Original Article

Breastfeeding practice in mothers with eating disorders

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Abstract

The purpose of this study was to compare the prevalence of breastfeeding in women with anorexia nervosa, bulimia nervosa, binge eating disorder and eating disorders not otherwise specified – purging subtype, with mothers with no eating disorders during the first 6 months after birth. The study is based on the Norwegian Mother and Child Cohort Study conducted at the Norwegian Institute of Public Health. Questionnaire-based information on eating disorder diagnoses and breastfeeding in 39 355 women was used to estimate the risk of cessation of breastfeeding with Cox proportional hazards regression. Almost all women (98%) initially breast-feed their infants, with no statistically significant difference between the eating disorders subgroups and women with no eating disorders. However, the risk of early cessation before 6 months post-partum increased for all subgroups of mothers with eating disorders, compared with mothers with no eating disorders. After adjusting for maternal body mass index, age, education, birthweight and pre-term birth, only mothers with anorexia nervosa [hazard ratios (HR), 2.35; 95% confidence interval (CI) 1.22–4.53] and eating disorder not otherwise specified-purging subtype (HR, 1.95; 95% CI 1.08–3.53) had increased risk for cessation of breastfeeding There were no differences in the risk of cessation of exclusive breastfeeding. These results show that some eating disorders may influence mothers' early feeding practices and indicate that additional support may be necessary to assist women with anorexia nervosa in maintaining breastfeeding.

Keywords: breastfeeding, eating disorders, MoBa, child nutrition, anorexia nervosa.

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Introduction

Eating disorders affect women at the peak age of reproductive function. Studies based on both clinical and community samples have revealed substantial adverse effect of eating disorders on both the pregnant woman and her unborn child (Sollid *et al.* 2004; Kouba *et al.* 2005; Micali *et al.* 2007), and more frequent feeding problems among children born to women with eating disorders compared with those born to mothers without eating disorders (Russell *et al.* 1998; Patel *et al.* 2002).

A recent Swedish study has shown that differences in feeding behaviour between mothers with and without a history of eating disorders are present already in the breastfeeding period (Larsson & Andersson-Ellstrom 2003). Case studies from the United States (US) and the United Kingdom (UK) have indicated that mothers with eating disorders typically wean their children earlier than healthy women due to problems such as insufficient lactation (which may be attributable to the mothers' poor diet) and slow feeding (Lacey & Smith 1987; Stein & Fairburn 1989; Evans & Legrange 1995). Mothers

with eating disorders also report that they find the process of breastfeeding embarrassing (Waugh & Bulik 1999), and were concerned that it would have a negative effect on their appearance (Stein & Fairburn 1989). These studies, however, lacked comparison groups or were conducted in small samples.

Only three population-based studies have examined breastfeeding among mothers with eating disorders. In a Swedish retrospective questionnaire study surveying 454 women at 3 to 7 months post-partum, 11.5% reported a history of eating disorders. These women were significantly less likely to be breastfeeding at 3 months post-partum compared with women with no history of an eating disorder (Larsson & Andersson-Ellstrom 2003). A prospective American study following 216 mothers and their children from pregnancy indicated no differences in duration of breastfeeding between women with and without eating disorders (Agras *et al.* 1999); whereas, Micali *et al.* (2009) reported that mothers living in the UK with a lifetime self-report history of eating disorders were more likely to breastfeed compared with mothers from the general population control. Current and lifetime eating disorders were combined in both studies, and eating disorders subgroups were not investigated separately.

Body and weight concerns have also been associated with breastfeeding (Foster *et al.* 1996; Barnes *et al.* 1997). Barnes *et al.* (1997) used data from a large community sample study of pregnancy and childbirth in the UK to examine a range of social and psychological factors that might influence breastfeeding intention, and found that pregnant women with higher concern about body shape and weight were less likely to express an intention to breastfeed.

The authorities in Norway are in line with the World Health Organization's recommendations that infants should be exclusively breastfed for the first 6 months of life, and continued until the child is 12 months old. This recommendation is based on studies showing that breastfeeding has been associated with several positive health outcomes for both child and mother (Friedman & Zeiger 2005; Martin *et al.* 2005; Owen *et al.* 2005; O'Tierney *et al.* 2009) Nearly all mothers in Norway start by breastfeeding their child (Lande *et al.* 2003). The proportion of breastfeeding women in Norway is therefore much higher than in other industrialized countries such as the UK (Lawson 1998) and the US (Ryan 1997), 66% and 60%, respectively. No previous studies have investigated breastfeeding practices among mothers with eating disorders in Norway.

A number of risk factors which are independently related to both eating disorders and breastfeeding, e.g. maternal age, education level, maternal weight and birth complications (Cooklin *et al.* 2008; Donath & Amir 2008) can impede a mother's wish to establish and sustain breastfeeding. More studies investigating early feeding behaviours among mothers with eating disorders, that include relevant covariates, are needed to better understand how the mother's eating disorder can influence her feeding practices. The aim of the present study was to explore the prevalence of breastfeeding across eating disorder subtypes compared to a referent group of women without eating disorders.

Materials and methods

Participants

This study is based on the Norwegian Mother and Child Cohort Study (MoBa) conducted by the Norwegian Institute of Public Health (Magnus *et al.* 2006). In brief, MoBa is a population-based pregnancy cohort started in 1999, and which now include more than 100 000 pregnancies. Pregnant women are

Key messages

- Almost all women (98%) initially breastfeed their infants.
- The risk of early cessation before 6 months post-partum is increased for mothers with eating disorders.
- There were no differences in the risk of cessation of exclusive breastfeeding.
- Additional support may be necessary to assist women with eating disorders, particularly those with anorexia nervosa, in maintaining breastfeeding.

recruited to the study through a postal invitation in connection with a routine ultrasound examination offered to all pregnant women in Norway at 17–18 weeks of gestation (http://www.fhi.no/morogbarn). The response rate is approximately 42%. The current study is based on participants recruited between 1999 and 2007. Informed consent was obtained from each participant before the study. The Regional Committee for Medical Research, the Norwegian Data Inspectorate and the University of North Carolina at Chapel Hill Biomedical Institutional Review Board has approved the study. The study is described in more detail elsewhere (Magnus *et al.* 2006; Bulik *et al.* 2007).

The population analysis for this report included MoBa participants who: (1) had information from both the MoBa Questionnaire 1, Questionnaire 4 and the Medical Birth Registry of Norway (see below), (2) did not complete an early pilot version of Questionnaire 1 ($n = 2599$), (3) had valid values for self-reported age, weight and height, (4) returned Questionnaire 1 before delivery, (5) had a singleton birth, and (6) had a non-missing eating disorder subtype. If a woman was enrolled in MoBa more than once due to additional pregnancies, only the first pregnancy was included. This excluded 6620 mothers. Of the initial 74 200 pregnancies enrolled in MoBa, 39 355 met the criteria above and were included in this report. Missing data were due to the fact that many of the children for whom Questionnaire 1 was available had not yet reached the age at which Questionnaire 4 was administered.

Measures

The present study is based on Questionnaire 1 (gestational week 17), Questionnaire 4 (6 months after birth) and medical Birth Registry of Norway (MBRN). Questionnaire 1 included items on eating disorders and disordered eating behaviours designed in accordance with the Fourth Edition of the Diagnostic and Statistical Manual (of Mental Health disorders) axis I, II, III, IV (DSM-IV) criteria (American Psychiatric Association 1994) and was previously used for studies of eating disorders in the Norwegian Institute of Public Health Twin Panel (Harris *et al.* 2002; Reichborn-Kjennerud *et al.* 2003, 2004a,b). Diagnostic

algorithms and hierarchies were constructed from the questionnaire items to define the presence of eating disorders in the 6 months prior to pregnancy (retrospective assessment) and during pregnancy (measured at survey completion). Anorexia nervosa (AN) was assessed before pregnancy only due to difficulties in determining low weight in the presence of pregnancy-related weight gain. Our final categories included women with the following eating disorders prior to, *or* during pregnancy, including: broadly defined AN, defined as meeting DSM IV criteria for AN (with the exception of amenorrhea); broadly defined bulimia nervosa (BN), endorsing at least weekly frequency of binge eating and either purging (vomiting, laxatives) or non-purging (exercise, fasting) compensatory behaviours; broadly defined binge eating disorder (BED), at least weekly frequency of binge eating in the absence of compensatory behaviours; and eating disorder not otherwise specified-purging subtype (EDNOS-P), purging at least weekly in the absence of binge eating. Questions for binge eating included both eating an unusually large amount of food and the feeling of loss of control. Purging was assessed specifically to be differentiated from nausea and vomiting of pregnancy. BN, BED and EDNOS-P are all broadly defined categories because our frequency criteria for binge eating and purging differed from the current DSM-IV criteria (once a week instead of twice a week). As the symptom profile for many women changed in the interval before pregnancy and during pregnancy, the order for our diagnostic hierarchy was: AN, BN, EDNOS-P, BED and no eating disorder. All individuals who met the AN criteria before pregnancy were categorized as AN regardless of presentation during pregnancy. Those who met BN criteria either before or during pregnancy and who did not meet the AN criteria prior to pregnancy were categorized as BN. If not classified as AN or BN, those who met criteria for EDNOS-P before or during pregnancy *and* did not endorse binge eating at either time were categorized as EDNOS-P. Similarly, individuals who endorsed BED and did not endorse purging during or before pregnancy were included in the BED group. Group assignment was only made when all responses were available to ensure accurate classification.

Six months after birth (Questionnaire 4), the mothers self-reported about breastfeeding, bottle-feeding, and introduction of other drinks and solid food for each of the proceeding 6 months. Breastfeeding was defined as continued breastfeeding, with possible supplementation with milk or solids, and bottle-feeding was defined as feeding of formula by a bottle, with possible supplementation with solids, and no current but possible previous breastfeeding. Predominantly, breastfeeding was defined as breastfeeding without any supplements of formula milk or solid food. Although the current WHO recommendation is for exclusive breastfeeding, our study applied the category of predominant breastfeeding, which is less restrictive. The reason for this is that we did not have information on fluids other than formula that the infant might have received up to 6 months post-partum. Level of maternal education was obtained from the MoBa questionnaires, and self-reported weight and height were used to calculate body mass index (BMI, $kg\,m^{-2}$) at 6 months post-partum. The BMI measure was from 6 months post-partum, which did not correspond with the point of breastfeeding cessation for all women, but was the closest temporal indicator of BMI available in the MoBa dataset.

The MoBa cohort is linked to the MBRN (Irgens 2000). Information on pregnancy, delivery and health of the neonate are reported to the MBRN for all deliveries after 16 weeks of gestation through mandatory notification by midwives and doctors. Information obtained from the MBRN in this study included mother's age, Apgar score after 5 min, birthweight and length of gestation. Pre-term birth was defined as length of gestation less than 37 weeks. If the birthweight was below the 10th percentile, the baby was classified as low birthweight. The Apgar procedure is designed to quickly evaluate a newborn's physical condition after delivery and to determine any immediate need for extra medical or emergency care.

Statistics

Group differences in maternal BMI, age and Apgar score were analyzed by one-way analysis of variance, with Bonferroni post-hoc tests analyzing the pairwise comparisons between the four eating disorder groups

and the referent. Group differences in breastfeeding, education, pre-term birth and low birthweight were analyzed with chi-squared tests. The Bonferroni correction method was conducted to account for multiple comparisons. The results presented reflect that correction. Group differences in initiating breastfeeding were tested by binary logistic regression model [odds ratio (OR)].

To analyze cessation of breastfeeding and predominant breastfeeding, survival analysis was used. Cumulative survivals were presented by a Kaplan–Meier plot. Cox's proportional hazards regression was used to estimate hazard ratios (HR) of breastfeeding cessation in two different models: (1) unadjusted, (2) adjusted for BMI, mother's age and education, pre-term birth, low birthweight and Apgar score. The HR is an estimate of the risk of breastfeeding cessation in the eating disorders groups compared with the risk of breastfeeding cessation in the control group. An HR > 1 indicates a higher relative risk of breastfeeding cessation from birth to 6 months post-partum.

Results

Characteristics of mothers

The average age of the mothers was 30.0 ± 4.6 years. The mothers in the sample were relatively highly educated with 61% having attended some form of college. Thirty-nine women (0.1%) met criteria for AN, 334 (0.8%) met criteria for BN, 2007 (4.6%) met criteria for BED, 42 (0.1%) met criteria for EDNOS-P, 36 933 (85.5%) reported no eating disorder and 8.9% had missing information on the eating disorder questions. Ninety-eight per cent of the mothers initially started to breastfeed their infant. Up to 6 months post-partum, 85% were still breastfeeding. Eighty-three per cent of the mothers began predominantly breastfeeding. Up to 6 months, 15% were still predominantly breastfeeding.

Table 1 presents differences across eating disorder groups in maternal age, education and BMI at 6 months post-partum, Apgar score 5 min after birth, pre-term birth and low birthweight. Women with AN before pregnancy had significantly lower BMI 6 months post-partum ($P < 0.001$) and were signifi-

Table 1. Population characteristics for mothers at 6 months post-partum, by eating disorder subtypes

	Eating disorders (*n*)						
	AN (39)	BN (334)	BED (2007)	EDNOS-P (42)	NO ED (36 933)	F/χ² (d.f.)	*P*
BMI at 6 months post-partum (SD)	19.3 (2.0)	25.1 (5.1)	26.6 (5.1)	25.3 (5.1)	24.4 (4.2)	144.2	<0.001
Range	17–24	16–44	16–49	18–45	14–52		
Age, means (SD)	26.5 (4.7)	29.7 (4.8)	30 (4.6)	28.2 (5.0)	29.9 (4.5)	7.76	<0.001
Education %						149.7 (12)	<0.001
<3 years (high school)	11	13	11	17	8		
3 years (high school)	51	38	37	34	30		
1–4 years (university)	17	34	39	34	42		
>4 years (university)	20	15	13	15	20		
Apgar score at 5 min, means (SD)	9.5 (0.64)	9.4 (0.84)	9.4 (0.81)	9.5 (0.67)	9.4 (0.77)	0.37	NS
Pre-term birth (% <37 weeks)	2.6	4.0	5.4	7.3	4.8	2.85	NS
Low birthweight (% <10%)	5.1	8.1	6.3	14.3	7.7	8.64	NS

BMI, body mass index; SD, standard deviation; d.f., degrees of freedom; AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; EDNOS-P, eating disorder not otherwise specified-purging subtype; NO ED, no eating disorder; NS, not significant.

cantly younger ($P < 0.001$) than women with no eating disorder. Women with BN and BED before or during pregnancy had significantly higher BMI 6 months post-partum than women with no eating disorder ($P < 0.001$). Mothers with no eating disorder were more highly educated than the mothers with the different eating disorder subtypes. There were no statistically significant differences between the eating disorder groups and the referent mothers on Apgar score 5 min after birth, pre-term birth and low birthweight.

Eating disorders and breastfeeding practices

Ninety-eight percent of the mothers initially started to breastfeed their infant, and there were no significant differences between the mothers with various eating disorders and mothers with no eating disorders. The rates for starting with predominantly breastfeeding were 81% for AN [95% confidence interval (CI) ±12.3), 81% for BN (95% CI ±4.2), 80% for BED (95% CI ±1.75), 71% for EDNOS-P (95% CI ±13.7) and 83% for mothers with no ED (95% CI ±0.4). Only mothers with BED were significantly less likely to predominantly breastfeed than the referent mothers (OR = 0.81; 95% CI = 0.72–0.90). Cumulative survival of breastfeeding by eating disorder subgroups are given in Figs 1 and 2.

Survival analysis using Cox proportional hazard model was used to determine the association between eating disorder groups and cessation of breastfeeding (Table 2) and cessation of predominant breastfeeding (Table 3). As can be seen in Table 2 in the unadjusted model, all eating disorders had significant elevated risk of breastfeeding cessation during the first 6 months post-partum. After adjusting for characteristics of the mother and the child, only the AN and EDNOS-P group had a significant elevated risk of early breastfeeding cessation.

Table 3 shows that only mothers with BED had a 12% statistically significant higher risk of early cessation of predominant breastfeeding in the unadjusted model. There were no significant differences between the eating disorder subgroups and referent mothers in the adjusted model.

Discussion

In this large population-based study, 98% of all women initiated breastfeeding. This high proportion of breastfeeding women is consistent with previous reports from Norway (Lande *et al.* 2003), and is much higher than in other industrialized countries, such as the UK (66%) (Lawson 1998) and the US (60%) (Ryan 1997).

Mothers with eating disorders during the 6 months before or during pregnancy reported that they initially started to breastfeed their infant at the same high rate as women without eating disorders. However, the risk of cessation of breastfeeding during
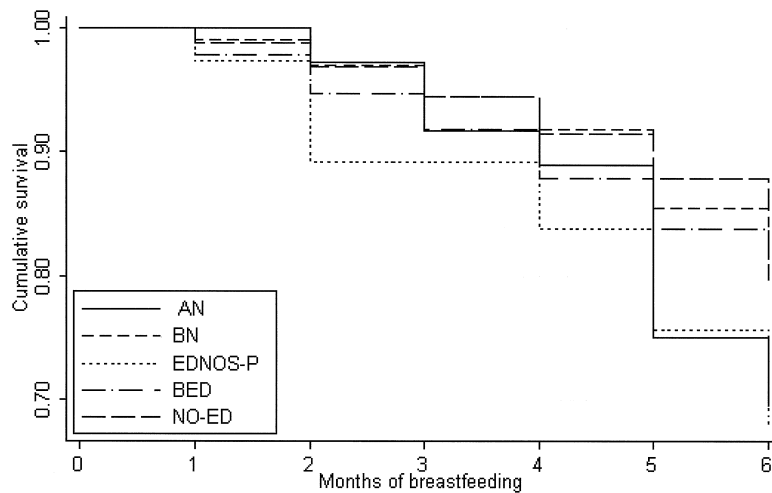
Fig. 1. Cumulative survival (%) of breast-feeding by eating disorder subgroups (Kaplan–Meier analysis). AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; EDNOS-P, eating disorder not otherwise specified-purging subtype; NO ED, no eating disorder.
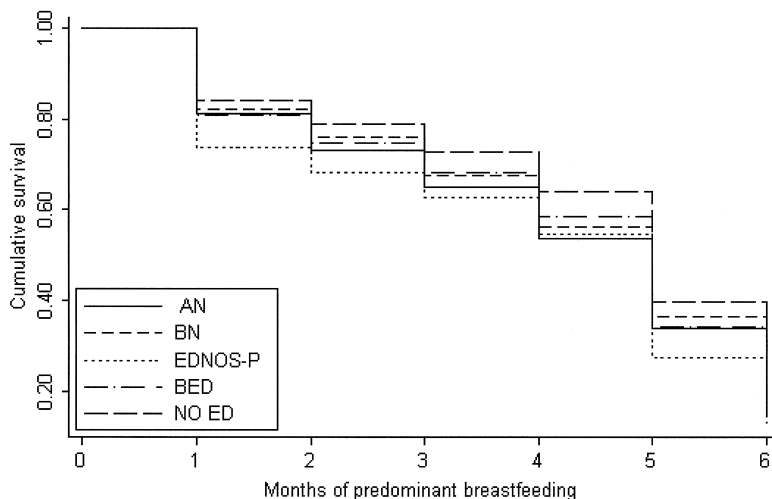
Fig. 2. Cumulative survival (%) of predominanty breastfeeding by eating disorder subgroups (Kaplan–Meier analysis). AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; EDNOS-P, eating disorder not otherwise specified-purging subtype; NO ED, no eating disorder.

the first 6 months was higher for mothers within all subgroups of eating disorders compared to mothers without eating disorders, suggesting that differences in feeding behaviour by mothers with eating disorders are already apparent during the breastfeeding period. Mothers with BED started with predominant breast-feeding at a lower rate than mothers without eating disorders, and the risk for cessation of predominant breastfeeding was higher for this group only.

When age, education, BMI and birth complications were included as covariates, the only significant difference that remained was that mothers with AN and EDNOS-P subtype had a significantly higher risk of

early cessation of breastfeeding. Earlier studies have indicated more frequent general feeding problems among mothers with eating disorders (Patel *et al.* 2002). We had expected a lower prevalence of breast-feeding across all eating disorder subtypes. It is possible that different processes are operative across eating disorder subtypes relative to the decision to stop breastfeeding. A small qualitative study of 16 women with eating disorders found that many of the women with eating disorders were delaying the cessation of breastfeeding in order to sustain the belief in their ability to adequately provide for the need of the growing infant (Stapleton *et al.* 2008). They also

Table 2. The association between eating disorders and cessation of breastfeeding during the first 6 months using Cox regression analysis

	Unadjusted		Adjusted	
	HR	(95% CI)	Adjusted HR	(95% CI)
No eating disorder	1	–	1	–
Anorexia nervosa	2.07	(1.15–3.74)	2.35	(1.22–4.53)
Bulimia nervosa	1.29	(1.00–1.67)	1.05	(0.79–1.38)
EDNOS-P	2.28	(1.29–4.01)	1.95	(1.08–3.53)
Binge eating disorder	1.37	(1.24–1.52)	1.01	(0.90–1.13)
Maternal age			0.96	(0.96–0.97)
Education				
not completed high school			1	–
high school			0.66	(0.61–0.71)
~4 years university			0.35	(0.32–0.38)
>4 years university			0.24	(0.21–0.27)
BMI at 6 months			1.08	(1.07–1.08)
Apgar score at 5 min			0.95	(0.92–0.98)
Pre-term birth (% <37 weeks)			0.81	(0.71–0.92)
Low birthweight (% <10%)			0.72	(0.65–0.81)

HR, hazard ratios; CI, confidence interval; EDNOS-P, eating disorder not otherwise specified-purging subtype; BMI, body mass index.

Table 3. The association between eating disorders and cessation of predominant breastfeeding during the first 6 months using Cox regression analysis

	Hazard of predominant breastfeeding cessation			
	Unadjusted		Adjusted	
	HR	(95% CI)	Adjusted HR	(95% CI)
No eating disorder	1	–	1	–
Anorexia nervosa	1.14	(0.80–1.63)	1.19	(0.81–1.75)
Bulimia nervosa	1.07	(0.94–1.20)	1.03	(0.90–1.17)
EDNOS-P	1.18	(0.83–1.68)	1.04	(0.70–1.54)
Binge eating disorder	1.12	(1.06–1.17)	1.02	(0.97–1.08)
Maternal age			0.98	(0.96–0.97)
Education				
not completed high school			1	–
high school			0.87	(0.61–0.71)
~4 years university			0.74	(0.32–0.38)
>4 years university			0.69	(0.21–0.27)
BMI at 6 months			1.03	(1.03–1.03)
Apgar score at 5 min			0.98	(0.96–0.99)
Pre-term birth (% <37 weeks)			1.07	(1.00–1.14)
Low birthweight (% <10%)			0.85	(0.81–0.90)

HR, hazard ratios; CI, confidence interval; EDNOS-P, eating disorder not otherwise specified-purging subtype; BMI, body mass index.

reported that breastfeeding was protective against the re-emergence of practices underpinning their eating disorder and the belief that breastfeeding would accelerate their weight loss. It is therefore possible that some mothers with eating disorders might perceive benefits from continuing to breastfeed their child.

AN, however, may operate differently. First, case studies have indicated that mothers with AN who weaned early reported that they did so because of low or no milk supply or difficulty with breastfeeding (Evans & Legrange 1995; Waugh & Bulik 1999). AN is an eating disorder characterized by a strong refusal to maintain a normal bodyweight and an intense fear of

gaining weight that persists even with weight loss. The medical complications are more severe among patients with AN than BN, due to complications of the starvation state (Pomeroy & Mitchell 2002). However, little is known about the effect of AN on lactation. In their analysis of the available literature, Prentice *et al.* (1994) found that lactation performance was independent of maternal BMI, and therefore, BMI would not provide a useful index of functional impairment in the breastfeeding mother as judged by the quantity or quality of milk production. Focus groups that we have conducted yielded comments from mothers such as, once the baby was born, they no longer felt justified in eating more leading to the cessation of breastfeeding due to reduced milk production (Mazzeo, personal communication). An alternative explanation is related to a possible association between breastfeeding and body awareness. Mothers with AN and BN have reported the embarrassing aspect of breastfeeding as a primary reason for using formula (Waugh & Bulik 1999). Shame or embarrassment could be more strongly experienced by women with AN than those with other eating disorders.

Only three population-based studies have previously examined the effect of eating disorders on breastfeeding. In these studies, it was not controlled for relevant covariates and not distinguished across eating disorder subtypes. These studies also reported lifetime prevalence's of eating disorders, whereas we focused on eating disorders immediately prior to, or during pregnancy. These fundamental methodological differences render direct comparisons of results difficult. Agras *et al.* (1999) conducted a study of 216 mothers, reporting no differences in breastfeeding duration between mothers with eating disorders (AN and BN combined) and mothers without eating disorders. A Swedish study of 454 mothers found that, of the women reporting a lifetime eating disorder, 19% did not breastfeed their children at the age of 3 months, compared with 7% among mothers without eating disorders (Larsson & Andersson-Ellstrom 2003). Micali *et al.* (2009) studied mothers with a lifetime self-report history of eating disorders (12 050 mothers from the Avon Longitudinal Study of Parents and Children (ALSPAC study). They found that the women with eating disorders were more likely to breastfeed (83% vs. 76%), and were less likely to stop breastfeeding during the first year of infant life.

We also found that mothers with EDNOS-P had a somewhat higher risk of early cessation of breastfeeding. To our knowledge, breastfeeding among mothers with this eating disorder subtype has never been previously studied. This is a relatively new eating disorder category including persons who engage in purging behaviour, like in bulimia, but in the absence of binge eating. A recent study reported that women with purging disorder displayed significantly higher drive for thinness, body dissatisfaction and lower levels of self-esteem than women with no lifetime eating disorders (Fink *et al.* 2009). Higher body dissatisfaction (Barnes *et al.* 1997) and lower self-esteem (Britton & Britton 2008) have been related to early cessation of breastfeeding. More studies are needed to better understand the impact of purging disorder on breastfeeding.

The findings of the current study should be interpreted in the context of the following limitations. First, all information about the mothers is based on self-report. The questions about eating disorders used to develop diagnostic algorithms reflected DSM-V criteria, but direct interviews may have yielded richer diagnostic information. Self-reported weights have been shown to be valid measures of weight in the general population, but there is a tendency for overweight and obese women to underestimate their weight (Rowland 1990; Engstrom *et al.* 2003). Some reports indicated that inaccurate estimation may be a problem among women with eating disorders (Conley & Boardman 2007). The rates of breastfeeding in this study are consistent with earlier Norwegian studies (Lande *et al.* 2003). Second, we targeted broadly defined eating disorders using frequency criteria for binge eating and purging which differ from current DSM-IV criteria. However, the established criteria have not been empirically supported and have continually been questioned. Our frequency criterion of once per week for binge eating in BN and BED has empirical support in the literature (Sullivan *et al.* 1998). Third, 42% of invited women agreed to participate in MoBa. This response rate is typical for large epidemiologic studies, and it does not necessarily imply a biased sample

(Hartge 2006). MoBa participants are, however, somewhat more educated than the general Norwegian population (Bulik *et al.* 2007). In addition, the sample does not fully represent the ethnic diversity of Norway because the ability to understand the Norwegian questionnaire was one of the inclusion criteria in the study. Moreover, given the considerable effort required to participate in the various waves of the MoBa protocol, the women with eating disorders who do participate may represent the healthier end of the eating disorder severity spectrum. Even if the prevalence estimates of both eating disorders and breastfeeding duration differ from the general population, this would not invalidate the observations of the relations among the variables. This study also has many strengths including a prospective and longitudinal design, careful collection of many potential confounders, and a sufficiently large sample size to study uncommon diseases such as eating disorders.

In conclusion, our results support earlier studies which suggest that differences in the early feeding environment are apparent in women with AN as early as 6 months. The majority of mothers with eating disorders breastfeed their children, but they stop breastfeeding earlier than mothers with no eating disorders. With the exception of AN and EDNOS-P, this result may be accounted for by the confounders. Only AN and EDNOS-P were associated with breastfeeding practices as indexed by early cessation of breastfeeding. These women may require additional support from health-care providers in order to explore reasons for early cessation of breastfeeding and ongoing support in order to provide an optimal feeding experience for their children.

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Conflicts of interest

No conflicts of interest have been declared.

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