

# **Fear of birth: Prevalence, counselling and method of birth at five obstetrical units in Norway**

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## **Abstract**

**Background:** There is increasing evidence that fear of birth can have long-term effects on the childbearing woman and the method of birth.

**Aim:** To examine differences between five hospitals in Norway in the occurrence of fear of birth, counselling received and method of birth.

**Method:** Source data was from the Norwegian cohort of the Bidens study and retrieved through a questionnaire and electronic patient records from five different hospitals in Oslo, Drammen, Tromsø, Ålesund and Trondheim, which included 2145 women. The Wijma Delivery Expectancy Questionnaire measured fear of birth, and a cut-off of  $\geq 85$  was used to define fear of birth.

**Results:** In total, 12% of the women reported fear of birth, with no significant differences between the different units. A total of 8.7% received counselling according to hospital obstetrical records, varying significantly from 5.7% in Drammen to 12.7% in Oslo. Only 24.9% of the women with fear of birth had counselling at their hospital. All the units provided

counselling for women with fear, but the content varied. Overarching aims included helping women develop coping strategies like writing a birth plan and clearing up issues regarding prior births. A secondary objective was to prevent unnecessary caesarean section. Both primiparous and multiparous women who reported fear of birth had a twofold increased risk of a planned caesarean section.

**Conclusion:** There were no differences between five Norwegian hospitals regarding the occurrence of fear of birth. Counselling methods, resources, level of commitment and the number of women who received counselling varied; thus, hospital practices differed.

**Keywords:** Fear of childbirth; Treatment; Counselling; Birth; Mode of delivery

### Statement of significance

<p><b>Problem</b></p> <p>Little is known about the prevalence of fear of birth (FOB), the content of counselling for FOB and how it influences the mode of birth among different hospitals in Norway.</p>
<p><b>What Is Already Known</b></p> <p>Studies have shown that counselling for FOB has a minor effect in reducing FOB and decreasing the rate of caesarean section.</p>
<p><b>What This Paper Adds</b></p> <p>There were no differences between birth sites in Norway regarding FOB prevalence. The counselling-methods and the number of women who received counselling varied; thus,</p>

hospital practices differed. Women with FOB had a twofold increased risk of a planned caesarean section.

## **Introduction**

It is normal for pregnant women to be anxious before an upcoming birth. For some women, the anxiety becomes a fear of birth (FOB) or even an extreme FOB, tocophobia.<sup>1</sup> FOB becomes clinically relevant if it affects the woman's daily life and/or quality of life, bonding to the unborn baby or the method of birth.<sup>2</sup> Avoiding a vaginal birth, as one way to cope with FOB may result in the request of a caesarean section (CS).<sup>3</sup> A CS may help women to feel more in control, and it may be less frightening than a vaginal birth.<sup>4</sup> For some women, FOB may be a reason not to get pregnant at all.<sup>4</sup>

New research suggests that the FOB prevalence is 14% worldwide.<sup>1</sup> In Scandinavia, studies estimate a FOB prevalence of approximately 12%, with variations between 6.5% and 25% when measured during pregnancy.<sup>1</sup> The association between poor mental health status and fear of birth is known.<sup>5</sup> Studies furthermore indicate an association between FOB and young age, low coping ability, poor social network, low education and unemployment.<sup>6,7</sup> Women who report that they are not happy with their partner/relationship or are single have a higher risk of experiencing FOB.<sup>7,8</sup> A study from Sweden showed a higher prevalence of FOB among foreign born pregnant women.<sup>9</sup> Abuse and violence, both as a child and as an adult, may influence the development of women's FOB during the pregnancy.<sup>10,11</sup> Among, multiparous women, a previous negative birth experience is associated with FOB.<sup>8</sup> A woman's subjective experience is important, and a negative birth experience does not

necessarily involve obstetric complications.<sup>12</sup> Interventions like an emergency CS, vacuum or forceps delivery, however, are associated with a higher risk of developing FOB for women.<sup>12</sup>

FOB is related to more daily stress, exhaustion and sleep deprivation during pregnancy,<sup>13</sup> slow progress in birth<sup>14,15</sup> and a higher risk of experiencing both elective and emergency CS.<sup>3,15</sup>

Furthermore, FOB is connected to postpartum depression and post-traumatic stress disorder,<sup>16</sup> conditions that can affect family life and mother-and-child bonding.<sup>4</sup> Thus, the effects of FOB may be costly on both a personal and a societal level.

Women who have FOB are offered counselling, especially in the Scandinavian countries.<sup>2,17,18</sup>

However, a common content are lacking and the type of counselling varies widely in terms of resources, time and methods used.<sup>2,9,17,18,19</sup> Counselling at the hospital were women plan to give birth is common,<sup>17</sup> but Internet-Based therapy<sup>18</sup> or telephone counselling<sup>19</sup> have been used. The overall aim of the treatment is essentially the same: strengthening the woman's belief in herself.<sup>2,20</sup> This is commonly done with information about the birth proses and coping strategies, making an individual birth plan and processing previous negative birth experiences.<sup>20</sup> Some women with FOB will see a CS as a better alternative than vaginal birth.<sup>21</sup> A CS can lead to more complications for mother and child<sup>22-24</sup> thus, another common aim for the counselling is to prevent an unnecessary CS.<sup>25</sup> However, there is evidence that women undergoing treatment for their FOB have a higher risk of interventions, such as induction of labour and elective CS.<sup>23</sup>

In Norway, women receive antenatal care by a midwife or a general practitioner or both, working in primary care. Women are not routinely screened for FOB but if this is something a women express or if she request a planned CS because of FOB, both midwives and doctors

can refer the woman to the hospital where she plan to give birth.<sup>4,22</sup> The Norwegian Guidelines for Obstetric Care<sup>22</sup> state that women who request a CS because of FOB should receive follow-up consultations at the hospital and information regarding CS.<sup>22</sup> The guidelines<sup>22</sup> point out that a woman's desire alone is not an adequate reason to grant a CS. Birth units in Norway are encouraged to allocate resources to consultations for women who request an elective CS.<sup>22</sup> However, the content and the extent of the consultations has not been examined in a Norwegian setting. Based on this, the purpose of our study was to investigate whether there were differences between five hospitals in Norway regarding the occurrence of FOB among pregnant women, the counselling they received and how they gave birth.

### **Participants, Ethics and Methods**

This study was based on the Bidens cohort study, which was conducted in six European countries: Belgium, Iceland, Denmark, Estonia, Norway and Sweden.<sup>26</sup> The main purpose of the Bidens study was to investigate the factors related to maternal anxiety, a history of abuse and the mode of delivery in order to improve pregnancy and childbirth care.<sup>26</sup> The Norwegian data from the Bidens study was used in this study.

The data was obtained from unselected pregnant women at five hospitals in five cities in Norway: Ålesund (XXX), Drammen (XXX), Trondheim (XXX), Tromsø (XXX) and Oslo (XXX). The first two are local hospitals and the last three are university hospitals.

### ***Participants***

The participants were recruited from March 2008 to August 2010. At the hospitals in Ålesund and Drammen, the study invitation and a consent form were sent together with the invitation

for the routine ultrasound screening to all women who planned to give birth at the hospitals. Each woman received a questionnaire with a prepaid envelope at her ultrasound screening at around week 18. In Oslo, Trondheim and Tromsø, an invitation was sent together with the questionnaire and the consent form in an included prepaid envelope after the ultrasound screening to all women except those with major foetal pathologies. The invitation, consent form and questionnaire were written in Norwegian. To participate in the study, each woman had to master Norwegian sufficiently to fill out the questionnaire.

The average response rate was 50%, with the highest in Oslo (61%) and lowest in Ålesund (44%). For this study, 286 women were excluded: 80 because of inadequate filling out of the FOB questions and lack of parity, and 206 because of twin pregnancies or lack of information regarding how the woman gave birth. Thus, the total number of women included in our study was 2,145. Of these, 444 women were recruited from Trondheim, 359 from Tromsø, 471 from Ålesund, 417 from Drammen and 454 from Oslo.

### ***Ethics***

The Bidens was approved by the Regional Committees for Medical and Health Research Ethics (REC; 2006/72) and the Norwegian Centre for Research Data (NSD; 15214/3/). The women signed consent forms, which included participation and allowed data collection from the patient charts.

### ***Methods***

Demographic and background data were obtained from the questionnaire, information regarding counselling from both the questionnaire and the hospitals' electronic patient charts, and birth outcome data from the hospitals' electronic patient charts. The questionnaire

included socio-demographic information and obstetric history, in addition to validated self-assessment scales such as the short version of the Edinburgh Depression Scale (EDS),<sup>27</sup> the Wijma Delivery Expectancy Questionnaire (W-DEQ)<sup>28</sup> and the NorVold Abuse Questionnaire (NorAq).<sup>29</sup> Information on the hospitals' routines regarding counselling for FOB was collected in May 2017.

### ***Exposure variable***

The exposure variable in this study was fear of birth (FOB), assessed with the Wijma Delivery Expectancy Questionnaire (W-DEQ).<sup>28</sup> W-DEQ is an instrument validated to assess FOB.<sup>28</sup> The W-DEQ consists of a six-point, 33-item self-assessment rating scale, with a minimum score of 0 and maximum score of 165. A woman was defined as having FOB if the total score was 85 or greater.<sup>28</sup>

### ***Outcome variables***

#### ***Counselling***

Information regarding counselling for FOB was obtained from different sources. 1): It was registered in the hospital's electronic patient chart if a woman had used their counselling offer or not. This information is in the variable *Hospital counselling* in table 2. This is the primary variable regarding counselling in this study and referred to as *counselling* throughout the article. 2): Women were also asked about counselling in the questionnaire with the question: Have you received counselling because of fear of birth during the pregnancy? This is the variable *Self-reported counselling*. 3): To get an overview of what kind of counselling the hospitals offered women with FOB, the different hospitals were contacted via email and phone during May 2017 (table 3). The hospitals were asked to give an overview on referral

reasons, methods and aim for the counselling they offered in the study period. The questions asked are described in Table S1.

### *Method of birth*

The variable included “spontaneous vaginal birth”, “vacuum”, “forceps” and “caesarean section (CS)”. From the notes, it was recorded if the CS was planned or if it was an emergency CS.

### *Co-variables*

Age was recoded into four categories: <25, 25-30, 31–35 and >35 years of age. Education was coded at three levels: primary school ( $\leq 10$  years), secondary school (11-13 years), and postsecondary school (university or college, >13 years). The gestational age (GA) when the questionnaire was filled out was kept both as a continuous variable and recoded into <21 weeks, 21–28 weeks and >28 weeks. Civil status was coded as married/cohabiting, single or other. The variable smoking included women who smoked at a daily basis during the pregnancy. Symptoms of depression was coded as a score of 7 or greater on the five-item EDS to capture moderate and high symptom levels of depression.<sup>27</sup> A previous CS was coded as at least one CS and no prior vaginal birth. The preferred mode of birth was assessed by the question “How would you prefer to give birth?” with four response options: vaginally, probably vaginally, probably CS and CS. Those who responded “CS” were classified as having a preference for a CS. A negative or mostly negative experience during the first or most recent birth was coded as a negative birth experience. A woman was defined as having a history of abuse if she answered yes to at least one of the questions of the NorAq abuse questionnaire, excluding a mild degree of physical abuse as a child.



### ***Statistical analysis***

Cross-tabulation and the Pearson's chi-squared tests were used to analyse the proportions and assess the differences regarding FOB, counselling and the methods of birth at the different hospitals. The GA continuous variable was analysed by using one-way ANOVA. Logistic regression analyses with odds ratios (ORs) and 95% confidence intervals (CIs) were used to calculate the associations between planned CS and FOB. Adjusting variables were *a priori* selected based on previous Bidens studies and literature in the field.<sup>3,13,23</sup> The adjusted ORs (AORs) were estimated by entering place of birth, age, education, civil status, smoking, symptoms of depression, a history of abuse, a negative birth experience and previous CS as adjusting variables. The analyses were stratified by parity because it was likely that the multiparous women were influenced by their obstetric histories. In all the analyses, a p-value < 0.05 was considered to be significant. The statistical analyses were conducted with the Statistical Package for the Social Sciences (SPSS, version 24) data processing program.

### **Results**

The total number of women in this study was 2,145. Among these, 258 (12%) reported fear of birth (Table 1). This was reported at a mean gestational age of 25 weeks, varying from week 21.6 in Tromsø to 29.6 in Oslo (Table S2). Oslo had the highest FOB prevalence (13.9%) and Drammen the lowest (9.1%). There were no significant differences between the sites (Table 2). The women who had FOB were less educated, more often smokers, and more often reported symptoms of depression and prior experiences of abuse (Table 1). Significantly more women with FOB preferred a caesarean section when asked during pregnancy (18.6%) compared to those without FOB (5.2%). Multiparous women with FOB more often reported a previous CS and a prior negative birth experience (Table 1). Table S2 describes the different background characteristics by the different study sites.

In total, 8.7% of the women were offered counselling according to hospital records, with significant differences between the hospitals, varying from 5.7% in Drammen to 12.7% in Oslo (Table 2). The prevalence of counselling was 5.5% in the women's self-reported data. Among the women with FOB, 24.9% had a hospital-counselling offer (Table 2). In Oslo, 34.5% of those with FOB received counselling compared to 10.8% in Drammen. A total of 6.6% of the women had hospital counselling without reporting FOB on the questionnaire.

Table 3 summarizes what kind of counselling the included hospitals offered to women with FOB during the study period. In general, primary care (community midwives or general practitioners) referred women to the hospital's outpatient clinic. The clinics had maternity care providers with a special interest and/or training to assess and counsel women with FOB. The treatment differed among the hospitals. In Oslo empathetic communication was used, and individual birth plans were prepared. When the Bidens study was conducted, women at Rikshospitalet, the participating hospital in Oslo, who requested a CS without a medical indication were offered a known midwife during birth. Many of these women had FOB.<sup>25</sup> In Drammen they also used empathetic communication. In addition, all women who planned to give birth at Drammen were offered an initial birth preparation talk regardless of whether they had FOB. In Tromsø, cognitive behavioural therapy (CBT) was offered to women with fear of birth, focusing on the underlying causes for FOB. In Ålesund, planning of the forthcoming birth and processing experiences connected to prior birth experiences were central. In Trondheim, birth preparation talks aimed at helping women to feel safe, resolve misunderstandings, process prior birth experiences and prepare individual birth plans, something all the hospitals had in common.

Table 4 describes the birth method among women with and without FOB, by place of birth. There were significant differences regarding mode of delivery in the two groups. A total of 69.0% of women with FOB had a spontaneous vaginal birth, compared to 78.0% of those without. More women had an elective CS in the FOB group (14.0%) compared to those without (5.9%). Women with FOB were less likely to have a spontaneous vaginal birth in Oslo compared to Tromsø. In Tromsø, they performed more emergency CSs among women with FOB. Figure 1 shows the different birth methods in relation to counselling. Among women with FOB who received counselling, 38.7% had a CS compared to 14.5% among those with FOB who did not receive counselling. Crude and adjusted odds ratios for a planned CS are presented in Table 5. Both primiparous and multiparous women with FOB had an increased risk of having a planned CS in adjusted analysis. Multiparous women who gave birth in Tromsø were less likely to have a planned CS compared to the other sites (AOR 0.46, 95% CI: 0.21–0.99).

## **Discussion**

In this study, we found that 12% of the women reported fear of birth. There were no significant differences among the different sites. All hospitals offered special services to women with FOB, and 8.7% of the women in this study received counselling at the hospital at which they gave birth. This varied significantly from 5.7% in Drammen to 12.7% in Oslo. Only 24.9% of the women who reported FOB had counselling at their hospital. The counselling and resources that were offered to women differed between the sites. Common features were to help the woman feel safe, sort out misunderstandings and prepare individual birthing plans. In total, 69% of the women with fear of birth had a vaginal birth and 78% of those without. FOB was associated with a planned CS in adjusted analyses.

The fear of birth prevalence of 12% is comparable with other studies, both worldwide<sup>1</sup> and in the Scandinavian countries.<sup>1</sup> A recent study from Norway that used the same instrument and cut-off to measure FOB had a prevalence of 8.0%.<sup>30</sup> This study included 1,789 women from one hospital who completed the questions about FOB in week 32.<sup>30</sup> This is later than in our study and may be the reason for a lower prevalence. It is shown that the prevalence of FOB decreases during pregnancy,<sup>9</sup> but the findings are inconsistent and both a stable FOB prevalence and an increase is found.<sup>31, 32</sup> In this study, the gestation age when women answered questions about FOB varied between sites (table S2), but not when we compared women with or without FOB (table 1).

In total, 8.7% of the women in this study had used the hospital counselling offer for FOB. The prevalence differed between the hospitals. This has, to our knowledge, not been measured before in a Norwegian setting. A similar prevalence and differences between different sites are described in a recent Swedish national survey.<sup>17</sup> Larsson et al. found that 7.1% received counselling for FOB, with a range between 2.4% and 11% between 43 clinics.<sup>17</sup> A total of 24.9% among those with FOB had, according to hospital records, received counselling treatment because of FOB. There may be several reasons for why only one-quarter of the women with FOB had counselling. Women with fear, but not requesting a CS for this reason, are less likely to be referred to the hospital and may receive counselling from the community midwife. Women can seek help for their fear at places other than the hospital they plan to give birth in, as our self-reported prevalence shows. Community midwives and community doctors may not be aware of the counselling opportunities at the hospitals, and hospitals may lack capacity. At the hospital in Drammen, only 10.8% of those who had FOB received counselling. However, all women at Drammen were offered an individual birth preparation talk, which may reduce the need for counselling for FOB. It is worth noting that there were no

significant differences in regard to the mode of delivery among those with or without FOB at this hospital.

Our study did not detect a common, standard way that women with FOB were counselled. Disparities regarding counselling were also found in the Swedish study by Larsson et al.<sup>17</sup> There were, however, some common features. Overarching aims included helping women develop strategies to cope with FOB and to help them gain a positive birth experience. This is supported by others and by the women themselves.<sup>17,20</sup> More multiparous women in this study with a prior negative birth experience had FOB. The association between a negative birth experience and FOB is shown in other studies.<sup>32,34</sup> To empower women in their ability to give birth and support them in their wish for a positive experience are core aspects within the scope of midwifery that apply to all pregnant women, regardless of FOB.<sup>35,36</sup>

While preventing a CS without medical indication was a shared aim for the counselling at all hospitals, we found significantly more caesarean sections among the women who had counselling. This association is seen in previous research.<sup>23</sup> At the same time, the participating hospital in Oslo, Rikshospitalet, is a specialist hospital. They have a higher proportion of women with high-risk pregnancies<sup>37</sup> and this may be reflected in both the higher prevalence of counselling for FOB and planned CS at this hospital. Women may actually have a good reason for fearing childbirth and a CS may be medically indicated. Tromsø had the lowest prevalence of elective caesarean sections, both among those with and without FOB in this study. In a study from 2006, researchers from Tromsø who used crisis-oriented therapy managed to change the view of a large majority of women who desired a CS.<sup>38</sup> The women were mainly positive with that choice. This could be reflected in the lower prevalence of CS in our study. In contrast, they had a significantly higher number of emergency CSs.

Women with FOB may be afraid of different things and have different reasons for seeking counselling at a hospital.<sup>2,39</sup> Some women cannot see a vaginal birth as an option,<sup>4</sup> and there may be both personal and societal reasons for them to have this view.<sup>39</sup> Research from Sweden has shown that granting a CS to women who wanted one did not necessarily lead to a better birth experience.<sup>40</sup> Nevertheless, a severe fear of birth can constitute a medical indication for CS and can be considered a better option than a vaginal birth.<sup>22</sup> Norwegian obstetrical care guidelines recommend counselling for women with FOB before a CS is granted.<sup>22</sup> In Norway, there are no national guidelines or public recommendations for how the obstetrical units should serve these women.<sup>22</sup> It is up to each place of birth to define the goal of treatment and how many resources will be used to reach them, as exemplified by our findings.

### ***Strengths and limitations***

The population-based design and the sample of unselected pregnant women are strengths of this study. The differences between the hospitals, both in geographical location and size, may help generalize the findings to a larger part of Norway. At the same time, no sites from southern Norway were included, or the biggest hospital in the western part of Norway, Haukland hospital in Bergen, which is known for its low CS rate.<sup>37</sup> The other strengths include the use of validated instruments in the questionnaire and the follow-up design. Healthcare professionals collected the outcomes independently of the exposure; therefore, bias regarding the registered FOB counselling and the method of birth is unlikely. One limitation is the data regarding the content of FOB counselling. This data was obtained sometime after the study period, and a recall bias may be present, since we asked about the offer the hospital had in 2008–2010. We were assured that the informants worked at the

hospitals when the Bidens study was conducted and that they had good knowledge of the counselling opportunities at their hospital during this time. We have no information regarding the self-reported counselling (content, timing and methods) and how this may have affected the results is not known.

The Bidens study had a moderate response rate (50% in Norway). Unfortunately, we lack information on the women who did not participate, and selection bias is a cause for concern. The women participating in the Bidens study were in general more educated than the national average,<sup>3</sup> and the women with an insufficient knowledge of the Norwegian language were excluded. A recent Swedish study found a higher FOB prevalence among foreign-born women.<sup>9</sup> Thus, including immigrant women could affect the results. Despite this, the estimates of the exposure-outcome associations could still be valid, as shown in another birth cohort from Norway with a lower participation rate and the same selection bias.<sup>41</sup>

## **Conclusion**

This study shows that the prevalence of fear of birth does not differ between five Norwegian hospitals, but that there were significant differences regarding how many women had received counselling because of FOB. All hospitals offered some sort of special services for women with FOB, but the resources, treatment methods and involvement varied, thus indicating that hospital practices differ. Only one-quarter of those who reported FOB during pregnancy had counselling, according to hospital records. Findings from this study can inform the development of further treatment for women with fear of birth.

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Table 1: Characteristics of women with and without fear of birth (FOB) in the Norwegian sample of the Bidens cohort study.

	<b>Women without FOB n=1887</b>	<b>Women with FOB n=258</b>	<b>P-value</b>
<b>Birthplace</b> n=2145			0.248
Oslo	391 (20.7)	63 (24.4)	
Drammen	379 (20.1)	38 (14.7)	
Tromsø	314 (16.6)	45 (17.4)	
Ålesund	410 (21.7)	61 (23.6)	
Trondheim	393 (20.8)	51 (19.8)	
<b>Age</b> n=2145			0.008
<25	209 (11.1)	40 (15.5)	
25-30	727 (38.5)	90 (34.9)	
31-35	638 (33.8)	101 (39.1)	
>35	313 (16.6)	27 (10.5)	
<b>Education</b> n=2135			<0.001
≤10 years	35 (1.9)	15 (5.9)	
11-13	454 (24.1)	89 (34.9)	
>13	1391 (74.0)	151 (59.2)	
<b>Civil status</b> n=2145			0.824
Married/cohabitant	1812 (96.0)	247 (95.7)	
Single	75 (4.0)	11 (4.3)	
<b>Smoking</b> n=2145			0.044
Yes	68 (3.6)	16 (6.2)	
No	1819 (96.4)	242 (93.8)	
<b>Parity</b> n=2145			0.299
Primiparous	806 (42.7)	119 (46.1)	
Multiparous	1081 (57.3)	139 (53.9)	
<b>GA when answering the questionnaire</b> n=2145			0.208
<21 weeks	380 (20.2)	40 (15.6)	
21-28 weeks	1105 (58.8)	159 (61.9)	
>28 weeks	393 (20.9)	58 (22.6)	
<b>Symptoms of depression</b> n=2121			<0.001
No	1758 (94.3)	204 (79.7)	
Yes	107 (5.7)	52 (20.3)	

<b>A history of abuse</b> n=2145			<0.001
Yes	684 (36.2)	128 (49.6)	
No	1203 (63.8)	130 (50.4)	
<b>Hospital Counselling</b> n=2108			<0.001
Yes	122 (6.6)	62 (24.9)	
No	1734 (93.3)	186 (74.7)	
Unknown	3 (0.2)	1 (0.4)	
<b>Preference for caesarean section</b> n=2145			<0.001
Yes	98 (5.2)	48 (18.6)	
No	1789 (94.8)	210 (81.4)	
<b>Previous CS and no previous vaginal birth</b> * n=1220			<0.001
Yes	140 (13.0)	35 (25.2)	
No	941 (87.0)	140 (74.8)	
<b>Previous birth experience</b> * n=1220			<0.001
Positive	895 (82.8)	62 (44.6)	
Negative	186 (17.2)	77 (55.4)	

<sup>a</sup> GA= gestational age, SD = standard deviation \*multiparous only

Table 2: Fear of birth (FOB), counselling and counselling among women with FOB by place of birth in the Norwegian sample of the Bidens cohort study.

	<b>Total</b>	<b>Oslo n=454 (%)</b>	<b>Drammen n=417 (%)</b>	<b>Tromsø n=359 (%)</b>	<b>Ålesund n=471 (%)</b>	<b>Trondheim n=444 (%)</b>	<b>P- value</b>
<b>FOB (n=2145)</b>							0.248
Yes	258 (12.0)	63 (13.9)	39 (9.1)	45 (12.5)	61 (13.0)	51 (11.4)	
<b>Hospital counselling<sup>a</sup> (n=2145)</b>							
Yes	184 (8.7)	56 (12.7)	24 (5.8)	26 (7.4)	52 (11.1)	26 (6.0)	<0.001
<b>Self-reported counselling<sup>b</sup> (n=2145)</b>							0.008
Yes	119 (5.5)	31 (6.8)	14 (3.4)	31 (8.6)	19 (5.4)	24 (5.4)	
<b>Hospital counselling among women with FOB (n=258)</b>							
Yes	62 (24.9)	20 (34.5)	4 (10.8)	10 (23.3)	16 (26.2)	12 (24.5)	0.142
<b>Women with FOB and no hospital counselling (n=258)</b>							
Yes	122 (6.6)	36 (9.4)	20 (5.3)	16 (5.2)	36 (8.8)	14 (3.7)	0.004

<sup>a</sup>From hospital records, reported postpartum

<sup>b</sup>Self-reported by women during pregnancy

Table 3: Overview of the Norwegian hospitals in the Bidens cohort study and counselling information.

City	Oslo	Drammen	Tromsø	Ålesund	Trondheim
<b>Sites and number of recruited women (n)</b>	Rikshospitalet (University hospital) n=454	Buskerud Regional Hospital n=471	University hospital in north of Norway n=359	Hospital in Ålesund n=471	St.Olavs University hospital n=444
<b>Referred from</b>	Primary care or the women contacted the hospital themselves.	Primary care or the women contacted the hospital themselves.	Primary care	Primary care	The majority from primary care. A few after their routine ultrasound appointment.
<b>Method</b>	Individual consultations with midwives or doctors. No special method used. Some used empathic communication as a tool.	Individual consultations. Empathic communication was used as a tool.	Individual consultations. Cognitive therapy.	Individual consultations. No special method used.	Individual consultations. No special method; a mix of cognitive therapy and empathic communication.
<b>Main goal with counselling</b>	To make an individual birth plan. Some women were offered a known midwife if they initially wanted a CS section but would try a vaginal birth with the known midwife. <sup>25</sup> During this period, if women wanted a CS this was usually granted.	The main goal was to help each woman to feel safe and prevent depression, so she could cope with motherhood. Secondary aim to prevent CS. Drammen offered all women an individual birth preparation talk regardless of FOB.	They treated FOB like other types of anxiety. It was important for them to map why the woman had FOB and teach them how to cope with it. Main goal was to prepare women and help them feel safe, make individual birth plans and avoid CS.	Assessment with a gynaecologist. When the medical issues were sorted out and no clear indication for a CS was found, the woman was referred to a midwife for counselling. “We try to identify those who may have been traumatized by a vaginal birth.”	For the women to achieve personal growth and cope with pregnancy and birth; for the majority to be comfortable with a vaginal birth, and some with a planned CS. “We do not want to solve mental problems with an operation.”
<b>Providers</b>	Midwives and obstetricians. No special education required.	Midwives and obstetricians.	A team of two midwives with additional education as psychiatric midwives, an obstetrician and access to a social worker.	Midwives and obstetricians. Midwives responsible had education in gestalt therapy.	A team with midwives and obstetricians and one psychologist. No special education required.
<b>Number of counselling hours</b>	Have no record of this	Approximately 3–4h per woman	Approximately 4h per woman	Have no record of this	Average 1.75h per woman

FOB Fear of birth, CS Caesarean Section

Table 4: Women with and without fear of birth (FOB) and the different modes of delivery by place of birth in the Norwegian sample of the Bidens cohort study.

	<b>Spontaneous vaginal birth</b>	<b>Vacuum/forceps</b>	<b>Elective caesarean section</b>	<b>Emergency caesarean section</b>	<b>P-value</b>
<b>Oslo</b>					0.007
No FOB n=391	280 (71.6)	40 (10.2)	32 (8.2)	39 (10.0)	
FOB n=63	40 (63.5)	12 (19.0)	10 (15.9)	1 (1.6)	
<b>Buskerud</b>					0.094
No FOB n=379	290 (76.5)	34 (9.0)	23 (6.1)	32 (8.4)	
FOB n=38	27 (71.7)	4 (10.5)	6 (15.8)	1 (2.6)	
<b>Tromsø</b>					0.009
No FOB n=314	272 (86.6)	16 (5.1)	11 (3.5)	15 (4.8)	
FOB n=45	31 (68.9)	3 (6.7)	5 (11.1)	6 (13.1)	
<b>Ålesund.</b>					0.092
No FOB n=410	329 (80.2)	34 (8.3)	21 (5.1)	26 (6.3)	
FOB n=61	46 (75.4)	3 (4.9)	8 (13.1)	4 (6.6)	
<b>Trondheim</b>					0.182
No FOB n=393	301 (76.6)	29 (7.4)	25 (6.4)	38 (9.7)	
FOB n=51	34 (66.7)	3 (5.9)	7 (13.7)	7 (13.7)	
<b>Total</b>					<0.001
No FOB n=1887	1472 (78.0)	153 (8.1)	112 (5.9)	150 (7.9)	
FOB n=258	178 (69.0)	25 (9.7)	36 (14.0)	19 (7.4)	

FOB (Fear of birth) measured by Wijma Delivery Expectancy Questionnaire. A cut-off of  $\geq 85$  was defined as FOB.

Table 5: Crude and adjusted odds ratios (OR) for a planned caesarean section among primiparous and multiparous women in the Norwegian sample of the Bidens cohort study.

	Primiparous women		Multiparous women	
	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)
<b>Fear of birth</b>				
No	1	1	1	1
Yes	2.02 (0.97-4.20)	2.32 (1.05-5.16)	3.00 (1.85-4.87)	1.97 (1.09-3.58)
<b>Birthplace</b>				
Trondheim	1	1	1	1
Oslo	1.88 (0.77-4.57)	1.71 (0.61-1.93)	1.08 (0.61-1.94)	0.78 (0.40-1.52)
Drammen	2.08 (0.86-5.08)	1.99 (0.80-4.93)	0.60 (0.30-1.16)	0.48 (0.23-1.00)
Tromsø	0.39 (0.08-1.86)	0.37 (0.08-1.82)	0.56 (0.28-1.12)	0.46 (0.21-0.99)
Ålesund	1.18 (0.42-3.33)	1.04 (0.36-2.97)	0.64 (0.35-1.18)	0.62 (0.31-1.21)
<b>Age</b>				
<25	1	1	1	1
25-30	0.94 (0.57-1.57)	1.20 (0.44-3.13)	1.32 (0.50-3.49)	0.86 (0.20-3.74)
31-35	1.50 (0.87-2.58)	1.92 (0.68-5.41)	1.65 (0.64-4.27)	1.53 (0.18-4.25)
>35	2.90 (1.52-5.23)	2.10 (0.58-7.53)	2.80 (1.07-7.34)	3.38 (0.77-14.80)
<b>Education</b>				
>13	1	1	1	1
11-13	1.87 (0.42-8.33)	2.83 (0.47-16.91)	---	---
≤10 years	1.37 (0.70-2.68)	1.83 (0.86-3.38)	1.29 (0.83-1.98)	1.43 (0.85-2.43)
<b>Civil status</b>				
Married/cohabitant	1	1	1	1
Single	0.53 (0.20-1.41)	0.51 (0.18-1.50)	1.11 (0.26-4.76)	0.88 (0.18-4.42)
<b>Smoking</b>				
No	1	1	1	1
Yes	0.55 (0.07-4.01)	0.38 (0.01-3.16)	0.28 (0.11-1.93)	0.72 (0.18-3.65)
<b>Symptoms of depression</b>				
No	1	1	1	1
Yes	0.59 (0.14-2.51)	0.50 (0.11-2.25)	2.04 (1.11-3.75)	1.61 (0.76-3.42)
<b>A history of abuse</b>				
No	1	1	1	1
Yes	0.57 (0.30-1.10)	0.53 (0.26-2.25)	1.17 (0.78-1.60)	0.88 (0.55-01.41)
<b>Negative birth experience <sup>a</sup></b>				
No			1	1
Yes			2.67 (1.75-4.06)	2.36 (1.42-3.91)
<b>Prior CS <sup>a</sup></b>				
No			1	1
Yes			12.30 (7.82-19.36)	11.65 (7.14-19.00)

<sup>a</sup> Multiparous women only

Women with fear of birth who received counselling/no counselling and their mode of birth (p<0.001)

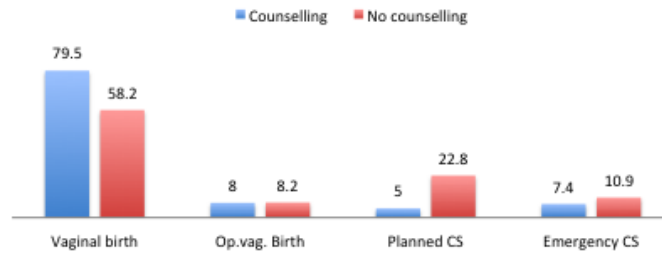


Figure 1: Percentage of women in the Norwegian sample of the Bidens cohort study with fear of birth who received counselling and the mode of birth.