoking in pregnancy, EDS score ≥7 and birth weight.

[§] excluded elective CS from analyses

Table 3. Adjusted odds ratios of having an elective or emergency cesarean section among multiparous women n=3233 in the Bidens cohort study, 2008-2010

| | Elective CS n=287 | | Emergency CS n=160 [§] | |
|-----------------------------------|-------------------|---------------------|---------------------------------|--------------------|
| | n | Adjusted* | n | Adjusted* |
| Severe FOC | | | | |
| No | 230 | Ref | 135 | Ref |
| Yes | 57 | 1.87 (1.30-2.69) | 25 | 1.46 (0.88-2.41) |
| Age | | | | |
| <25 | 12 | Ref | 5 | Ref |
| 25-30 | 74 | 0.91 (0.45-1.84) | 50 | 1.38 (0.52-3.65) |
| 31-35 | 122 | 1.21 (0.60-2.46) | 67 | 1.33 (0.49-3.56) |
| >35 | 79 | 1.78 (0.86-3.69) | 38 | 1.72 (0.62-4.73) |
| Education | | | | |
| ≤ 9 years | 5 | Ref | 7 | Ref |
| 10-13 years | 77 | 1.96 (0.73-5.25) | 39 | 0.66 (0.27-1.61) |
| >13 years | 203 | 1.83 (0.69-4.88) | 114 | 0.78 (0.32-1.88) |
| Country | | | | |
| Belgium | 33 | Ref | 9 | Ref |
| Iceland | 33 | 1.08 (0.62-1.86) | 19 | 1.89 (0.82-4.39) |
| Denmark | 61 | 1.17 (0.71-1.94) | 23 | 1.67 (0.73-3.79) |
| Estonia | 37 | 0.97 (0.57-1.63) | 20 | 1.78 (0.78-4.02) |
| Norway | 103 | 0.51 (0.32-0.82) | 72 | 1.43 (0.68-3.00) |
| Sweden | 20 | 0.47 (0.25-0.87) | 17 | 1.45 (0.62-3.41) |
| Daily smoking in pregnancy | 10 | 0.67 (0.32-1.42) | 11 | 1.77 (0.83-3.77) |
| EDS Score of ≥7 | 38 | 1.53 (1.02-2.31) | 14 | 0.89 (0.47-1.66) |
| Previous CS | 88 | 15.60 (10.90-22.42) | 36 | 12.51 (7.55-20.72) |
| Birthweight | | | | |
| <2500 gram | 11 | 1.88 (0.90-3.93) | 15 | 8.31 (4.23-16.30) |
| 2500-4499 gram | 261 | Ref | 127 | Ref |
| ≥4500 gram | 14 | 0.71 (0.37-1.37) | 18 | 2.10 (1.16-3.79) |

*Adjusted for age, education, country, smoking in pregnancy, EDS score ≥7, birth weight and previous CS.

[§]excluded elective CS from analyses

Table 4. The adjusted odds of having an elective or emergency cesarean section for a low, moderate and high level of fear, stratified by parity, among women in the Bidens cohort study, 2008-2010

| Level of fear | Elective CS | | Emergency CS [§] | |
|--------------------------|-------------|------------------|---------------------------|------------------|
| | n | Adjusted OR* | n | Adjusted* |
| Primiparous women | 3189 | | 3012 [§] | |
| Low | 812 | Ref | 769 | Ref |
| Moderate | 1594 | 0.93 (0.60-1.45) | 1506 | 1.20 (0.90–1.60) |
| High | 783 | 0.92 (0.56-1.52) | 737 | 1.46 (1.05–2.05) |
| Multiparous women | 3233 | | 2946 [§] | |
| Low | 821 | Ref | 774 | Ref |
| Moderate | 1629 | 1.36 (0.94-1.96) | 1496 | 1.89 (1.15–3.10) |
| High | 783 | 2.07 (1.39-3.09) | 676 | 2.40 (1.39–4.14) |

*Adjusted for age, education, country, smoking in pregnancy, EDS score ≥ 7 and birth weight for primiparous women. Additionally adjusted for previous CS for multiparous women. [§] Excluded elective CS from analyses

Table 5. The adjusted odds ratios of having an elective or emergency cesarean section by the dimensions of fear of childbirth, stratified by parity, among women in the Bidens cohort study, 2008-2010

| | Elective CS | | Emergency CS [§] | |
|------------------------------------|-------------|------------------|---------------------------|------------------|
| | n | Adjusted OR* | n | Adjusted OR* |
| Primiparous women | 3189 | | 3012 [§] | |
| F.1 Lack of self-efficacy | 776 | 1.07 (0.74–1.55) | 731 | 1.03 (0.78–1.35) |
| F. 2 Loneliness | 788 | 1.10 (0.67–1.82) | 741 | 1.25 (0.95–1.63) |
| F. 3 Negative appraisal | 603 | 1.09 (0.74–1.62) | 567 | 0.96 (0.72–1.29) |
| F. 4 Lack of positive anticipation | 855 | 1.02 (0.71–1.45) | 804 | 0.95 (0.73–1.24) |
| F. 5 Fear | 777 | 1.35 (0.95–1.92) | 726 | 1.21 (0.93–1.57) |
| F.6 Fear for the child | 717 | 1.28 (0.89–1.85) | 666 | 1.06 (0.80–1.41) |
| Multiparous women | 3233 | | 2946 [§] | |
| F.1 Lack of self-efficacy | 604 | 1.78 (1.31–2.41) | 519 | 1.33 (0.88–2.02) |
| F. 2 Loneliness | 781 | 1.67 (1.23–2.28) | 588 | 1.18 (0.77–1.79) |
| F. 3 Negative appraisal | 859 | 0.95 (0.71–1.28) | 777 | 0.99 (0.67–1.45) |
| F. 4 Lack of positive anticipation | 741 | 2.02 (1.52–2.68) | 627 | 1.77 (1.21–2.58) |
| F. 5 Fear | 436 | 1.33 (0.92–1.92) | 389 | 1.36 (0.85–2.17) |
| F.6 Fear for the child | 781 | 1.74 (1.30–2.32) | 673 | 1.20 (0.81–1.80) |

*Adjusted for age, education, country, smoking in pregnancy, EDS score ≥ 7 and birth weight for primiparous women. Additionally adjusted for previous CS for multiparous women.

[§] excluded elective CS from analyses