



Maternal history of eating disorders: Diet quality during pregnancy and infant feeding



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ABSTRACT

We studied associations of maternal history of eating disorders (EDs) with diet quality of pregnant women and their infants, and breastfeeding practices. We included 6196 mother-child pairs from Generation R, a population-based cohort in the Netherlands. Maternal history of lifetime EDs was assessed during pregnancy with a questionnaire. Dietary intake during pregnancy and in infancy was assessed with food-frequency questionnaires and diet quality scores were calculated, reflecting adherence to dietary guidelines. Breastfeeding practices were assessed with questionnaires at 2, 6, and 12 months. We observed that, after adjustment for socioeconomic and lifestyle factors, women with a history of EDs had a higher diet quality than women without a history of EDs ($B = 0.24$ SD, 95%CI: 0.15; 0.33). Mothers with a history of EDs were less likely to breastfeed (unadjusted OR = 0.68, 95%CI: 0.51; 0.93), although no longer statistically significant after adjustment (OR = 0.75, 95%CI: 0.55; 1.03). These findings suggest that mothers with a history of EDs seem slightly less likely to initiate breastfeeding, however, this warrants further investigation. At the age of 1 year, infants of mothers with a history of EDs had a higher diet quality ($B = 0.15$ SD, 95%CI: 0.02; 0.27). We conclude that mothers with a history of EDs and their infants have a relative good diet quality, although follow-up studies are needed to assess long-term associations with diet in later childhood and adolescence.

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1. Introduction

Eating disorders (EDs) are mental disorders characterized by disordered eating and distorted body images (American Psychiatric Association, 1994; American Psychiatric Association, 2013). Anorexia nervosa (AN) is characterized by an extreme restriction of energy intake, a low body weight, an intense fear of gaining weight, and a distorted body image (American Psychiatric Association, 1994; American Psychiatric Association, 2013). Bulimia nervosa

(BN) is characterized by recurrent periods of uncontrolled binge-eating, followed by compensatory behaviors to prevent weight gain (American Psychiatric Association, 1994; American Psychiatric Association, 2013). Women with an ED have an increased risk of psychiatric co-morbid disorders and medical complications (Papadopoulos, Karamanis, Brandt, Ekblom, & Ekselius, 2013; Watson et al., 2014), including fertility difficulties (Easter, Treasure, & Micali, 2011; Patel, Wheatcroft, Park, & Stein, 2002), pregnancy complications (Kimmel, Ferguson, Zerwas, Bulik, & Meltzer-Brody, 2015; Micali, Simonoff, & Treasure, 2007; Sollid, Wisborg, Hjort, & Secher, 2004), and their offspring might be at increased risk of health issues (Agras, Hammer, & McNicholas, 1999; Patel et al., 2002). Women who suffered from an ED in the past may be more aware of what they eat during pregnancy (Mazzeo, Zucker, Gerke, Mitchell, & Bulik, 2005) and which foods they provide to their infants (Mazzeo et al., 2005). As nutrition during pregnancy and in early childhood may have long-term

Abbreviations: AN, Anorexia nervosa; BMI, Body mass index; BN, Bulimia nervosa; BSI, Brief Symptom Inventory; CI, Confidence interval; ED, Eating disorder; FFQ, Food frequency questionnaire; IQR, Interquartile range; SD, Standard deviation.

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consequences for growth, development, and health (Craigie, Lake, Kelly, Adamson, & Mathers, 2011; Emmett, Jones, & Golding, 2015; Langley-Evans, 2015), it is important to study diet quality during these periods.

Women with a history of EDs may have more nutritional knowledge and therefore provide themselves and their children with healthier diets (Ho, Soh, Walter, & Touyz, 2011; Laessle et al., 1988). Indeed, pregnant women with a history of EDs seem more likely to adhere to a dietary pattern characterized by a high intake of meat substitutes, legumes, nuts and herbal teas (Micali, Northstone, Emmett, Naumann, & Treasure, 2012), and to have lower intakes of high-fat meats (Siega-Riz et al., 2008). Among school-aged children of mothers with a history of EDs, a higher adherence to a data-driven ‘health conscious/vegetarian’ dietary pattern has also been reported (Easter et al., 2013). Likewise, at ages 1–4 years, these children ate less junk food than children of mothers without a history of EDs (Vaugh & Bulik, 1999). Less is known about diet quality in infancy. Moreover, adherence to these data-driven dietary patterns or a low consumption of high-fat foods does not necessarily imply that the overall diet is actually healthier (Kant, 1996; Ocké, 2013). Therefore, further research examining the overall diet quality beyond specific patterns in women with a history of EDs and their infants is needed.

Although mothers with a history of EDs may provide themselves and their infants with healthier diets, they may face difficulties with breastfeeding (Vaugh & Bulik, 1999). Enduring shape concerns and body awareness in women with a history of EDs could evoke feelings of embarrassment of breastfeeding (Patel et al., 2002; Vaugh & Bulik, 1999). Alternatively, the common belief that breastfeeding promotes weight loss may increase breastfeeding initiation and duration in women with a history of EDs (Patel, Lee, Wheatcroft, Barnes, & Stein, 2005), who may still have the desire to be thin. Contrasting results with regard to breastfeeding have been reported, with a study showing that mothers with a history of EDs were more likely to start breastfeeding and to continue for a longer period (Micali, Simonoff, & Treasure, 2009), whereas other studies found shorter (Larsson & Andersson-Ellström, 2003; Torgersen et al., 2010), or similar durations (Allen, Gibson, McLean, Davis, & Byrne, 2014; Evans & Grange, 1995; Hoffman et al., 2014). Thus, associations between maternal EDs and breastfeeding remain unclear.

Therefore, we aimed to explore the associations between maternal history of EDs and overall diet quality of women during pregnancy, as well as their breastfeeding practices and their infants’ diet quality during the first year of life.

2. Methods

2.1. Study design

This study was embedded in the Generation R Study, a multi-ethnic population-based prospective cohort from fetal life onward, conducted in Rotterdam, the Netherlands (Jaddoe et al., 2012). Pregnant women living in Rotterdam, with an expected delivery date between April 2002 and January 2006 were invited to participate (baseline response rate: 61%). All participating parents gave written informed consent and medical ethical approval was obtained from the medical ethical committee of the Erasmus Medical Center. Further information is available elsewhere (Jaddoe et al., 2012).

2.2. Participants

A total of 6608 women were enrolled during pregnancy, provided information on their history of EDs and gave full consent for

the prenatal and postnatal phase of the study. Those with missing data on all dietary outcome variables were excluded ($n = 412$), resulting in a total of 6196 mother-child pairs with eligible data. Because data on diet quality and breastfeeding were not complete for all participants, the population for analysis varied per specific analysis (n between 2933 and 5035).

3. Measures

3.1. Maternal history of eating disorders

Mothers’ history of lifetime EDs was assessed with a self-report questionnaire during pregnancy as described in detail elsewhere (de Barse et al., 2015; Micali, De Stavola et al., 2012). The questionnaire included a vignette to clarify what was meant by AN and BN. This vignette was based on diagnostic criteria (American Psychiatric Association, 1994), but was slightly changed to create a clear and understandable description of both AN and BN. The vignette was followed by questions whether the women had suffered from either AN or BN (ever and in the previous year), such as: “Have you ever tried to lose weight to the extent that you may have suffered from anorexia?”, “Have you suffered from anorexia in the past year?”, and “Have you ever had bouts of compulsive eating as described for bulimia?”. Additionally, the questionnaire included items about treatment, medication, and the inability to work as a result of the disorder. Women who answered ‘yes’ on at least one of these questions, were categorized as having a history of EDs. Due to a low prevalence of EDs in the year before pregnancy (Micali, De Stavola et al., 2012), women were grouped according to their lifetime history of any ED (i.e., a history of any ED versus no history of EDs).

Given the large sample size, it was not feasible to obtain a clinical diagnosis. However, in a sub-sample ($n = 928$) of the Generation R Study, our self-reports of EDs were evaluated against clinical diagnoses. Excellent sensitivity (100%) and specificity (96%) were found for self-reported AN, and very good sensitivity (94%) and specificity (81%) were found for self-reported BN (Micali, De Stavola et al., 2012).

3.2. Diet quality during pregnancy

Women’s dietary intake in early pregnancy was assessed using a semi-quantitative 293-item food frequency questionnaire (FFQ) at enrollment (median 13.6 weeks of gestation, interquartile range (IQR) 12.4–16.2). The FFQ included foods that were frequently consumed in the Dutch population and was modified for use during pregnancy (Klipstein-Grobush et al., 1998). Energy and nutrient intakes were calculated using the Dutch food composition table from 2006 (Netherlands Nutrition Center, 2006). The FFQ was validated against three 24-h recalls among 71 pregnant women living in Rotterdam. Intra-class correlation coefficients for macro-nutrient intakes ranged from 0.5 to 0.7 (Tielemans et al., 2015).

National dietary guidelines (Health Council of The Netherlands, 2015) were used to develop a predefined diet quality score for pregnant women. The following 15 components and cut-offs were included in the diet score: vegetables (≥ 200 g/d), fruit (≥ 200 g/d), whole grains (≥ 90 g/d), legumes (≥ 135 g/wk), nuts (≥ 15 g/d), dairy (≥ 300 g/d), fish (≥ 100 g/wk), tea (≥ 450 g/d), grain quality (ratio whole grains of total grains), soft fats and oils (ratio of total fat), red meat (≤ 375 g/wk), sugar-containing beverages (≤ 150 g/d), alcohol (yes/no), salt (≤ 6 g/d), and folic acid supplements in early pregnancy (periconceptional/first ten weeks/not). For each component, except for alcohol and folic acid supplements, the ratio of the reported intake and the recommended intake was calculated. For example: a woman with a vegetable intake of 120 g/d received a score of 0.6

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