Infant feeding in women with eating disorders – insights from healthcare professionals

by

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ABSTRACT

Eating disorders (EDs) are severe mental health conditions with significant impact on physical health. EDs affect predominantly women, including during the reproductive phases of their lives. Although pregnancy and childbirth can have protective and restorative functions for some women with EDs, the relationship between pregnancy/childbirth and ED is bidirectional, as post-partum relapse is not a seldom phenomenon. In fact, the post-partum period may be a very destabilizing event for a woman with a history of an ED, which not only may negatively affect her own physical and mental health, but also her overall adjustment to motherhood and various aspects of caretaking for her child, including infant feeding.

Our research project explores the infant feeding choices in women with ED from a healthcare provider's point of view, with a particular focus on breastfeeding in the context of the current public recommendations for optimal infant feeding which currently promote exclusive breastfeeding for 6 months and extended breastfeeding for 2 years and beyond. Specifically, we asked whether breastfeeding may carry abuse potential for excessive and/or accelerated post-partum weight loss in mothers with past or present EDs. Using interpretive description, we explored 7 healthcare provider's (4 dietitians, 1 psychiatrist, 1 nurse, 1 psychologist) experiences with infant feeding choices of women with EDs. Interview transcripts were examined by three observers and extracted themes included women's and healthcare providers' personal beliefs around breastfeeding, specific ED symptoms affecting coping with pregnancy, postpartum, and infant care (i.e., body image and cognitive distortions, need for control, infant attachment, changes to the identity as a woman), denial of abusive breastfeeding practices, and support for breastfeeding. Our final analysis suggests that women with ED may engage in problematic breastfeeding practices for its caloric expenditure, however the presence and extent of these

practices is difficult to establish due to denial and concealment of purging behaviors by women with ED. Healthcare providers may benefit from specific education on recognizing signs of excessive breastfeeding practices in women with (suspected) EDs, and on delivering ED-informed advice with a balanced approach to breastfeeding that is beneficial to the infant, but also attending to the patient's values and needs. Consequently, new mothers with EDs may benefit from tailored recommendations on infant feeding choices, including support for healthy extended breastfeeding in conjunction with supports to safely lose their postpartum weight. This thesis concludes with five recommendations for healthcare providers derived from our results, aimed to promote sensitive and tailored care for mothers with suspected ED.

PREFACE

This thesis is the original, unpublished work of Dr. Natalia Stavila, MD, collaboratively conducted with Dr. Esther Fujiwara, PhD, Dr. Tanya Park, PhD and Dr. Lara Ostolosky, MD.

The research in this thesis received ethics approval from the University of Alberta, Health Research Ethics Board, No. Pro00078980.

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1. Introduction

Eating disorders are highly complex, serious psychiatric conditions that may lead to significant medical complications, high levels of psychological distress, risk of long-term mental illness and increased risk of premature fatalities due to medical complications or suicide. Eating disorders have one of the highest impacts on health-related quality of life among all psychiatric disorders (Hay et al., 2014).

EDs are more common than is realized in women of reproductive age. Eating disordered symptomatology in pregnancy was prevalent in 7.5% in a population based cohort in UK (N=739 Easter et al., 2013). Although EDs are quite prevalent today, research is limited on precursors, consequences, and treatment implications of EDs among childbearing women. A retrospective population-based study in Norway examined the frequency of self-reported EDs in females who had delivered a baby, along with interrogating their perceptions of body shape changes in the first 3-7 months postpartum. The study also specifically examined breastfeeding behavior, including the length of breastfeeding periods (Larsson & Andersson-Ellström, 2003). A total of 11.5% of women had a history of an ED (out of N=454) and of these, breast-feeding at 3-months post-partum was less likely than in women without an ED history. This implies premature termination of breastfeeding and/or difficult initiating breast-feeding in women with EDs.

Over the last two decades, debates about infant feeding practices have intensified with increasing pressures on women living in industrialized countries to breastfeed their infants (Stapleton et al., 2008). The most recent WHO (2018; https://www.canada.ca/en/public-health/services/health-promotion/childhood-adolescence/stages-childhood/infancy-birth-two-years/breastfeeding-infant-nutrition.html) breastfeeding guidelines state as follows: initiation of breastfeeding within the first hour after the birth; exclusive breastfeeding for the first six months;

continued breastfeeding for two years or more, together with safe, nutritionally adequate, age-appropriate, responsive complementary feeding starting in the sixth month. These guidelines may have limited applicability to special cases such as women with EDs. The medical and public health literature generally supports that - irrespective of EDs - women who breastfeed do so primarily to confer health benefits to their babies (Murphy, 1999). However, the desire to lose the extra weight accumulated during gestation and to recover to the pre-pregnancy shape and size, can also motivate women's decisions to breastfeed, at least in western cultures (Ryan, 2001). This poses a particularly challenging situation for women with EDs and their health care providers. Reflecting on my own personal experience with breastfeeding and breastfeeding advice I received, during the completion of this study project I had two daughters whom I breastfed for 12 and 14 months, respectively. I made this choice based on personal and culturally based beliefs, but also based on the scientific knowledge I had as a physician. In medical school we were taught that not only breastmilk was nutritious but was also rich in antibodies that were passed through breastmilk to the immune naïve babies, and thus protecting them within the first few months of their lives before they receive their first vaccinations. As someone interested in mental health, I also believed it promoted a stronger attachment between me and my daughters. Nevertheless, I distinctly recall thinking to myself of the additional benefit of weight loss that came with breastfeeding. I also recall these "side effects" of breastfeeding being highly emphasized to new mothers during my Obstetrics rotation. Therefore, I could not help but think that some women, especially someone with a history of an ED, may become overinvested in the weight loss aspect of breastfeeding when they receive unanimous advice on the benefits of breastfeeding over and above any other infant feeding choices. I thought that women who are concerned about their pregnancy-related weight gain and changed body shape then could

possibly employ unhealthy breastfeeding behaviors such as prolonged breastfeeding, pumping and dumping their milk or pumping and donating their excess milk to milk banks. Nevertheless, during my literature review to explore this behaviour I found no scientific literature to support that such behaviors truly exist. As mentioned above, existing literature on this topic (Larsson & Andersson-Ellström, 2003; Ward, 2008) points towards *premature* termination and/or breastfeeding *problems* in women with EDs, compared to the general population. But consider the potential of breastfeeding to burn calories: According to the La Leche League, it takes roughly 20 calories to produce 1 oz. of milk. For the average 150-pound woman, this means breastfeeding burns approximately 500 calories per day. In comparison, 30 minutes of light housework would burn 246 calories, and 30 minutes of aerobic dancing would burn 546 calories. Thus, in women with EDs, breastfeeding or excessive, prolonged breastfeeding might carry abuse potential (e.g., to lose weight). This behavior may then be detrimental to the health of both mother and child. If this were the case, a more flexible approach to delivering guidance on breastfeeding when advising mothers who have an ED.

Based on anecdotal clinical observations Dr. Ostolovsky, director of the Eating Disorder Program at the Department of Psychiatry, at University of Alberta Hospital, shared with me at the start of this project, some women from the Eating Disorder Program may have engaged in excessive breastfeeding practices (e.g., prolonged lactation, freezing excessive amounts of milk, milk donation etc.) to lose weight. This type of observation, if confirmed by our study, would call for changes to breastfeeding guidelines with some adjustment for women with an ED whose body weight/shape is a central concern of theirs, and during the postpartum time in particular. Given the lack of scientific evidence that such behaviours are employed by women with ED, we aimed to collect and analyze clinicians' opinions and observations of breastfeeding practices in

women with ED who received treatment in the program. Our original intentions were to also explore the opinions, attitudes and practices of breastfeeding of women with ED from their point of view in the second phase of our study. However, due to COVID-related disruptions we were unable to do so and completed our project at phase one, describing our insights from the perspective of the healthcare professionals regarding infant feeding choices of the women they work with in the Eating Disorders Program.

1.1. Eating Disorders

In North American psychiatric practice, eating disorders (EDs) are diagnosed according to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association [APA], 2013). In the DSM-5, EDs are subsumed in the chapter "Feeding and Eating Disorders" and comprise (in approximate neurodevelopmental sequence of onset age): Pica, Rumination Disorder, Avoidant/Restrictive Food Intake Disorder, Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), as well as Other Specified Feeding and Eating Disorders (OSFED). These disorders are broadly defined as persistent disturbances of eating or eating-related behaviors that may lead to aberrant use and assimilation of nutrients and that can result in serious physical detriment and poor psychological functioning.

1.1.1. Epidemiology of EDs

Although EDs are not as common as other mental disorders, they represent a public health issue as they are often comorbid with other psychiatric conditions, carry potential for medical complications and are often under-treated, which can result in functional disability and poor quality of life (Hudson et al., 2007). Worldwide it is estimated that nearly 9% of the population may be affected by an eating disorder (ED) (Arcelus et al., 2011). However, it should be kept in mind that epidemiological data on EDs are skewed by the fact that individuals with EDs are

often inclined to minimize or conceal their symptoms, and typically do not pursue professional help (Smink et al., 2012). According to a recent report by Deloitte Access Economics for the Strategic Training for the Prevention of Eating Disorders and the Academy for Eating Disorders, approximately 28.8 million people in the United States of America will have an ED during their lifespan with a one-year prevalence of EDs of 1.66% (5.48 million cases) between 2018-2019 (DAE, 2020). The one-year prevalence for the same time period was estimated to be higher in women (2.62%, 4.39 million cases) compared to males (0.67 %, 1.09 million cases) (DAE, 2020). Far less is known about the epidemiology of ED amongst males, but the existing literature estimates a ratio of approximately 10:1 female to male for one-year prevalence (5th ed.; DSM-5; American Psychiatric Association [APA], 2013). Canadian data are scarce. According to an expert report of the Standing Committee on the Status of Women of the Public Health Agency of Canada (PHAC) to the House of Commons published in 2014, it is estimated that at any point in time, nearly 600.000 to 990.000 Canadians may fulfill the diagnosis of an ED including AN, BN, or BED (LeBlanc, 2014). According to this report, in 2014, 0.5% of Canadians aged 15 and above had been given a diagnosis of an ED in the past 12 months, and 1.5 % of Canadians acknowledged symptoms consistent with an "eating attitude problem". Of the EDs, AN or BN are most commonly seen in psychiatric care, owing to the severity of symptoms which can require immediate medical attention.

1.1.2. Anorexia Nervosa

AN is an eating disorder defined by weight loss (or lack of appropriate weight gain in children/adolescents with incomplete growth); difficulties maintaining an appropriate body weight for height and weight and in some individuals, a distorted body image. To be diagnosed with AN according to the DSM-5, the following criteria must be met:

1. Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. Significantly low weight is defined as a weight that is less than minimally normal, or, for children and adolescents, less than minimally expected.
2. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain even though at a significantly low weight.
3. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

If not all the above criteria are met, a serious ED can still be present, for example atypical AN, which entails individuals who meet the criteria for AN but who may not be underweight, albeit having substantial weight loss. Further, AN is subclassified in:

1. Restricting type – During the last 3 months, the individual has not engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics or enemas). Weight loss is accomplished primarily through dieting, fasting and/or excessive exercise.
2. Binge-eating/purging type – During the last 3 months, the individual has engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics or enemas).

Once in remission, AN can be further classified in full or partial remission and body-mass-index (BMI) can determine the severity of this ED, namely BMI > 17 – mild AN; BMI 16-16.99 – moderate AN; BMI 15-15.99 – severe and BMI< 15 – extreme AN.

According to the DSM-5, the 12-month prevalence of AN is 0.4% for females and 0.04% for males (Association, 2013). Several population-based epidemiological studies have depicted a lifetime prevalence for AN in women specifically, ranging from 0.9 % in the US (Hudson et al., 2007) to 2.2 % in Finland (Keski-Rahkonen et al., 2007). Some of the higher numbers may represent detection of cases that are omitted when identification was based on clinical referral, compared to self-referral (Keski-Rahkonen et al., 2007). With respect to incidence, according to a meta-analysis (Keel & Klump, 2003) and a systematic review (Hoek & van Hoeken, 2003), the incidence of AN had significantly increased during the 20th century from 0.2 per 100.000 persons per year during 1940-1949 to 8 cases per 100.000 per year in the1970's (Hoek & van Hoeken, 2003). Similar numbers were reported in a community-based epidemiological study by Lucas et al (1999) with an incidence rate of 8.3 per 100.000 person-years between 1985-1989 (Lucas et al., 1999). Moreover, evidence suggests that the incidence of AN continued to rise in the first decade of the current century. Based on the health registry in Sweden (Javaras et al., 2015) the incidence of AN in females and males from 2001 to 2009 had significantly increased with a recorded incidence of 205.9 cases per 100.000 persons per year for females aged 14-15. Similarly, a study from Denmark's nationwide psychiatric registry from 1995 to 2010 depicted a peak incidence of 12.6 per 100.000 person-years (Steinhausen & Jensen, 2015). Notably, these rates would be affected by improved detection of cases secondary to increased awareness of ED and their diagnostic criteria, as increased trends as were noted for AN were also identified for other psychiatric disorders (Steinhausen & Jensen, 2015).

1.1.3. Bulimia Nervosa

BN is a serious, potentially life-threatening ED defined by a cycle of bingeing and compensatory behaviors such as self-induced vomiting intended to reverse or compensate for the effects of binge eating. According to the DSM-5, the diagnostic criteria of BN are:

1. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
    - Eating in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.
    - A sense of lack of control of overeating during the episode (e.g., feeling that one cannot stop eating or control what and how much one is eating).
2. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting, misuse of laxatives, diuretics, or other medications, fasting, or excessive exercise.
3. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months.
4. Self-evaluation is unduly influenced by body shape and weight.
5. The disturbance does not occur exclusively during episodes of AN.

Similar to AN, as per DSM-5 bulimia can be classified by severity level, with mild forms having 1-3 episodes of inappropriate compensatory behaviors per week, moderate with 4-7 episodes per week, severe with 8-13 episodes per week and extreme with 14 or more episodes per week. Once in remission, classification can entail partial or full remission (American Psychiatric Association, 2013).

According to the DSM-5, the 12-month prevalence of BN is 1.0% - 1.5% in teenagers and young adult women (American Psychiatric Association, 2013). These numbers are congruent to the ones identified by Hudson et al. (2007) in a large US-based national face-to-face survey, showing a lifetime prevalence of 1.5% of BN. Onset usually is in late adolescence to young adulthood, thus peak age at onset overlaps somewhat with AN, but tends to fall in a slightly older age range for BN (Stewart Agras, 2017). Regarding incidence, some studies are suggestive of the possibility of decreasing rates of BN in the population. (Currin et al., 2005) depicted an initial rise in BN incidence in women ages 10 to 39 years from less than 25 per 100,000 person-years in 1988 to greater than 50 per 100,000 person-years in 1996, which was followed by a significant decline by 2000 with an incidence of 12.4 cases per 100,000 person-years. Smink et al. (2016) reported an impressive decrease in BN incidence from 8.6 per 100,000 in 1985-1989 to 3.2 per 100,000 person years between 2005-2009 in contrast to stability of AN incidence over the same period of time (Smink et al., 2016). Discrepancies such as these resonate with the fact that BN can be perceived as a culturally-bound pathology (Keel & Klump, 2003) that will oscillate in relation to immediate cultural determinants (Stewart Agras, 2017) and perhaps more so than AN which has a stronger genetic component (Thornton et al., 2011).

1.1.4. Binge Eating Disorder

BED is another serious ED characterized by recurrent episodes of eating large quantities of food, often very fast and to the point of discomfort; a feeling of loss of control during the binge associated with extreme shame, distress, or guilt afterwards; and typically, not using unhealthy compensatory measures to counter the bingeing. DSM-5 diagnostic criteria are as follow:

1. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

- Eating in a discrete period of time (e.g., within any 2- hour period) an amount of food that is definitely larger than what most people would eat in a similar period of time under similar circumstances.
- A sense of lack of control overeating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).

2. The binge eating episodes are associated with three (or more) of the following:
    - Eating much more rapidly than normal.
    - Eating until feeling uncomfortably full.
    - Eating large amounts of food when not feeling physically hungry.
    - Eating alone because of feeling of embarrassment by how much one is eating.
    - Feeling disgusted with oneself, depressed, or very guilty afterwards.
3. Marked distress regarding binge eating is present.
4. The binge eating occurs, on average, at least once a week for three months.
5. The binge eating is not associated with the recurrent use of inappropriate compensatory behaviors (e.g., purging) as in BN and does not occur exclusively during the course of BN or AN (American Psychiatric Association, 2013).

Regarding prevalence, BED is reported to have a lifetime prevalence of 1.6 % according to the DSM-5 (American Psychiatric Association, 2013). According to a community survey across 14 countries with the World Health Organization (WHO) Composite International Diagnostic Interview, lifetime prevalence estimates of BED was 1.9% across surveys (Kessler et al., 2013), which is similar to the DSM-5 numbers. However, the BED diagnosis was only introduced to the DSM in 2013, and hence systematic research on temporal trends in BED prevalence and incidence rates over many decades is not available.

1.2. Medical Complications and Mortality in EDs

EDs are associated with a large number of possible medical complications. These are most commonly seen in the context of AN and BN (Zerwas & Claydon, 2014). In AN, they are primarily caused by low body weight and malnutrition, whereas in BN medical complications are most commonly secondary to the mode and frequency of purging behaviors (Stewart Agras, 2017). Medical complications in AN and BN are far-reaching and can affect cardiac, gastrointestinal, hematologic, dermatologic, and endocrine systems. Complications secondary to AN may involve nearly every organ system as follow:

1. Cardiac Complications - the most worrisome ones amongst them are myocardial atrophy, arrhythmias (ventricular tachycardias, bradycardia and QT prolongation), pericardial effusion, orthostatic hypotension and sudden cardiac death (Cost et al., 2020).
2. Gastrointestinal complications - chronic malnutrition leads to decrease in gastrointestinal time transit, therefore precipitating gastroparesis and constipation; superior mesenteric artery syndrome characterized by early satiety, nausea and epigastric pain; acute gastric dilatation with high risk of perforation; transaminitis and finally diarrhea due to small intestinal villous atrophy (Cost et al., 2020; Gibson et al., 2019).
3. Pulmonary implications - these are less frequent, however they occur in form of spontaneous pneumothorax and pneumomediastinum; aspiration pneumonia secondary to weakened pharyngeal muscle and difficulties with the second swallowing phase (Cost et al., 2020).
4. Hematologic - these are consequent to the bone marrow fat reduction that result in pancytopenia, namely leukopenia, anemia and thrombocytopenia as weight loss becomes more severe. Interestingly, neutropenia is not linked to increased risk of infections as

seen in other conditions when leukocytes are depleted. These alterations improve with weight restoration and improved nutritional status (Cost et al., 2020; Gibson et al., 2019).

5. Neurologic disorders - these comprise both central and peripheral alterations. Brain imaging studies with CT, MRI and PET have demonstrated both white and grey matter atrophy. These are contextualized by well-known symptoms exhibited by these patients such as hyposmia, dysgeusia, dysregulation of body-temperature and cognitive impairment. The latter is somewhat irreversible even with nutritional rehabilitation (Cost et al., 2020). The peripheral nervous system is affected by the loss of the protective subcutaneous fat layer above the peripheral nerves, leading to compressive neuropathies manifested by tingling, numbness and weakness if a motor nerve is affected.(Stewart Agras, 2017).
6. Dermatologic - these are usual not serious, and they include, xerosis, fissured skin, and lanugo - hair growth on the face and spine, which occurs as a direct consequence of the body to preserve its energy. The loss of the fat pad often leads to development of decubitus ulcers that if untreated may result in systemic infections (Stewart Agras, 2017).
7. Musculoskeletal - similar to cardiac and brain tissue loss, muscular and bone tissue can also suffer significant mass loss. Sarcopenia, or skeletal muscle loss often manifests itself by a dangerous state of weakness and increase risk of falls. Compared to osteopenia, loss of bone density, sarcopenia is completely reversible with nutritional rehabilitation and physiotherapy. This is not the case for osteopenia and osteoporosis, which once established remains permanent.
8. Endocrine abnormalities - reproductive health is directly impacted by endocrine disturbances, compared to the aforementioned factors that may impact childbearing

females indirectly. Of all hormonal dysregulation, amenorrhea is present in most females who have low estrogen due to regression to a prepubertal stage in the hypothalamic-pituitary axis. Generally, menses recommence when 95% of ideal body weight is restored, although it may take up to 9 months for the menses to reoccur (Cost et al., 2020). Although infertility is a well-known complication of ED, some females continue to ovulate despite absence of menses, therefore these individuals are predisposed to an increased risk of unplanned pregnancies. Other endocrinological abnormalities comprise of growth hormone resistance, chronic elevated cortisol levels, euthyroid sick syndrome and hypoglycemia. The later represents a negative prognostic sign, as it portrays hepatic failure and inability to actualize gluconeogenesis and glycogenolysis; hypoglycemia is a common cause of sudden death in AN (Gibson et al., 2019).

Medical complications of BN are directed by the unique means of purging behavior and most of them are localized to the body systems that are involved in the act of purging (Forney et al., 2016). The two main purging methods in BN comprise self-induced vomiting and abuse of laxatives (Stewart Agras, 2017) which consequently may result in the following complications:

1. Self-induced vomiting - these transcends in gastroesophageal reflux due to the altered integrity of the lower esophageal sphincter (Denholm & Jankowski, 2011); tears secondary to forceful repeated emesis; dysphagia, (Stewart Agras, 2017), dental erosions subsidiary to repeated acid exposure (Uhlen et al., 2014); sialadenitis-bilateral parotid gland hypertrophy (Coleman et al., 1998). At a systemic level, self-induced vomiting may result in electrolyte abnormalities such as, hypokalemia, hyponatremia and metabolic acidosis (Jensen et al., 2015).

2. Laxative abuse - similar to self-induced vomiting, laxative abuse may lead to the above-mentioned electrolyte abnormalities which can be life-threatening, due to their arrhythmogenic effects (Jensen et al., 2015); gastrointestinal complications such as hematochezia, hemorrhoids and even rectal prolapse may also occur (Xing & Soffer, 2001).

At the most extreme, EDs are associated with premature mortality. According to the DAE report (DAE, 2020), every 52 minutes there is one death caused by an ED in the U.S.A., either secondary to suicide or cardiac complications. Arcelus et al. (2011) reported that EDs carry one of the highest mortality rates of all psychiatric disorders, after opioid use disorder. In their meta-analysis of 34 quantitative ED studies with a total of 17, 272 individuals, Arcelus et al. (2011) estimated that mortality levels were 5.86 times higher in individuals with AN compared to the general population, 1.93 times higher in individuals with BN and 1.92 higher in those with ED not otherwise specified (EDNOS) diagnoses – a subcategory previously included in the DSM-IV as a mixed category of EDs sharing features with AN, BN and BED (Arcelus et al., 2011). LeBlanc et al (2014) estimated that between 1000 to 1500 Canadians die secondary to an ED per year. The same report suggested that death certificates often do not reflect ED as a cause of death, but rather the associated psychological and/or medical complications leading to fatal outcomes, in particular suicide or heart failure, and therefore concealing the accurate mortality rates of EDs (LeBlanc, 2014).

In summary, ED comprise a group of psychiatric disorders that may range from mild-moderate to critically severe forms, including AN, BN, and BED. Their onset typically is in childhood, they peak throughout teenage years, but they can develop later in life as well. Existing data suggest that AN, BN and BED have steadily increased over the course of the 20th

century, with most noticeable changes observed for disorders characterized by binge eating, reflecting increased urbanization and access to large quantities of readily edible food (Keel & Klump, 2003), although with possible declining rates for BN in most recent times (Stewart Agras, 2017). Overall, AN, BN and BED may be placed on a continuum of illness severity, with AN residing at the end of the spectrum with the highest chronicity and risk of early death and BED positioned at the other side with lowest chronicity (Stewart Agras, 2017).

1.3. Recovery from Eating Disorders: Treatment and Natural History

In light of the complexity of medical and psychological needs in EDs, a collaborative treatment approach is typically recommended. Generally, ED treatment can be delivered as an inpatient or outpatient treatment, in primary care or more specialized secondary or tertiary settings depending on the severity of the illness. Often the multidisciplinary care teams consist of psychiatrists, family physicians or pediatricians, psychologists, dietitians, nurses, social workers, and others. The American Psychiatric Association treatment guidelines (Yager, 2012) recommend that individuals with ED receive care in a sequential, step-wise approach, tailored towards the individual needs that may fluctuate throughout their chronic illness. This model of treatment would grant individuals the opportunity to "step up" or "step down" the intensity of their treatment by delivering a wide range of available therapeutic options, from the least invasive, such as community follow-up with a dietitian and a psychologist, to the most intensive, like a hospital admission to a tertiary specialized unit in ED. Thus, as with other mental illnesses, the ideal treatment for EDs will be closely aligned to the individual's needs. Conventionally, the interventions may start with conservative approaches such as cognitive behavioural therapy, family-based treatment, interpersonal psychotherapy, and nutritional services, but for individuals with moderate to severe EDs, psychopharmacological interventions may be warranted.

Acknowledging interindividual differences in personal treatment goals, common goals for the treatment of EDs include changing the problematic feeding and eating patterns, as well as normalizing and stabilizing the body weight. For EDs, these two primary goals complement each other, as normalization of one often promotes improvement of the other one. For example, in AN weight gain and nutritional rehabilitation often result in reduction of ritualistic eating behaviours, and as the latter diminishes, weight gain and weight maintenance become more achievable (Sadock, 2017). A secondary goal for treatment for EDs includes addressing problematic cognitive distortions, attitudes, and beliefs that perpetuate the disordered behaviours. Care teams involved in ED treatment therefore often also include clinical psychologists specialized in treating ED. Finally, EDs have high rates of psychiatric comorbidity (in particular, affective disorders) and addressing these problems is crucial once the ED is stabilized. For many individuals, some of their concomitant symptoms, such as depressive or anxiety symptoms significantly diminish following remission of the ED. Certain pharmacological treatments for some of the EDs, especially selective serotonin reuptake inhibitors (SSRIs) used in the treatment of BN or BED can simultaneously improve ED symptoms and address the comorbid affective symptoms. For many, these comorbidities require additional treatments even after resolution of the ED symptoms (Sadock, 2017).

Unique to EDs compared to other major psychiatric disorders, ED treatment includes a large range of treatment intensities, from less restrictive options like outpatient treatment, to more intensive interventions like residential or hospital-based treatment programs. Intermediate-level tertiary centers may also offer full-week day-programs, weekday-day programs, or meal supervision, i.e., treatment options that are less intensive than inpatient settings, but more intensive than outpatient community treatment. This type of setting ideally permits individuals

with higher frequency of serious medical and psychiatric comorbidities to receive care from a team, or a group of clinicians with various specializations who work collaboratively to achieve treatment goals. At the same time, this type of treatment is less restrictive than a residential or inpatient setting.

Overall, EDs are a distinct group of complex illnesses with treatment requirements that significantly vary from other psychiatric conditions. Their complexity requires a long-term multidisciplinary, stepwise approach, incorporating medical, nutritional and psychological treatment delivered across a continuum of settings including community, inpatient and specialist services.

Regarding the natural history and progression of symptoms, AN is associated with a highly variable course and outcome (American Psychiatric Association, 2013). Some individuals with AN may sustain full remission after one single episode, whereas some display a fluctuating pattern of weight gain followed by relapse, and others just experience a chronic course throughout their lives (American Psychiatric Association, 2013). Across different studies, exploring patients 10-20 years after being diagnosed, just under 50% achieved full recovery, another third remained symptomatic with some improvement and the rest remained chronically ill (Steinhausen, 2002). Among patients achieving some recovery, some developed binge-purge type symptoms and experienced weight gain resulting in a shift from AN to AN in partial remission or to BN (Steinhausen, 2002). According to (Fichter & Quadflieg, 2007), 15.7% of individuals with AN developed patterns of symptoms more consistent with a diagnosis of EDNOS (as per DSM-IV). Conversely, BN has been linked with a more benign course and outcome compared to AN (American Psychiatric Association, 2013). Studies following BN patients for more than 5 years after diagnosis reported that almost 70% achieve recovery, another

20 % remain symptomatic, considered to be in partial remission, whereas 10% remain chronically ill (Fichter & Quadflieg, 2007; Herzog et al., 1999; Keel et al., 1999). However, long-term natural history data are sparse, with some reports pointing to more promising remission rates in AN. As such, a prospective longitudinal study of 176 patients (Eddy et. al., 2017) reported that 62.8% and 68.2% of individuals with AN (N=100) and BN (total N=76), respectively, had recovered at a 22-year follow-up. Moreover, the authors also noted that individuals with BN tend to recover earlier in the course of their illness as opposed to individuals with AN.

With respect to BED trajectories, data on recovery is even scarcer compared to AN and BN, given that BED is a relatively newer diagnosis. In a small community-based sample that described the natural course of BED over a 5-year follow-up, 82% of individuals were substantially improved or recovered, 4% continued to meet full criteria for BED and no deaths were recorded (Fairburn et al., 2000). Furthermore, Fairburn et al. (2000) described no transition from BED to AN whereas 3% transitioned from BED to BN during follow-up. Similarly, Fichter and Quadflieg et al. (2007) did not depict any crossover from BED to AN during their follow-up, however 5% of individuals with BED later met criteria for EDNOS (Fichter & Quadflieg, 2007).

1.4. Pregnancy, Childbirth, and Post-Partum in Women with Eating Disorders

Although EDs may affect any gender at any age, these conditions largely emerge in women, including during the reproductive phase of their lives. Pregnancy and childbirth are significant life events associated with complex biological and psychosocial implications, which can be poignant for any woman. Such changes can be even more destabilizing in individuals with mental health conditions (Watson et al., 2014). Given the physical changes during pregnancy/post-partum and the central role of body shape and weight in EDs, being pregnant,

giving birth, and becoming a mother conceivably has pronounced influences on the course and symptoms of EDs. Conversely, comorbid ED may negatively impact reproductive health, pregnancy and childbirth, as well as infant care.

1.4.1. EDs and the Reproductive Lifecycle

A substantial proportion of pregnant women may be affected by an ED. For example, the prevalence of ED symptoms during pregnancy was estimated as nearly 7.5% in a cohort of 739 pregnant women attending early pregnancy care in the UK, a rate somewhat lower than pre-pregnancy (9.2%) (Easter et al., 2013). There is a growing body of literature from large cohort studies and registry data illustrating that disordered eating behavior and dysregulated body weight during pregnancy can negatively affect the course of pregnancy, birth outcomes and later on, the mother-child dyad (Dorsam et al., 2019). More specifically, pregnancy in women with an active ED has been associated with higher rates of antepartum hemorrhage (Eagles et al., 2012), high rates of cesarian sections and complicated deliveries (Bansil et al., 2008; Bulik et al., 2009); increased rates of spontaneous abortions (Micali, Simonoff, et al., 2007); hyperemesis gravidarum, maternal anemia and infections (Bansil et al., 2008; Linna et al., 2014).

Complications are also more likely in babies of women with EDs, including higher rates of intrauterine growth restriction (Bansil et al., 2008; Eagles et al., 2012), premature deliveries (Linna et al., 2014), low gestational weight in babies of anorexic mothers (Bansil et al., 2008), higher than normal gestational weight in babies of mothers with BN or BED (Bulik et al., 2009; Linna et al., 2014), and possible behavioral changes such as infant neurobehavioral dysregulation early after birth (Barona et al., 2017).

As previously mentioned, some data suggest that pregnancy may result in remission of AN and BN (Bulik et al., 2007; Micali et al., 2012), although the resolution of AN/BN symptoms

may cause BED symptoms to emerge (Bulik et al., 2009; Knoph et al., 2013). Although several studies supported an improvement in ED symptomatology during pregnancy (Blais et al., 2000; Bulik et al., 2007; Crow et al., 2008; Micali & Treasure, 2009), they also depicted that most of the new mothers relapsed into their ED at various points in time during the post-partum period. In a prospective study of 97 participants, Rocco et al. (2005) reported that dissatisfaction with their bodies and ED symptoms improved during pregnancy, but this was followed by relapse to preconception levels of dieting and purging behaviors in the postpartum period (Rocco et al., 2005). Similarly, a smaller prospective study demonstrated that nearly half of 20 new mothers with BN endorsed worsening symptoms of their disordered eating in the post-partum period (Lacey & Smith, 1987), with 57% of those with BN describing an escalation in their bulimic symptoms compared to their pre-conceiving time (Morgan et al., 1999). Similarly, women with AN were also found to report an improvement of their symptoms during pregnancy followed by relapsing after delivery (Blais et al., 2000; Larsson & Andersson-Ellström, 2003).

Overall, the relationship between ED and reproductive health is bidirectional. While an active ED can negatively impact a woman during pregnancy and post-pregnancy, some data suggest that pregnancy may serve as a protective window for women who - when pregnant - may be able to stop their abnormal eating behaviors, in order to protect their developing child from the outcomes of severe malnutrition, or simply driven by their increased tendency to comply to various social norms and standards from "beauty standards" to provide "best mothering" abilities to their off-spring (Miotto et al., 2002).

1.4.2. Weight Gain and Body Shape During Pregnancy in ED

The physical and social changes resulting from pregnancy, coupled with concerns about maintaining an adequate weight can predispose or precipitate an individual's risk for psychiatric

disorders, especially EDs (Martínez-Olcina et al., 2020). Dissatisfaction with body weight and shape during pregnancy and post-partum have been reported as "normative" even in women without EDs. In fact, almost three quarters of women were preoccupied with weight retention in the first month post-delivery, and by four months nearly 70 % attempt to lose weight in a prospective study of 97 women recruited from John Radcliffe Hospital in Oxford (A. Stein & C. G. Fairburn, 1996). Namely, they engaged in restrictive behaviors and various types of dieting to regain their pre-pregnancy body weight.

Bulik and colleagues noted that women with EDs are often gaining more weight during pregnancy (Bulik et al., 2009) and more diverse patterns of weight retention post-delivery compared to individuals without an ED were also reported (Zerwas et al., 2014). For example, higher weight gain during pregnancy was reported in women with AN, BN or BED compared to women without EDs, although in AN higher weight gain can be understood as restorative in nature and protective for the nutritional requirements of the developing fetus (Bulik et al., 2009; Micali et al., 2012; Zerwas et al., 2014). After delivery, studies suggest that some women with EDs may quickly revert to their familiar restrictive and purging methods, given that - on average – they lose weight more quickly compared to women without ED (A. Stein & C. G. Fairburn, 1996; Zerwas et al., 2014). In fact, women with an ED diagnosis may have higher residual weight post-pregnancy and therefore be compelled to dispose of body fat accumulated during pregnancy by re-commencing rigid eating rituals and relapsing into anorexic, binge eating or other disordered eating symptoms (Polivy & Herman, 1985). Thus, post-delivery some women may start struggling with pregnancy-related weight retention, precipitating the reinstatement of abnormal eating behaviors and restrictive diets (Watson et al., 2014). In fact, of 43 women with an ED, 80% who relapsed back to disordered eating post-delivery attributed their relapse to

feeling overweight and wanting to lose their retained weight, in the post-partum period (R Lemberg & J Phillips, 1989). Thus, the physical transformation and weight gain that are a natural outcome of a pregnancy may lead to re-occurrence of ED symptomatology postpartum at least in some women (A. Stein & C. G. Fairburn, 1996; Welch et al., 1997).

Several studies have examined the attitudes towards weight gain in women with EDs, including large population-based studies. These studies overall revealed more pronounced concerns regarding weight retention in women with EDs compared to non-eating disordered women (Swann et al., 2009). In the Avon Longitudinal Study for Parents and Children (ALSPAC), a prospective study of 12,252 individuals with recent or lifetime history of ED endorsed higher levels of worries about weight gain, desire to lose weight and more pronounced beliefs that they had gained too much weight during their pregnancy, compared to 11,184 non-eating disordered participants (Micali, Treasure, et al., 2007). Yet, as already alluded to, there are also reports of women who conceived and had a history of an ED that they noted feeling relieved from weight worries, and claimed an appreciation for their body's function over appearance, acquiring new meaning that overpowered concerns regarding body shape (Clark et al., 2009). In parallel to their weight changes, some women with ED reported a shift in their attention from weight and body shape to wellbeing for themselves and their newborn, confirming the protective role of pregnancy for some individuals with an ED (Raymond Lemberg & Jeanne Phillips, 1989)).

Taken together, weight gain and pregnancy-related body changes may serve as precipitating and perpetuating factors in reoccurring ED symptoms in the post-partum period. While some women experience a shift of their focus from their own body changes and weight

gain to serving a protective purpose for the developing child, many relapse into disordered eating at various points in time after the delivery.

1.4.3. Adaptation to Motherhood in Women with EDs

Pregnancy and subsequent motherhood are poignant life experiences which can result in substantial changes to women's self-identity. Their bodies often dramatically change which consequently may affect their sense of self, their relationship with their partners, their developing relationship with their babies and in general, their relationship with the society (Patel et al., 2005). Whilst pregnancy can present an opportunity for a break from the ED, when women temporarily cease their ED identity to embrace a new one that is more socially accepted of a mother-to-be identity (Taborelli *et al.,* 2016), the post-partum period seems to be perceived as a significantly destabilizing event. At a societal level, adjustment to motherhood requires women to embrace dependence and to incorporate into various identities and social roles, which emphasize different values of caring and cooperation. New mothers with an ED have been reported to have difficulty adapting to these conflicting demands. For example, in their qualitative study, Taborelli et al. (2016) interviewed 12 women with EDs and reported they expressed discontent and deep dissatisfaction with their body, depressive symptomatology and a subsequent relapse into their abnormal eating patterns as a way to regain control of their overall identity. The women were also reported to endorse feelings of failure and distress in not being able to procure confidence from their previous non-pregnant selves, which consequently perpetuated their feelings of isolation and self-doubt (Taborelli et al., 2016). Likewise, in a qualitative study, Patel et al. (2005) had aimed to explore how three groups of women with various level of ED psychopathology (N= 21) perceived and coped with changes in their eating and body shape and weight following pregnancy and the birth of their baby. The authors reported

that women with ED found that the changes that occurred in their bodies during pregnancy and in the postpartum period were similarly distressing to those they had during puberty. In a prospective case control study with 44 women with ED and 67 controls, the authors explored differences in early maternal adjustment and other changes associated with childbirth, comparing mothers with different EDs to each other and to the control group (Koubaa *et al.,* 2008). Three months post-delivery women were assessed with The Maternal Adjustment and Maternal Attitude Questionnaire (MAMA), a 60 item self-questionnaire that consists of 5 subscales including, body image, somatic symptoms, marital relationships, attitudes to sex and attitudes to pregnancy and the baby. In this study, the authors only used the post-natal version of the latter subscale, regarding maternal adjustment and attitudes to the baby. The results depicted significantly higher scores in the MAMA in mothers with ED compared to the control group, which reflected lower levels of maternal adjustments or more negative attitudes. Specifically, 90% of the primiparous mothers with a history of AN or BN expressed great challenges with their adaptation to motherhood and problems with parenting during the first 3 months post-delivery. Infant feeding-related problems were reported by 50% of the women with EDs, who responded with "little or not at all" to the question "Have you enjoyed feeding the baby?", in sharp contrast with one out of 67 mothers in the control group. Similarly, only 25 % of the mothers with ED stated that they enjoyed caring for their baby (Koubaa *et al.,* 2008). In the same study it was also observed that compared to non-eating-disordered mothers, mothers with EDs reported to be more anxious and less satisfied with their lives, they perceived that they no longer had enough time for themselves, and they were often not proud being a mother, but instead disappointed, they described their lives as much more difficult since their baby was born, and the

thought of having more children was mostly aversive to them compared to controls (Koubaa *et al.,* 2008).

Another important aspect of adaptation to motherhood is the interpersonal domain that may be already vulnerable in women with ED (Stein et al., 1994). These interpersonal changes may well expand to their relationships with their children, and in particular with their rapidly developing newborns who are entirely relying upon their caregivers, often primarily mothers (Stein et al. 1994). In a qualitative study, Patel et al (2005) reported that six mothers with greater ED concerns (out of a total of 21 mothers) described significant discomfort of their babies' dependency on them, often indicating that they required more space between themselves and their child, maintaining their babies' vulnerabilities as separate from themselves (Patel et al., 2005). These women also frequently questioned their parenting ability, feeling less capable or 'inferior' during the post-partum compared to the women with less ED concerns. The authors further observed that the women with ED symptoms reported a shift in their relationships with other significant people in their lives, not just with their babies, following delivery. As such, they had the tendency to perceive the support and assistance they received from their partners as more negatively and therefore often did not seek out their help. In fact, they perceived their partners as critical, which subsequently may have fueled further ED psychopathology (Patel et al., 2005). The authors proposed that in the context of EDs, a heightened tendency to process information through a negative lens or negative feelings about post-delivery body shape, as well as anxious or avoidant underlying attachment styles may have tainted other relationships as well (Broberg et al., 2001; Patel et al., 2005).

Thus, the transition to motherhood can be a vulnerable period for all women, but perhaps specifically for those with EDs, not only representing a trigger for a relapse into ED symptoms,

but as a major life transition requiring adaptation of a new self-identity and changing relationships, both with their new babies and with other significant people in their lives. This time may be a period of further social isolation, as the fear of being judged for their new body and weight can override the need for connection to their baby and their partners. The combination of these factors could further negatively impact various domains of lives of mothers with EDs, including the development of their infants.

1.5. Impact of EDs on Infant Feeding

Infant feeding is one of the most important, though not straightforward tasks of parenting. It is not just a form of caloric nourishment, but also one of the most compelling ways of communication between mother and child (Silva et al., 2016). Owing to the physical and psychological changes and challenges that can be associated with pregnancy and childbirth, perhaps particularly so for women with EDs, complications with infant feeding, in particular with breastfeeding, have been reported in women with EDs.

1.5.1. Epidemiology of Breastfeeding in Women with Eating Disorders

Some studies suggest that mothers with EDs may experience problematic feeding behaviors of their children starting with breastfeeding (Astrachan-Fletcher et al., 2008). Several population-based studies have explored the impact of ED on breastfeeding, with conflicting findings. For example, in the ALSPAC (Avon. Longitudinal. Study for Parents. And Children, UK) (Micali et al., 2009), women with ED were most likely to breastfeed and less likely to stop breastfeeding during the first year of their babies' lives. Namely, 83% of women with history of ED commenced breastfeeding compared to 76% of the general population controls and 72% of women with other psychiatric disorders (Micali et al., 2009). Conversely, in the large Norwegian population study MoBa, the authors had concluded that women with ED initiated breastfeeding

as often as the controls did, specifically 81% of women with AN and BN had initiated breastfeeding along with 83% of the mothers with no ED. However, mothers with an ED were more likely to stop breastfeeding prematurely (Torgersen et al., 2010). Finally, though in a much smaller sample of 6196 women (Nguyen et al., 2017), women with EDs were less likely to begin to breastfeed (unadjusted OR = 0.68, 95%CI: 0.51; 0.93), although no longer statistically significant after adjustment for socioeconomic and life-style factors (OR = 0.75, 95%CI: 0.55; 1.03).

A recent systematic review on breastfeeding duration in EDs found similar incongruencies (Kass et al., 2021). Most studies identified in this review suggested a similar total duration of breastfeeding between mothers with and without EDs (Agras et al., 1999; Allen et al., 2014; Brinch et al., 1988; Evans & le Grange, 1995; Hoffman et al., 2014; Martini et al., 2019; Nguyen et al., 2017), with a total number of 788 mothers with ED and 5987 controls. On the other hand, Kass et al. (2021) identified five studies with a larger total number of participants of 3356 eating-disordered women and 56078 controls reporting a shorter duration of breastfeeding for mothers with EDs (Larsson & Andersson-Ellström, 2003; Popovic et al., 2018; Torgersen et al., 2010; Torgersen et al., 2015; Waugh & Bulik, 1999). The authors only found one large prospective population based study (n=12050) that depicted a longer duration of breastfeeding in mothers with EDs, namely in mothers with BN (Micali et al., 2009). Though the existing literature remains conflicting, the evidence in favor of a shorter breastfeeding duration was drawn from a much larger sample size and therefore could be considered stronger evidence compared to the findings of similar breastfeeding duration in women with or without EDs. A potential reason for the apparent conflicting results may be differences among the cohorts and the screening tools used to identify and determine either the diagnosis of EDs or the

breastfeeding practices. Sociocultural norms likely played a role as well, considering that fewer women in the general population in the UK (76%) breastfeed compared with Norway (98%) and Sweden (93%)(Watson et al., 2014). Thus, further investigations are required to clarify if EDs do or do not substantially alter breastfeeding duration.

1.5.2. Infant Feeding Experiences and Practices in Women with EDs

Social and cultural norms may affect parents' decisions from the very beginning of their children's lives, which impacts the choices they are faced with such as breast versus bottle feeding (Mills, 2012). Mothers have been identified to be struggling with conflicting societal ideas about feeding such as "I should breastfeed, it makes me a better mother", versus "I am not just a mother; breastfeeding would make the baby too dependent on me" (Chabrol et al., 2004). While we know about non-eating disordered women's experiences and motivations surrounding breastfeeding, e.g., from qualitative studies (Nelson, 2006), it is less clear if and how breastfeeding among women with EDs may differ. According to a qualitative study from the University of Sheffield (UK) which explored the perception of infant feeding practices of 16 childbearing women with a self-reported ED, some study participants refused to consider breastfeeding as an option as they were trying to resume purging and strenuous exercise regimens in order to lose weight they had gained during gestation (Stapleton et al., 2008). The majority of participants in this study (14 of 16 participants total) breastfed exclusively for 6 months and two of them continued beyond 12 months. The latter two women reported that they were motivated to extend breastfeeding primarily because they believed this would help them lose weight and/or resume their pre-pregnancy body shape more quickly. Furthermore, women also breastfed because they were motivated by the fact that the caloric intake associated with this activity meant that they could eat additional food, especially treats such as chocolates and ice

cream. Thus, breastfeeding acted in some ways as a compensatory mechanism, similar to purging and vomiting practices (Stapleton et al., 2008). Note that objectively, the mode of feeding (breast or bottle-feeding) and postpartum weight loss may not be as closely tied as is commonly assumed (Walker et al., 2005). Stapleton et al. (2008) further observed that some of the interviewed mothers with self-reported EDs stated that they felt breastfeeding gave them the opportunity to demonstrate "good mothering" and that they were doing the best for their babies (Stapleton, Fielder et al. 2008). They expressed feeling extremely proud of themselves when their breastfeeding efforts led to their babies' growth as well as to continued weight loss in themselves. As a result, these perceived positive outcomes served as a strong reinforcement to continue and extend breastfeeding. Of note, this study is 14 years old, the participating women self-identified as having past EDs and it took place in England. Thus, more severely eating disordered women were likely not included, and it is unclear if the observed findings transcend to North America and to the current time/changed breastfeeding guidelines.

As discussed in section 2.1 it remains unclear if the tendency to prematurely cease breastfeeding in the ED population exists, however more studies point towards this trend including the above qualitative study by Stapleton, et. al., (2008), where 14 out of 16 patient stopped breastfeeding at 7 months, which is way below the recommended timeline of at least 24 months by WHO. Several authors suggested that women with ED may perceive the act of breastfeeding as shameful and had concerns that breastfeeding could alter the appearance of their breasts (Stein & Fairburn, 1989; Waugh & Bulik, 1999). According to Bulik et al. (1999) some mothers with EDs do not even initiate breastfeeding due to such concerns. In addition to worries related to their appearance, mothers with EDs may be worried about the quality of their breastmilk for their infant nutritional demands, about their baby being allergic to their

breastmilk, and more likely to rigidly comply to a prescribed feeding schedule, experiencing significant anxiety when their baby displays hunger signals outside of that prescribed feeding window (Evans & le Grange, 1995). In their mixed-methods study, Evans and le Grange (1995) compared body satisfaction and parenting abilities between 10 mothers with ED and 10 controls. Subsequently, the authors explored the children's development and eating behaviors from pregnancy to their current age by using a semi-structured interview and the obtained data was analyzed qualitatively by establishing common themes pertaining experiences with feeding, parenting and children's social development. Based on their study, Evans and le Grange (1995) concluded that rigid adherence to a feeding schedule created confusion reading signs of baby's hunger and fueled a sense of guilt, misinterpreting theirs' children "non-compliance" as evidence of an ED precipitated by their own conflict with food. Other participants misread their babies' noncompliance to a feeding schedule as evidence of their own inability to provide competent parenting. In extreme cases, deviations from scheduled feeding resulted in forced feeding, and some mothers acknowledged to putting their child on a diet (Evans & le Grange, 1995).

Infant difficulties with feeding and eating were also reported in the context of mothers with EDs (Zerwas & Claydon, 2014). Mothers with a history of EDs were more likely to have infants with feeding difficulties, such as weak sucking, drinking too fast, exhaustion with feeding, small quantity feeding, not satisfied after feeding and refusal to take solids, primarily due to maternal distress, including postpartum depression and anxiety (Micali et al., 2011). Maternal emotional dysregulation in response to food and weight-related worries can negatively impact the mother's aptitude to feed her newborn without a certain level of anxiety, which potentially could be conveyed to their baby. For example in their mixed study, (Evans & le Grange, 1995), had noted that several of their participants reported emotional struggles in

relation to feeding their children , such as “waves of sadness” during breastfeeding; strong feelings of guilt whenever their child would refuse to eat; inability to eat with their children for fear of relapsing into a binge episode and distress associated with their role as cook and food provider. Mothers with EDs are also more likely to describe their infants more difficult, with fussy temperaments, which could potentially lead to further feeding difficulties (Zerwas & Claydon, 2014). Women with ED may inadequately feed their children by underfeeding them (Waugh & Bulik, 1999) or overfeeding (Micali et al., 2009) as they may find it difficult to differentiate between normal versus abnormal feeding practices and they may find it distressing keeping food items accessible because of fear of binge eating (Watson et al., 2014). Several studies have highlighted that woman with EDs are overly preoccupied about their child’s weight and shape, which subsequently resulted in altered maternal feeding behaviors, namely restricting their child’s food (Astrachan-Fletcher et al., 2008; Lacey & Smith, 1987; Reba-Harrelson et al., 2010).

In summary, the available data suggest that women with ED infant feeding choices may be driven by various factors when choosing breast over bottle. Some women choose bottle feeding so they could resume their aberrant eating behaviors and reclaim their pre-pregnancy body back. Conversely, some of them choose to breastfeed to demonstrate “good” mothering abilities, while others may be inclined to breastfeed due to the benefit of caloric expenditure in conjunction to the added advantages for their babies’ health. Interestingly, some mothers with EDs who chose to breastfeed have the tendency to follow a rigid breastfeeding schedule and who have great difficulty reading babies’ hunger cry between their feeds finding this experience very deplorable. The rigid implementation of this method is often ineffective and may be harmful, as these mothers interpret its success as evidence of their parental competency as opposed to

attributing their babies' cry to their reported fussy temperaments or simply because they are truly hungry.

1.6. WHO/Health Canada Infant Feeding Guidelines and EDs

As previously noted, arguments about infant feeding practices have escalated with increasing pressures on women living in industrialized countries to breastfeed their infants (Stapleton et al., 2008). International, national, and local health authorities in developed countries typically promote and provide parental education on infant feeding, especially breastfeeding (Mills, 2012). When it comes to infant feeding choices for new parents, some authors indicated that parents often receive conflicting messages between different sources of information or professionals, creating a mismatch between mothers' experiences and the advice they receive (Mills, 2012). The WHO guidelines cited above may require further qualification for women with EDs. The desire to lose the weight accumulated during gestation and to recover to the pre-pregnancy shape and size can motivate women's decisions to breastfeed (Ryan & Grace, 2001), and this drive may be particularly pronounced in women with past or present EDs. Even though the literature on breastfeeding practices in women with EDs is mixed, premature termination of breastfeeding is often observed (Larsson & Andersson-Ellström, 2003; Popovic et al., 2018; Torgersen et al., 2015; Ward, 2008). Consequently, prompt initiation of breastfeeding is typically recommended to be promoted in ED populations and such recommendations may even include highlighting benefits of breastfeeding for post-partum weight reduction (Carwell & Spatz, 2011). However, the (real or perceived) potential of breastfeeding to consume calories[1], in conjunction with heightened post-partum weight/body shape concerns may require adjustments to current

[1] According to La Leche League (https://www.lllc.ca/) it takes roughly 20 calories to produce 1 oz. of milk. For the average 150-pound woman, breastfeeding consumes approximately 500 calories per day. In comparison, 30 minutes of light housework consumes around 246 calories, and 30 minutes of aerobic dancing consumes 546 calories.

recommendations around breastfeeding for women with an ED history. Conceivably, emphasizing benefits of breastfeeding for weight reduction could trigger ED relapse and prolonged breastfeeding in this population might carry abuse potential (i.e., to continue to lose weight). Therefore, promoting breastfeeding in women with an ED history should be individually tailored to avoid relapse. Irrespective of EDs, mothers may perceive information about infant feeding from various health professionals as conflicting (Corbett, 2000; Heinig et al., 2006; Horodynski et al., 2007), and may rely on other female relatives for infant feeding assistance rather than communicating with health professionals (Heinig et al., 2006). Indeed, some studies suggested that health professionals may not always fully comprehend the personal, family, and environmental circumstances in which women live, and thus be unable to provide culturally relevant advice on feeding plans women are able to implement (Chamberlin et al., 2002; Cricco-Lizza, 2005). Nelson et al., (2006)'s meta-synthesis of 15 qualitative breastfeeding studies, mothers typically reached out for professional breastfeeding support that was informational, technical and emotionally attuned to their individual capacity and restrictions. However, they often received unsupportive, inappropriate, insufficient and sometimes conflicting messages from their healthcare providers (Nelson, 2006). Professional breastfeeding support that was perceived as negative by mothers was described as rude, uncaring, routine, standardized, distant, judgmental and insensitive and instead these mothers qualified "good support" as being individual, believable, compassionate and caring (Nelson, 2006). The authors' recommendation to healthcare providers was to devise individually tailored breastfeeding plans, considering a woman's breastfeeding capacity, goals, comfort level with her own body, support network, tolerance of breastfeeding difficulties, and willingness to make the life adaptations that breastfeeding requires. Of note, personalized messaging around infant feeding choices for

women with an ED history is likely complicated by the high rate of non-disclosed ED symptoms. In a meta-ethnographic study including 11 qualitative studies on experiences of women with an ED in the perinatal period, (Fogarty et al., 2018) concluded that many women were hesitant to disclose disordered eating habits and clinical ED status to others, including maternity care providers (midwives, maternity nurses or obstetricians) and or significant others (friends, partner, husband). Therefore, non-disclosure of ED symptoms should be considered when designing individualized breastfeeding support for women with EDs.

Little is known about healthcare professionals' perspectives on infant feeding choices in mothers, and to our knowledge, no studies exist in those treating women with EDs specifically. One qualitative study of healthcare providers' experiences with mothers' infant feeding choices and practices (Olson et al. 2010) established that providers perceived mothers' beliefs (e.g., introducing solids early will help baby sleep longer) often interfered with professional guidelines about weaning, and that different professionals may deliver competing messages around infant feeding issues, for example pediatricians and other professionals. Providers also reported that they perceived mothers felt pressured by family-held beliefs and searched for guidance in written form to prove the older generation of the family with how advice had changed (Olson et al., 2010). This study was conducted in low-income mothers and is 11 years old. Thus, there is a current need explore health care professionals' experiences with ED treatment in the context of current infant feeding practices and policies.

There are a limited number of studies that explored infant feeding choices and practices in women with ED, and none that probed the perspective of health care providers regarding how to reconcile public health recommendations for exclusive and extended breastfeeding with the potential of abusive breastfeeding in women with EDs. This gap in knowledge calls for

exploration of this particular topic, using a qualitative approach that can confer some insights whether breastfeeding a) truly carries an abuse potential and if it does, b) what the consequences of such behaviours are in the broader context of infant feeding choices in women with EDs and c) how healthcare providers can support women with infant feeding and postpartum.

Thus, based on consultation of the available literature on infant feeding practices, behaviors, and motivations in women treated for EDs, we started with the question whether breastfeeding may be overly used for weight loss purposes by women with ED. For this purpose, we first explored collateral sources and then interviewed ED specialists to explore breastfeeding in the broader context of infant feeding choices in women with an ED, in light of current public recommendations for exclusive and extended breastfeeding. The goal of this study is to provide the clinicians with recommendations on infant feeding advice when working with new mothers who have a current or past ED.

2. Materials and Methods

This study was developed around the primary research question on how an ED may affect a mother in her infant feeding choices, with a focus on current public health guidelines around breastfeeding and ED practitioners' experiences.

2.1. Study Design

In the context of scarce data regarding this particular topic, we have pursued a qualitative approach using Interpretative Description (ID), a relatively new qualitative health research method described first by S. Thorne (1997). ID is an inductive methodological approach aimed at informing and improving clinical practice. ID originates with individual experiences and translates those experiences to formulate generalizable knowledge "grounded" in the particulars (Woodruff et al., 2020). An advantage of ID methodology is that it allows researchers to establish a better understanding of the subjective experience of a population, in our case the health care providers for women with EDs. With an accurate sampling technique, a relatively small number of participants may deliver sufficient in-depth data to reach an answer to the proposed research question (Thompson Burdine et al., 2021). The study was conducted in adherence to the Declaration of Helsinki and the protocol was approved by the Research Ethics Board at the University of Alberta (#Pro00078980).

2.2. Collateral Sources

In ID, collection of data, transcription, and analysis occur in synchrony, each informing the other in a repetitive process, by reviewing the transcripts and granting the opportunity for new themes to emerge (Thorne et al., 2004). Excess of data is not an ideal outcome in ID because clinical disciplines often involve a wide variability in the experiences that are being subjected to study. Instead of sampling (too) many variable experiences from multiple sources, Thorne et. al (2016)

suggests that the focus in ID should be on obtaining a deeper understanding on individual participant points of view while acknowledging that variation in perceptions and deviations may exist (Thompson Burdine et al., 2021). The techniques we chose for collecting our data was interviewing the selected participants directly and supplementing these interviews by collateral data sources (internet blogs, websites, see below) to enhance the outlook and reach of this study (Thorne et al., 1997). In ID, data gathering from collateral sources of input is aimed at bolstering the insights collected during data analysis, including lay media, social media platforms, forums and blogs (Thompson Burdine et al., 2021). Thus prior to interviewing our participants, a Google search was conducted using the keywords: *breastfeeding, weight loss, pumping, dumping* to explore if breastfeeding for the purpose of weight loss is mentioned in any online forums for new mothers as we wanted to find out if excessive breastfeeding is even discussed as a potential phenomenon in EDs (see Figures 1-4 for links to the original sources).

2.3. Participants

For the interviews, we applied purposive sampling (Moser & Korstjens, 2018) such that the participants were selected based on our judgment of them to be most informed and experienced with the phenomenon of interest, i.e., we chose to recruit and interview healthcare providers from the University of Alberta, Department of Psychiatry, Eating Disorder Program. The selected participants were targeted specifically as having provided health care services to women who were pregnant and had children during their ED treatment in the Eating Disorder Program.

2.3.1. Recruitment

Via an initial scoping email, study co-investigator and director of the ED program, Dr. Lara Ostolosky, solicited a screening form from all healthcare providers in the ED program to facilitate identifying those who had experience with treatment of pregnant women and mothers

in the ED program. A screening form (see Table 1) with three questions was attached to the email. Only practitioners with positive answers ("Yes") to all three questions were eligible to participate and those eligible have connected with the author of the thesis, Dr. Natalia Stavila via email stating that they were eligible according to the screening form and that they were interested to participate in the interview. In parallel, an information session with a presentation by the author of the thesis (Dr. Natalia Stavila) was delivered and open to all staff at the ED program, including psychiatric nurses, psychologists, and dietitians (see Appendix 1. for the original presentation). The presentation was conferred on the inpatient unit of the ED program, therefore only staff present on the unit that day had the opportunity to view the slideshow. Through this process, seven eligible healthcare providers were identified and agreed to enroll in this study: One psychologist, one psychiatrist specialized in treatment of ED, one psychiatric nurse and four dietitians. We considered the sample size of 7 to be sufficient on the concept of information power within qualitative research studies established by (Malterud et al., 2016). Specifically, information power indicates that the more information the sample holds that is relevant for the research question, the fewer participants are needed (Malterud et al., 2016). In our case, the sample consisted of healthcare providers on a tertiary level hospital unit delivering care to women with ED, a targeted population we needed to interview to explore their insights into the infant feeding choices amongst women with ED. Moreover, Thompson Burdine et al. (2021) affirm that studies that apply principles of interpretative description have successfully been completed with sample of many sizes including as low as 5 participants (e.g., Kimber et al., 2015). All participants provided written informed consent.

Table 1 Practitioners' screening questions prior to enrolment

Screening Question	Response exclusion criteria
Are you currently employed at the ED program?	No
In this capacity, have you provided care for at least one woman who has had a baby while in care at the program?	No
In an interview, would you be able to tell us some details about their infant feeding practices, in particular their breastfeeding practices?	No

2.4. Interviews

The author of the thesis (Dr. Natalia Stavila) conducted one-on-one in person interviews by using a guided interview approach (Table 2) under the supervision of Dr. Tania Park, RN, PhD who has extensive experience in qualitative interviewing. The questions were developed by all three study investigators during two of our preliminary meetings, prior to initiation of the actual interviews. The set of questions (Table 2) was slightly modified after the first interview, when we decided to inquire whether the participants had children and whether they breastfed. After that first interview, we have come to realize that having children in the past and their experience with feeding their offspring, was an important question to explore as this influenced the approach, they had in treating a new mother with an ED, who had struggles with their infant feeding choices. The interviews were completed on average within 35 minutes to 1 hour, in a medical office in the outpatient program of the Department of Psychiatry. The recordings were

uploaded on a password-protected computer in the Department of Psychiatry, University of Alberta. All the identifiable data was removed, and each interview was coded with a number.

Table 2 Interview guideline/script

In your role as _____ in the ED program, can you think about one or more women who you provided care for, and who had a baby within the last five years? 1. When you think about their infant-feeding decisions, for example, breastfeeding, bottle-feeding, etc. what can you tell us about their decisions and the feeding practices you have witnesses? 2. Have you had any concerns about their infant feeding-practices or attitudes you have observed? Why, what did these look like? 3. Have you heard concerns about baby feeding from the women? What did they tell you? 4. In your clinical practice, what do you think are the main barriers for you to provide useful guidance on infant feeding to women with EDs? 5. What do you think are possible facilitators to provide useful guidance on infant feeding to women with EDs?

Audio recordings were transcribed word-by-word by Natalia Stavila in the same day in one sitting. The transcripts were not corrected for grammatical errors. Subsequently, the transcriptions were read word by word by Drs. Esther Fujiwara and Tania Park. This was followed by one in-person meeting between the author of the thesis, and Drs. Fujiwara and Park,

where the first version of themes and subthemes was established (Table 3). In this meeting, the team derived codes by highlighting the verbatim words from the text that seemed to grasp key thoughts and concepts expressed by the participants.

Table 3 Initial themes and subthemes derived from the interviews

Theme	**Description of theme and subthemes**
Personal beliefs of mother	Attitudes and beliefs around breastfeeding
Personal beliefs of practitioner	Attitudes and beliefs around breastfeeding
ED symptoms	• Inability to read the baby, understand the cues/ "attachment" • Body Image distortions • Cognitive distortions/rigidity/inflexibility • OCD/control/BF as hyper exercising • Pregnancy as recovery/remission • Identity as a woman (girls vs. boy babies)
Denial/secrecy	Any behavior, thought to be hidden or denied (ex. catching the patient pumping and dumping milk on the unit)
Support for breastfeeding	Any reference to WHO guidelines, caregiver education, Motilium, family support

Another set of sequential readings of the transcripts word by word was performed by Dr. Fujiwara within a week from the team meeting when she created an excel document, where direct citations from transcriptions were extracted and linked to the selected theme as examples. This document was reviewed by the other two authors individually, and followed by two more in-person meetings, where the preliminary themes were reviewed and agreed upon in discussion.

Based on consensus, slight modifications to the preliminary themes were made and subthemes emerged during these meetings. These final themes will be presented in the results section. Finally, the transcripts were read once again by the first author, to verify if the linking themes were present within and transversely in each transcript, meaning that the identified themes were identified in all or nearly all interviews. During this process no new codes or themes were identified.

2.5. Data Analysis

ID recognizes the experiential, theoretical and practical knowledge that researchers and participants bring to the project. The development of the knowledge is seen as a continuous, inductive rather than deductive process of (re)negotiating shared perceptions about phenomena of common interest (Thorne et al. 1997, Thorne, Kirkham et al. 2004, Thorne 2016). In ID, researchers typically avoid using preconceived categories and themes, instead allowing them to emerge from the data, also known as an inductive analytical process (Kondracki et al., 2002), when individual observations and patterns make a generalization, and infer an explanation or a theory. Hence, the data analysis and the findings are inherently connected to what is expressed by the research participants and establish the foundation of the recommendations in the studied field with subsequent improved clinical practices (Kimber et al., 2015).

Content analysis is used extensively as a qualitative research technique, including in ID (Hsieh & Shannon, 2005). There are three distinct approaches to content analysis described by Hsieh et al. (2005), including conventional, directed, and summative content analysis. In conventional content analysis, coding categories are extracted directly from the text data, as opposed to the directed approach which starts with a theory or relevant research findings as a guidance for initial codes; or summative content analysis that comprises counting and

comparisons, usually of keywords or content, followed by the interpretation of the underlying context (Hsieh & Shannon, 2005). We used a conventional approach for data analysis in our study to extract themes from the interviews. By applying this form of analysis, we aimed to produce qualitative descriptions of infant feeding choices in mothers with ED, from the perspective of health care professionals treating these women. To reiterate, the goal of this study was to investigate infant feeding practices and behaviors from the perspective of health care professionals treating mothers with ED and to understand and describe the interaction between perceptions and practices of infant feeding in women with ED and their health care providers in order to promote a better pregnancy and post-partum management of women with ED. Ultimately, these insights would allow us to offer professionals involved in providing healthcare for mothers with ED, targeted and relevant knowledge about attitudes and behaviors surrounding breastfeeding in these women. This information may offer a platform on which appropriate and individualized breastfeeding advice may be developed for women with EDs.

3. Results

The results of this work are presented in the order of collateral sources followed by the outcomes of the interviews.

3.1. Collateral Sources

Interpretative description allows the for the inclusion of appropriate collateral sources to supplement the scope of the investigation and broaden the reach of the study's sample (Thorne et al., 1997). In our case, we completed a simple google search of several key words including "breastfeeding", "weight loss", "pumping and dumping" which revealed a few sources that will be detailed below. Interestingly, only one out of 4 sources that we identified as relevant had specifically described breastfeeding as a purging behavior in a mother with an ED. The other three sources that illustrated the potential abuse of breastfeeding for weight loss purposes came from women who did not identify as having an ED. That is, abusive forms of breastfeeding for weight loss purposes may generally take place and not be restricted to EDs specifically.

The first identified article was dated August 16, 2012, by Jennifer Wolff Perrine, in the SELF magazine, where she quoted a prominent researcher from the ED field, Dr. Cynthia Bulik whom she had interviewed. In the article Dr. Bulik described a patient of hers who was fighting her eating disorder shortly after she had delivered her son. This was described by Perrine as follows (Fig. 1):

She helped fight the urge to throw up by breast feeding: "It felt like purging and gave me the sense that I was burning more calories, like I was getting rid of something," she says. Some women even breast-feed or pump *only* to shed calories, sometimes after the baby is weaned. This so-called pump purging "is something we have just started to notice," Bulik says. It can be unhealthy for the mom if she starts to deplete her nutrients—for instance, if she is also purging food. And it's disordered because, Bulik says, "psychologically, it's twisting the function of lactation from something essential for life—feeding a child—to something that is part of the disorder —purging."

Figure 1. SELF magazine, "Does this baby make me look fat?" https://www.self.com/story/pregnant-women-eating-disorders?currentPage=1

Furthermore, several forum entries alluding to similar practices around excessive breastfeeding for the purpose of weight loss or weight control were identified. This included a conversation on reddit held by a new mother inquiring about the health risks associated with excessive breastfeeding for weight loss purposes (Fig. 2):

Pumping Breast Milk for Weight Loss

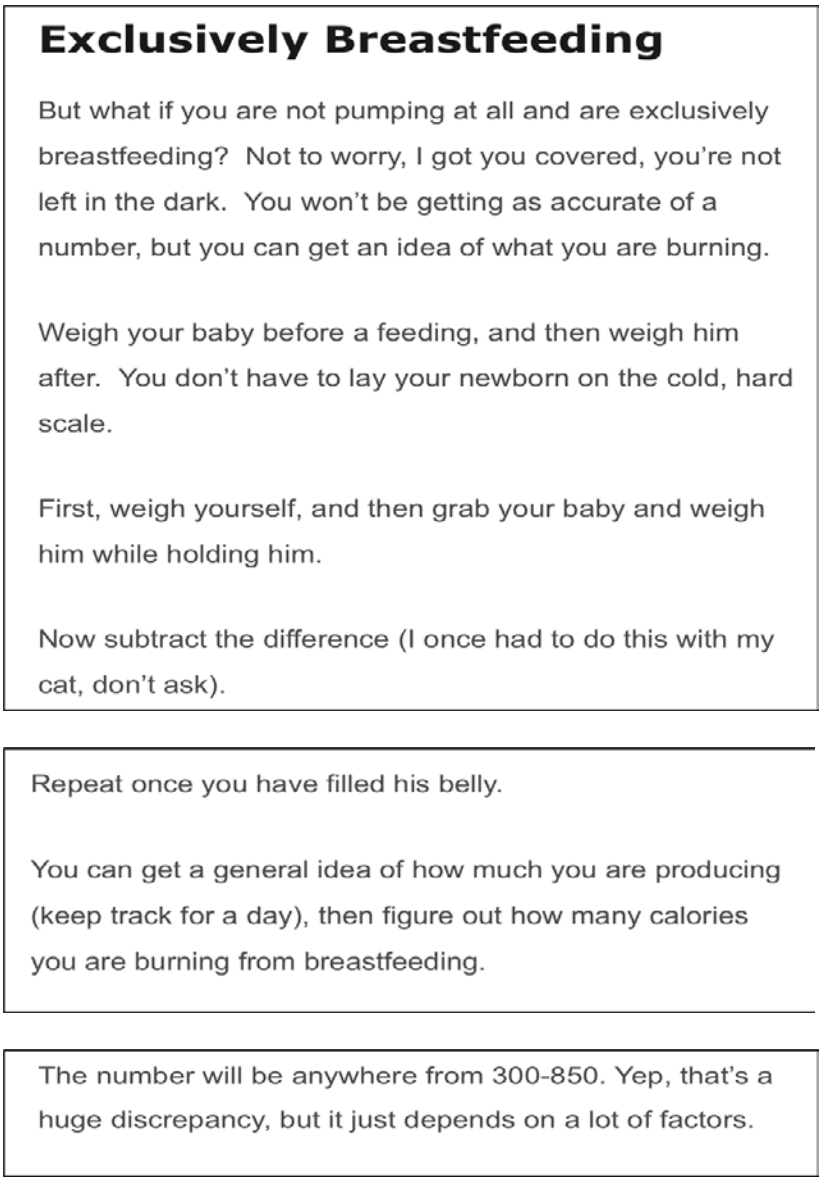
Hi guys! I'm amazed by how much weight I've been losing as a result of breastfeeding, and I'm curious about the health consequences of pumping MORE milk than baby needs in order to burn even more calories. (Heck...or even pumping milk after baby has weaned!) Extra milk could be donated to a milk bank, because lets be honest: if we mamas with oversupply are gonna be dripping with milk all day, then why not help a sister out?

I googled this topic and got the usual internet cess pool of forums and opinion-based blogs, but very little hard fact. I even read several articles that called it a "fad eating disorder!" That sounds kind of extreme.

Any nurses / doctors want to weigh in about long term pumping as a way to help weight loss?

Figure 2. Pumping milk for weight loss https://www.reddit.com/r/beyondthebump/comments/6h9f9d/pumping_breast_milk_for_weight_loss/

Another interesting blog post was identified, called “Our family world” (from October 2015) with an article entitled “Breastfeeding or Pumping: Which is Better for Weight Loss?”. The article revealed various strategies how to count the number of calories consumed for each ounce of pumped milk and offers alternative strategies on how to estimate expenditure through feeding, as outlined below (Fig. 3):



Exclusively Breastfeeding

But what if you are not pumping at all and are exclusively breastfeeding? Not to worry, I got you covered, you're not left in the dark. You won't be getting as accurate of a number, but you can get an idea of what you are burning.

Weigh your baby before a feeding, and then weigh him after. You don't have to lay your newborn on the cold, hard scale.

First, weigh yourself, and then grab your baby and weigh him while holding him.

Now subtract the difference (I once had to do this with my cat, don't ask).

Repeat once you have filled his belly.

You can get a general idea of how much you are producing (keep track for a day), then figure out how many calories you are burning from breastfeeding.

The number will be anywhere from 300-850. Yep, that's a huge discrepancy, but it just depends on a lot of factors.

Figure 3. “Breastfeeding or Pumping: Which is Better for Weight Loss?” https://www.ourfamilyworld.com/baby-tips/breastfeeding-or-pumping-which-is-better-for-weight-loss/

Furthermore, we found a dedicated blog/website entitled “Exclusive pumping”, which discusses in detail the advantages of breastmilk pumping and how to calculate the amount of burnt calories through this practice (Fig. 4):

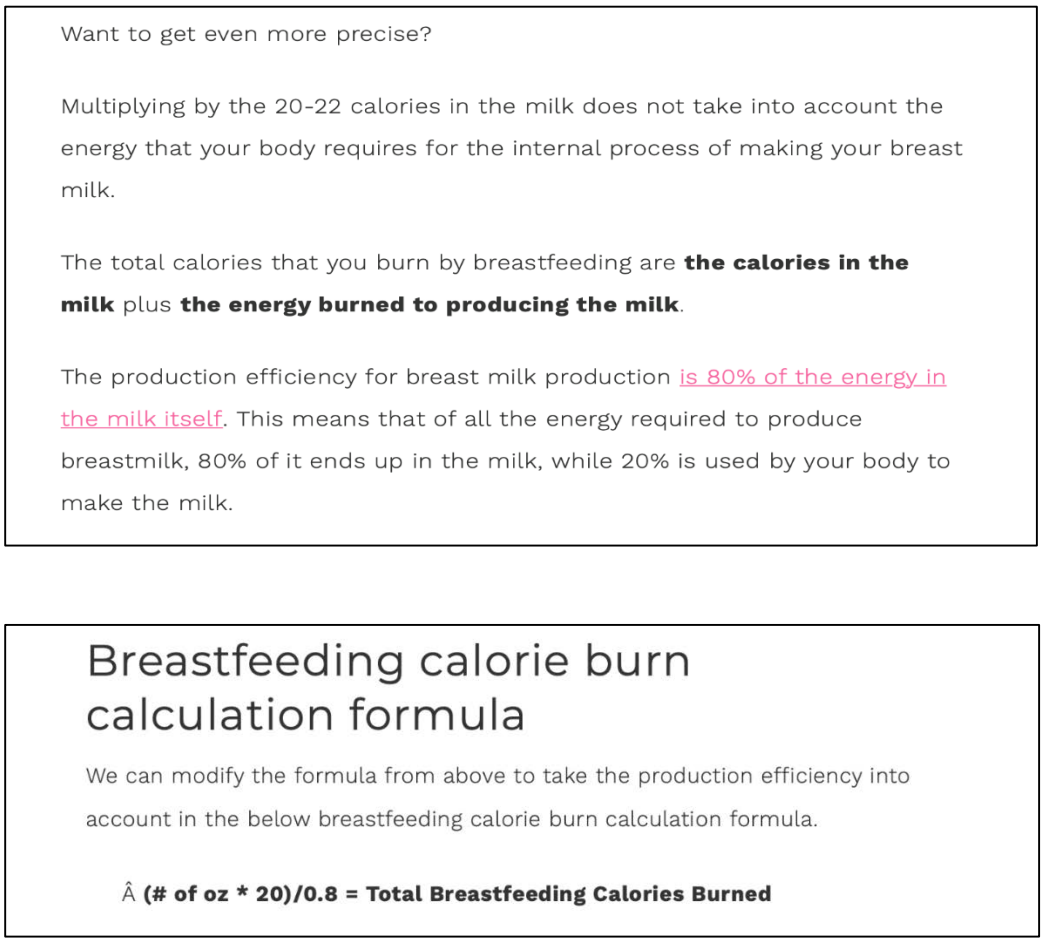


Figure 4. “Exclusive pumping”
https://exclusivepumping.com/how-many-extra-calories-breastfeeding-weight-loss/

3.2. Interviews and Themes

Our interview participants were four dietitians, one registered psychologist, one inpatient psychiatric nurse and one psychiatrist specialized in ED. All the participants consenting to the study completed the interview and their demographic data are shown in Table 4.

Table 4 Participants

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
Profession	Dietitian	Dietitian	Dietitian	RN	Psychiatrist	Dietitian	Psychologist
Years in practice	10	13	20+	20	15	20	18
Own Children	1	2 (boys)	No	2 (girls)	4 (girls)	4 (boys)	3 (boys)
Breastfed	Yes	Yes	N/A	Yes	Yes	Yes	Yes

Five overarching themes were depicted through conventional analysis, with one of them divided into several subthemes to fully comprehend the data, which describe the overall insights of healthcare providers about infant feeding choices and breastfeeding in women with eating disorders. The five emerging themes and subthemes materializing from this work are included in Table 5.

Table 5 Final themes derived from the interviews

Theme	Description
Women's perception of breastfeeding	Attitudes and beliefs around breastfeeding
Practitioner's perceptions of breastfeeding	Attitudes and beliefs around breastfeeding
Features of ED in new mothers	• Attachment to baby • Body image distortions • Cognitive distortions/rigidity • Breastfeeding as a compensation • Pregnancy as recovery/remission • Pregnancy/post-partum as relapse
Denial/secrecy	Any thought or behavior to be concealed or denied
Support for breastfeeding in ED population	• Current • Ideal

The identified themes will be described below with reported quotations from research participants for illustrative purposes supporting each theme's development.

3.2.1. Theme 1: Women's Perception of Breastfeeding

The healthcare providers shared that almost all their patients had intended to breastfeed following delivery:

> "I haven't met or engaged with any patients who don't want to nurse. I mean socially I have met many women who have opted that nursing is not an option, but in terms of my patient population here, I don't think I ever came across somebody who has gone into it not wanting to nurse their child".

However, their preplanned nursing plans, were altered by various reasons including inability to produce milk and the distress associated with breastfeeding.

> "I think a lot of them quit earlier, just from my experience. I'm thinking of a few in particular, because a lot of our patients they don't have a lot of distress tolerance, so they have a hard time kind of sticking with it. So, if it's painful or it's not, you know baby is not, and mom just start grooving right away, then it's kind of like "ok, well I tried and now will go to bottle feed". I find that, with the ones that I'm thinking of, that I've had recently. It's just, it's not necessarily something worth suffering through for some of them, if that makes sense?"

Some of them had to quit breastfeeding before they intended to, because of their need to return to work:

> **"**So, because I've never really experienced that true obvious abuse of breastfeeding, quite honestly it's always been verbalized by my patients "Yes", as they wanted to breastfeed for as long as they can and that is often the exact words that they will use; and then once that one year, and because all of the patients that I was directly treating during that time were working moms and were getting ready to go to back work and having to balance that, that ended up being the strongest deterrent than anything else. It was simply the ability to actually manage both ".

Another participant noted that an important deterrent to breastfeeding in this population were the medications prescribed to treat their comorbidities, including anxiety and depression:

> "They come in disappointed, now sometimes people can't breastfeed because they're taking medications and most patients will take medications over breastfeeding because they are very afraid of a mood drop postpartum. So, those patients don't have an issue with not breastfeeding but they will not tell you that they're worried about their weight per se, they're worried that they're not giving their child enough nutrition, but they don't

really want necessarily to hear evidence to the contrary that they can formula feed, they can do this other things and so then you wonder if the reasons aren't…like they are either too rigid in their beliefs about breastfeeding or they're too disappointed for their own reasons of weight loss potential."

Interestingly, one patient was described as not willing to breastfeed as she expressed feeling no sense of bonding to her baby, however the participant suspected that the main reason of unwillingness to breastfeed was to resume her restrictive/purging behaviors to lose weight without jeopardizing her babies' health:

"The automatic thinking of the patients that I've had, the 4 that I'm discussing have all wanted to breastfeed, except for the one that ended up not doing it. The other patient that I'm thinking of now, who has two babies, she decided not to breastfeed at all and part of the reason she said, because she didn't really bond with her babies, but the other frank reason was she wanted to lose this much weight as soon as possible and she didn't want that interfere with the babies' well-being."

In terms of duration of breastfeeding, this was reported to last from 6 weeks to 4 years:

"I don't think so, no. I can't recall anybody, I think. I don't think I even had somebody go a full year actually. Many of them went you know 6 or 8 months, but I don't know anybody who went for a full year."

"You've got 6 weeks to FOUR years; Yes, I had a patient who breastfed the baby until baby was in pre-kindergarten."...I don't think it was an eating disorder related thing. At this point in time, she was very healthy, great body weight, wonderful support, it was just a personal choice".

From the health care professionals' perspective, the motivations behind their desire to breastfeed were somewhat fluid, while some mothers wanted to breastfeed as this was the healthiest recommended option, some of them have been driven to breastfeed due to the caloric expenditure associated with breastfeeding:

> "So, I only have had experience treating patients while they are breastfeeding, that are maintaining their weight in an appropriate place and that verbalized doing so for the fact that it is the best for their baby and not necessarily actually abusing it."
>
> "I've seen some people breastfeeding who dropped weight absolutely dramatically and it's just not seemed explainable, that they are not eating for it obviously, right? In my opinion, but I mean, I can't say for sure that's the reason but often you know they are very, very upset if they can't breastfeed, right? More upset that I would expect…"
>
> "I think there is the weight loss aspect, I think it's something that makes them feel good about themselves, like many women who feel that they are not good mothers if they are not breastfeeding. I think this is true for them."
>
> "…the third the baby is already on various types of food, which has been very difficult for mom, because mom found the weight loss to be easier with breastfeeding".

With respect to other infant feeding choices described by the healthcare professionals, apart from breastfeeding was bottle feeding, either with expressed milk or formula as alternative options for these mothers:

> "They would pump so that baby could take the bottle from dad or just to maintain supply because some had trouble making enough and some even had to supplement with formula for a short period of time depending on what their pediatrician was providing them for guidance and were willing to do."

"So, the fifth patient that I have, she's had 2 babies and is pregnant with her 3rd one now. This particular patient tends to breastfeed for longer periods than the rest of them, if not a year it might've been just under a year, but it wasn't just pure breastfeeding. She supplemented the baby with formula as well and part of the reason was that she was restricted during pregnancy and postpartum. She's never looked pregnant, she is 7 months now and doesn't look anything, doesn't look pregnant at all, but she plans to breastfeed her third baby as well."

"Currently, I've got three that are breastfeeding: one that expresses and feeds the baby and does do some formula feeding, and one that exclusively breastfeeds and the third the babes is already on various types of food, which has been very difficult for mom, because mom found the weight loss to be easier with breastfeeding. So, those are the three ones that I currently have."

3.2.2. Theme 2: Practitioners' Perception of Breastfeeding

Healthcare providers' own perception and experiences around breastfeeding may directly or indirectly affect the advice they offer to their patients. The majority of our study participants breastfed their babies with the exception of one, who has had no children. The amount of time they breastfed varied from as little as one month to up to 13 months:

"Ahm, I breastfed my daughters partially because I just didn't have enough milk supply, when I went to a breastfeeding clinic, they very much promoted that this was a necessary thing for me to be doing and tried all kind of things to improve the ability to breastfeed. Eventually I ended up consulting with the child's doctor and found out that really the differences and the benefits were really not that, like the formulas are very much just as good not to worry about it, you know that it's not my fault, that kind of thing and after

that my kids were formula fed. Formula fed from about, with my triplets was from 1 month on and then with my older one it was after, you know 2 months, I was supplementing for sure."

"So, yeah, I've two boys, I breastfed them both exclusively till 6 months and then onwards my first for until about 10 months, because I came back to work, tried to continue to breastfeed coming back to work and it was getting harder and harder. So, I stopped breastfeeding him at about 10 months and my second I took the full maternity leave, so I breastfed him to 13 months. So, yes I am very pro breastfeeding for sure."

Our participants universally favored or promoted breastfeeding as the first option as an infant feeding choice for their patients, as long as this would not interfere with mother's but also baby's wellbeing:

"I'm very scientific based beliefs that yes I mean it is the most natural and therefore it is the best if it is not going to be to the detriment of the individual breastfeeding."

"Yes, no I never had to learn but certainly as a dietician I highly respect breastfeeding and would certainly promote it with any of my clients as kind of the best first option and you know try to help them find whatever support they needed to make that happen."

"I mean if I had a patient who is asking me today, then my recommendation would be to try breast first and if they were struggling with that, I would ask if they had any supports in the community from a lactation consultant or whatever kind of go that route if possible. A lot of it would depend on the patients though, depend on how they were doing with the eating disorder thinking that was there, whether or not they were feeding themselves enough, whether or not they needed to get back on some medication right away that would interfere with their breastfeeding."

Although breastfeeding was considered as one of the first options for infant feeding, all interviewees emphasized the importance of normalizing the fact that breastfeeding does not have to be the only choice and if it was not working for their patients, they would try to support alternative feeding choices:

> "I think my focus with my patients especially if it's prior to deciding or in those really early stages of figuring out whether it's going to work or not is providing reassurance that although the guidelines are that breastfeeding would be best, that it is OK, that infant formula is balanced, is reasonable, can provide baby with everything that's needed and that it's OK if they can't (breastfeed)."
>
> "So sometimes there are those types of issues where even if breast is best, you still have to think of the person holistically, what's going to work the best for them and their baby."
>
> "To be honest I tell them that, it is more important that you are able to bond with your child, that your child feels an attachment to you, because that is ultimately going to make the child healthy and secure, you do not need to breastfeed for that, if "you can, fine, but the risk of stopping your medication for the purpose of breastfeeding in my mind is not a wise decision", because the postpartum depression, which would be quite common in this population, is going to do more damage than formula feeding the child. That's what I would tell them, because that's what I believe, right?"
>
> "What I have learned over the years is to be more accepting of non-breastfeeding and that just came from my occupation so, when I had my children, I was newly in this area and only part time and I was a big advocate of breastfeeding. I had my 4 children in 4 years back-to-back, but then you learn very quickly that, that's not easy for everybody, it's not nutritionally appropriate for everyone so, you learn very quickly that it needs to be not

this glorified act, it needs to be affectual, someone can do it, someone can't, some have support, some don't. What are we going to do for the unit, the whole environment, baby, mom and the family, because there are others involved, it's not just the two?"

3.2.3. Theme 3: Features of EDs in New Mothers

Features of ED symptoms interacting with infant feeding comprised several characteristics of potential relevance, listed here as six subthemes.

Attachment to baby:

Several study participants have noticed that some of the mothers with severe forms of ED had difficulties forming secure attachments with their babies. They were so preoccupied with their weight and body, that breastfeeding became a task that needed to be completed either because they were doing what's "best" for their babies or wither because it was helping them lose weight:

> "So that was very difficult for us to see because initially she bonded well with the baby, but by the time she got to the point where she was doing it obsessively, the baby was a concern but the number one was weight loss."
>
> "…there is a different kind of connection that you see when moms are breastfeeding, and they are sort of like…they are engaged as they're breastfeeding. This was more like the type of attitude that I'd see if they are hyper exercising, like it was for certain agenda. They didn't have the typical attachment behaviors that you would see between mom and baby."
>
> "It was the reciprocity between mom and baby…I wasn't even quite sure sometimes if the baby was hungry, or as much as mom was trying to… If I'd feed these many times and they've calculated how many calories they're going to burn by feeding, then yes… Some of those, it's hard to put the word on, but there are some of these attachment

behaviors that you observe, you see the eye contact between mom and the baby, how they hold their baby and even with my most profoundly depressed post-partum moms, there's still some connection…."

We heard reports of fractured attachment to their child in the process of feeding, which was observed to be impacting these mothers' ability to read their child emotional state, especially when their babies were crying:

"She quickly found out that there was a huge interference in her ability to detect satiety and hunger cues in her baby. The baby used to cry all the time, she couldn't figure out why the baby was crying, because she was breastfeeding all the time."

"These patients have trouble reading signals, reading facial expressions, all these kinds of things. Wouldn't be a stretch to think that they would have trouble identifying the child's cry, is it a hungry cry? A tired cry? And I wonder if they don't know how to feed properly, in other words 'Oh the child is crying, they've got to be hungry', you know what I mean? Or, the child is crying, it must be a diaper problem and they are not being able to read the child signals that well right, and I think this is greatly depending on how ill they are with their eating disorder at the time which they become pregnant."

Body image distortions

Several participants noticed a range of body image distortions expressed by or observed in their patients who became pregnant and subsequently delivered their babies, partly fueled by their discomfort with their new bodies. In this context, we also heard participants reporting some of their patients experienced shame when breastfeeding around others:

"...they're going to balance feeling really gross in their bodies…"

> "In my group of patients, a lot of it is body image for sure, so a lot of our patients don't like the fact that they are breastfeeding, and their breasts are enlarged. That be something that they would struggle with, they are very sensitive about feeding in public or feeding around anybody else. They're tensed, a lot of shame I would say from the patients that I've worked with, because they are so uncomfortable in their bodies to begin with and now this is another way that their body is kind of displayed."

An interesting observation made by several study participants was that their patients' distress associated with their new bodies was either a principal motivator to prematurely quit breastfeeding, or a strong reason to continue breastfeeding as it helped them lose weight, thus restoring their pre-pregnancy body shape:

> "Others would have been, from a body image point of view and just having breasts that are full of milk, that bothered them as well, so they stopped it early because they just couldn't stand that change in body image. So, you kind of have two extremes there, the early the ones who gave up the breastfeeding early because from a body image point, they couldn't stand it and the other ones who may be kept with it for long time, but it wasn't necessarily because it was best for their babies but because they were losing weight with it."
>
> "She said she had patients that they quit to breastfeed early because they could not tolerate seeing their engorged breasts and their body changes. Did you see that amongst your patients?" --> "I have not heard that actually, that's not something that I've seen. I think that could very well be true, but it's like if they knew they were losing weight at the same time, I think they could tolerate it."

Some patients were perceived as nearly being repugnant to their own body that was now producing milk for their baby, an experience intolerable to some of them:

> "So for some women with eating disorders part of the struggle around eating disorder is having a typical female body, and so, having menstrual cycle, having hips, breasts is like almost aversive and so for some, for this particular patient I wouldn't have said she had the typical breast of a nursing mom, because she was so very underweight, but this idea that her body was doing what was designed to do was almost aversive to her; not just from a body image perspective; she had quite a ritual about nursing, she didn't actually want to look at her breast whilst nursing, the most covered she could be and I'm not talking because of privacy or cultural reasons, she just didn't want to see it."

Interestingly, one of the healthcare professionals had described a patient who had suffered with a severe form of AN, who developed psychotic symptoms when she was acutely ill post-partum and who believed that some of her body fat could be transferred to her own newborn daughter:

> "She felt fat all the time, but in this particular case it was almost feeling fat by proxy, she kind of felt that some of the fat from her she could transfer to the baby, and therefore the baby was getting really, really fat and she could not handle it, she could not handle the baby being fat. Upon further investigation we found out that this was not such an issue for the boys because boys were allowed to be heavier and they were all the 3 boys had a heavier stature, matching their father but the daughter could not be fat. So, she was going to not let them (pediatrics) make her fat."

Though not to a delusional degree, the idea of "fat transfer" had been described by another participant who stated:

> "But yes, the whole, and … oh my gosh, when the baby was slightly older, she is looking at him and thinking "Oh, that's my fat, he is slapping my fat…". She had her attention focused on her body, so, torso for most women with eating disorders is a very No-Go zone, and so if part of their torso is exposed, they don't like it as they don't want to see the fat on their stomach or this sort of thing. Their head is full with that while nursing."

Rigidity, need for control, and cognitive distortions

Some of the core neuropsychological features in ED are a tendency to have rigid cognitive styles and a strong need to be in control over various aspects of their lives, including but not limited to eating and body weight (Agras & Robinson, 2017). For some women with EDs this high need for control may expand to breastfeeding, e.g., regarding the exact frequency and other aspects of feeding. A strong desire to have control over the breastfeeding routine was observed by several study participants:

> "But I also think that they, some of them don't, that they want it to be their thing, the feeding of their baby to be their thing, and so, it doesn't allow for like a partner or anyone else to be part of the experience."
>
> "Very protective (of breastfeeding), but almost not seeing that it doesn't revolve only around them, right, these patients struggle with some element of not selfishness per se, but of like control and like this is an element of control for them, the breastfeeding is, how much they do, when they do, who's involved with it. Do you know what I mean? I think that it has more meaning for this population than it should."
>
> "my thoughts around that would come up when there were suggestions made for perhaps supplementing, because the baby wasn't gaining weight or for supplementing with like a bottle-feed or having the partner help by giving formula, there was profound resistance to

that and didn't seem to be based on something… like a strong argument, wasn't about you know like exposing the baby too early to formula and they're being allergic, wasn't any of those kinds of type of arguments. It was like a "I must hold on to this!"

"I think it's like not… for some people raising a child is the greatest thing they will ever do; they don't see themselves doing anything beyond that. Not that they should, they put all their stocking in their child like, so then they want all the control of the child, so they don't want to let their partners to be part of this, right?"

Restricted cognitive flexibility in EDs is well described including habit-like inflexible routine behaviors such as counting calories, compulsively exercising, preoccupation with rigid eating routines and other rituals (Eiber et al., 2005). Extending this type of behavior to breastfeeding, we observed several reports from our participants that could be interpreted as such. For example, some of the women were described as having strict beliefs on how, when and for how long to breastfeed:

"She came to see the physician here, the psychiatrist, and she was told that her weight…she had lost a lot of weight from her pre-pregnancy weight and the baby was just not satisfied enough. She agreed to come in as an inpatient while her husband looked after the baby, but she became quite obsessive with the idea of breastfeeding, because that she felt that was the only way she could obtain the weight loss that she wanted."

"So, that's what I mean by the meaning for them, right, like they get caught up on, like if they hear a belief on google, they will zero in on that belief, and they will hold fast to that belief, and because they have troubles with set shifting to a different idea mentally, this is part of their brain issue then they have problem changing "that ok, " like you know, their milk has to dry out before they going to stop breastfeeding, you know rather than saying

"Ok, I'm going to try to balance my health and my baby's health" They will be ultimately self-sacrificing their mind for their child. Do you see what I mean? And it's very, to me it's extreme. And it's not cultural, it's not you know, that my mother did this or you know what I mean? You know like in certain cultures, you know you do more breastfeeding, it has nothing to do with that, right, it's their own ideas about it."

"They come in disappointed, now sometimes people can't breastfeed because they're taking medications and most patients will take medications over breastfeeding because they are very afraid of a mood drop postpartum. So, those patients don't have an issue with not breastfeeding but they will not tell you that they're worried about their weight per se, they're worried that they're not giving their child enough nutrition but they don't really want necessarily to hear evidence to the contrary that they can formula feed, they can do this other things and so then you wonder if the reasons aren't…like they are either too rigid in their beliefs about breastfeeding or they're too disappointed for their own reasons of weight loss potential."

"She doesn't hide it at all to me, I don't know what she will do amongst her peers and things like that, but no, she come in knowing that this is…I mean she dreams about it, she dreams about the nursing and the calories, and it's very… you know, she is not well right now. The thought of not exclusively nursing causes her nightmares. She is really having a hard time allowing it, allowing herself to let go of this."

Cognitive distortions are a set of biased perspectives, irrational thoughts, and beliefs which can result in psychological distress. Cognitive distortions are the hallmark of many psychiatric disorders including ED. A common cognitive distortion in EDs is the presence of a mental filter

of how they appear and how their body looks. Interestingly, several of our study participants pointed out that this mental filter often applied to how these mothers see their babies:

> "Is my baby too chubby? Do I need to back off?" that kind of sense, definitely nothing that's been verbalized directly to me but definitely something that I've heard from my colleagues experienced, hearing from patients."

The idea of fat transfer between mother and baby was reported as follows:

> "She felt fat all the time, but in this particular case it was almost feeling fat by proxy, she kind of felt that some of the fat from her she could transfer to the baby, and therefore the baby was getting really, really fat and she could not handle it, she could not handle the baby being fat. Upon further investigation we found out that this was not such an issue for the boys because boys were allowed to be heavier and they were all the 3 boys had a heavier stature, matching their father but the daughter could not be fat. So, she was going to not let them (pediatrics) make her fat."

Another common cognitive distortion is "black and white" or "all or nothing" type thinking (Eiber et al., 2005). In the current context, such thinking style was reported by practitioners to extend to mothers' infant feeding in form of being convinced that there was only one optimal way to their child and consequently, being disappointed when their ideal feeding practice failed:

> "They come in disappointed, now sometimes people can't breastfeed because they're taking medications and most patients will take medications over breastfeeding because they are very afraid of a mood drop postpartum. So, those patients don't have an issue with not breastfeeding but they will not tell you that they're worried about their weight per se, they're worried that they're not giving their child enough nutrition but they don't really want necessarily to hear evidence to the contrary that they can formula feed, they

can do this other things and so then you wonder if the reasons aren't…like they are either too rigid in their beliefs about breastfeeding or they're too disappointed for their own reasons of weight loss potential."

"But yes if I do exclusively nurse…" or they try to justify it "Everything that this baby needs, it's in my breastmilk", so they do, you know, but that's protecting their own mental health."

Another poignant speculation based on some of the comments was that one of the health care professionals wondered if the idea of maintaining exclusive breastfeeding for as long as possible was to keep baby small:

"Yeah, I think they breastfeed for their own reasons, but I also wonder if…. I wonder if…they breastfeed to keep their babies small…"

"And you see the patients and they want their children to remain like little dollies. Their ideas of children for some of them are not…and I'm talking about the very sick population, is that they have these idea of having children is being such a "Oh I want this perfect little, little like doll" not realizing all that goes in to, what's going to entail to raise a child, like often they have no clue about that, like very little clue, but like "Oh, I've got this perfect little baby in front of me and I want her to stay like that forever", right, and I wonder if the breastfeeding is almost a way to hold the development process…"

Breastfeeding as a compensatory behavior

Compensatory behaviors are common features of EDs and include self-induced vomiting, laxatives or diuretic misuse, hyper-exercising and fasting. Our research question was motivated by the hypothesis whether breastfeeding is used by some women with ED for its caloric expenditure, in addition to its nutritional value for their babies. All interviewed health care

professionals reported having observed some aspect of breastfeeding as a purging method in their patients:

> "I've definitely seen patients from both perspectives who are quite honest about the fact that the only reason that they continue to breastfeed over time has much more to do with the metabolic effects of the breastfeeding."
>
> "A couple of my patients it almost appeared that they must've been using their breastfeeding as a way to lose weight, because breastmilk costs the body something like 800 additional calories above what they need to maintain their weight and yes it did seem to get to that point where they've realized that, and they've done their research and they were using it as a weight loss mechanism. So, yes for some of my patients it was kind of going… I shouldn't say too far."
>
> "One or two of my patients were using it (breastfeeding) as a way to burn out a ton of calories and it became a purging method for them."
>
> "Delivered her baby and restricted during her postpartum period, but wanted to continue to breastfeed, because of the weight loss."
>
> "No, the one that's exclusively breastfeeding that I'm encouraging to start initiating food. That one is more specifically related to the disordered eating because she is finding she can maintain and even decrease her body weight much more easily with the nursing. She doesn't have to restrict her intake the same way, but the pounds are still coming off so her motivation to continue exclusively breastfeeding is more, for mom's thought of her benefit of weight loss versus baby. So, that is the one I'm encouraging…"
>
> "Some women have chosen breastfeeding for what would be my opinion, eating disorder driven reasons. They wanted to take advantage, I feel sorry to say it, it's a bit of harsh

language, but they wanted to take advantage of the extern, sort of caloric consumption or expenditure required for breastfeeding. Some women have, I'm sure they had in their heart the desire to breastfeed their baby as well, but the primary motivation was for their caloric expenditure required for breastfeeding."

"Could she nurse standing up, is there any way she could nurse while walking, how many times a day would she need to nurse, you know the unit has a certain you know calorie level that they are burning, she would have calculated in her head down to like: 'Ok, so if I feed this many times a day then I will use these much calories so, then I can take that off 2400 kCal'."

This extended to reports on engaging in other forms of purging, such as pumping additional amount of milk for the same reasons of burning calories:

"Oh yes, almost all the moms that I've worked with, additionally pumped, it's all around the caloric expenditure."

"Not donate. Pump and dump for sure. Very interesting patient of mine would pump and dump like extensively before she would need to be weighed. So, she would come in once or twice a week, and additional to nursing she would pump, pump, pump…in between. ...Like, waking up at 4 am to pump, then she would feed baby at like 5 am, and then she would pump, and then she would get ready…there is this whole ritual…like hyper-exercise."

"So, we actually had to put a stop to the amount of pumping that she was able to do. To her, later on she admitted to us that it was a way of purging because she was no longer able to purge her meals via exercising or via restricting, this was the only way she felt she could obtain that."

Pregnancy as recovery/remission

Our study participants also noted patients recovering from ED symptoms through pregnancy and childbirth, with a shift in perspective away from body shape or weight and towards wellbeing of their child.

> "So, she came in maybe just starting her second trimester, saw me once a month and then I would recommend a certain calorie level and she would get to within about 100 calories of that, so, not quiet all the way there, but not bad. Gained weight throughout her pregnancy, had a really normal pregnancy and delivery and now she is breastfeeding, and she is again following up with me once a month, once every 6 weeks, just to make sure that she is eating enough to keep the breastfeeding going. So, she was somebody who is pretty much recovered from her initial eating disorder when she got pregnant. So, yeah…"
>
> "Most of them you know, they find out that they are pregnant, and something switches in their thinking and are able to allow themselves to gain weight."

While some were reported to cope well and abstain from disordered eating behaviors during pregnancy, we also heard reports of relapse into their ED after delivery:

> "I would say that through the pregnancy and through the first few months after the baby was born, they tended to be like a pause in the eating disorder thinking. It might have still been there but sort of way in the back corner of their brain rather than front and centered. Unfortunately, some of them as the year progressed, they just got more stressed and would start to drop weight, then the eating disorder patterns returned, but kind of through that pregnancy and first few months after, most of my patients did well and the eating disorder thinking was diminished."

> "Yes, yes (pregnancy as a protective factor) at least for a short period of time and for some of our patients was almost the turning point for their eating disorder. They struggled for couple of years with anorexia and they got pregnant, they gained weight and they breastfed for 6 months and had to keep their weight good and something in that was enough time to help change the thoughts, change the patterns of eating and be able to leave the eating disorder behind. Often for a lot of them that was change, becoming mothers."

Another interesting experience shared with us was a specific case of a patient who would sustain remission exclusively during her pregnancy and subsequently became pregnant 6 times as this was the only time when she was unconfined by her disordered eating. In fact, her care team had to have a discussion regarding finding other ways of staying healthy apart from motherhood:

> "Ok, so the first patient I ever met who got pregnant and had subsequent babies had a very positive experience with her pregnancy. In fact, she got pregnant 6 times and the reason she got pregnant 6 times because pregnancy was the only time, she felt free to eat, because she wasn't doing it for herself, she was doing it for another human being. And so, she struggled with OCD really bad, and so she came in as an inpatient, had treatment for her OCD but also had treatment for her Eating Disorder simultaneously which worked well. The first couple of times she needed to be an inpatient, but subsequent times she didn't need to be an inpatient cause she found…and she was a lovely pregnant lady, now I can't say that about the rest of them, but this particular patient. After her 6th baby we had to say: "Ok, you have to find other reasons to eat, you have 6 children, you have to look after them."

Pregnancy and post-partum period as a relapse

In contrast to the observations described above where pregnancy could serve as a deterrent from engaging in abnormal eating patterns or purging behaviors, we also heard reports of the pregnancy and post-partum time as destabilizing and precipitating or aggravating the further trajectory of the ED. Some of the women were reported to return to treatment with lower weight following birth compared to their pre-pregnancy weight, with questions around how the drastic weight loss had been achieved:

> "Sometimes what I see is patients come back with lower weight than they were before they got pregnant. This is so common. They drop more weight than they were prepregnant. And you think how is that happening? That doesn't happen for most of the women in that regular population."
>
> "So, the fifth patient that I have, she's had 2 babies and is pregnant with her 3rd one now. This particular patient tends to breastfeed for longer periods than the rest of them, if not a year it might've been just under a year, but it wasn't just pure breastfeeding. She supplemented the baby with formula as well and part of the reason was that she was restricted during pregnancy and postpartum. She's never looked pregnant, she is 7 months now and doesn't look anything, doesn't look pregnant at all, but she plans to breastfeed her third baby as well."

These women have also been noted to be resisting the idea that their post-partum weight is lower than before their pregnancy:

> "she's lost more than her pre-pregnancy weight and she is having a hard time accepting."

3.2.4. Theme 4: Denial/Secrecy

Core cognitive characteristics of EDs also include denial and secrecy, and intentional concealment related to perceived stigma, social desirability, and investment in maintaining behavioral symptoms (Becker et al., 2009). Public health messaging including the current WHO (see also Health Canada) guidelines promote breastfeeding initiated early and extended for two years or more (as outlined in section 2.3). Our interviews contained several references around the possibility that patients may not disclose the current state of their ED-related thoughts and behaviors, including the potential of using breastfeeding primarily for weight loss purposes and denying practices like "pumping and dumping".

> "But her initial…and she admitted to it, but her initial reason was the breast engorgement and she wanted to relief herself of that pain, but towards the end she did admit that she was using it for weight loss purposes."
>
> (Reply to whether pumping and dumping takes place/is reported): "I don't, I could definitely see that happening but I think patients do not, they would know that would be very much frowned upon, so patients are not going to come in and tell you that even if you ask them, because they see the breastfeeding as a good thing 'Oh, my doctor is going to be proud of me that I'm breastfeeding', right?"
>
> "They would calculate what they're burning by nursing their child for sure. Whether they articulate it directly, or not doesn't mean that the behavior is not there, and the motivation behind it, is not weight-related."
>
> "For the most it's just a gap in knowledge and there is so much secrecy in eating disorders, right? So much secrecy, so much profound shame that there is just a gap, like "is it ok to ask?" or I could ask the pediatrician "Could you just observe mom nurse the

baby and give me your impression?" and they would ask me "Is that ok?" "- Yes, it is ok and that's actually really important!" (Smiling)"

"I had one patient went to a Chinese medicine physician and had some tea that would enhance her lactation. And that's part of the deception of not telling people what the real purpose is, so people would tell them "I've tried this herb…" not really knowing that there is multiple sorts of competing purposes."

3.2.5. Theme 5: Support for Breastfeeding in the ED Population

This theme broadly refers to statements around current and ideal support for breastfeeding specifically and infant care more broadly in the context of treating women with EDs.

Current support

Following our interviews almost universally, healthcare providers indicated that they rely on the current Health Canada/WHO recommendations regarding breastfeeding, but also that they were well aware these guidelines have limited applicability to women with EDs. We heard multiple statements pertaining to healthcare providers' awareness to be sensitive to the specific challenges of new mothers with EDs and to prioritize their health if breastfeeding cannot be an option.

"We give the general recommendations that we give any patient about the benefits for both mom and the baby and the World Health organization guidelines. We normally say that "you need to have an additional 500 calories on top of your maintenance level of calories in order to adequately breastfeed". So, all that information is given up front whether or not patients can follow through is really individually, it depends on how the patient is taking it, it depends on how their pregnancy went. I find that it is really the key."

> "I didn't even do any research before this interview (smiling...), but I'm pretty sure it's at least a minimum of what 1 to 2 years kind of guideline for the general population that would never be something that I would state that they should be considering if they are within the first few months of having a baby. We would always focus on the fact that 'yep, if you can manage it well and keep yourself well that's fantastic', but ..."

Apart from care in the ED program, mothers with EDs may consult with family doctors, obstetricians, and other prenatal or postnatal programs, including lactation consultants about their infant feeding choices. Several of our study participants noted that the services outside the immediate ED care are not tailored to this population:

> "You know what, they are aware because of all the prenatal, like the majority of my patients would be attending prenatal classes, would be attending all of the recommended type of appointments that would include all of that education. I would be astounded if they were not aware of what the guidelines would be."
>
> "Alberta Health Services has lots of nutritional resources, the one that I do have is the dilemma between, we understand that breastmilk is probably the best for the baby's development, but if a patient is struggling, you are surprised that they've carried the baby to term and you think how can I encourage this mother to provide, so then it becomes 'What is best for my patient and where does baby come in?'. I do a lot of talking to them, this is what we've decided 'You need to have this snack to feed the baby'."
>
> "Often, when there is an eating disordered patient, they are still weighing them, so often, the number comes out, and the patient's mental health is not safe with numbers… but to them (other health professionals) 'What's the big deal?', well 'What do you mean? It's everything!'. So, the weighing, the measuring 'I'm measuring just fine.'. But 'Your BMI

is 18,2 and you are now creating a new being' so, I see where they are coming from in terms concerned of 'Yes, your weight gain is appropriate, babe's measuring is just fine, heart rate is great, blood sugar is ok.'. So, everything is fine. Well, if everything is fine then why is this person over here concerned. So, this person is telling me 'I'm doing what I need to' and then you've got this health care team of professionals who are saying 'But you are still underweight, even if the baby is taking from you, you still need to get your nutrition, what are the risks of having a low-weight or premature baby?' - But it's tough, because you do have a wonderful, highly educated healthcare professional identifying different concerns and different milestones and then the weight gain… I think we shifted from advocacy in women gaining inappropriate substantial amount of weight, I guess, so enough to nurse and lose. 'No, you should be only gaining 20 pounds', 'Well I don't know, to gain 20 pounds during pregnancy might be deemed appropriate for some, but not for others.' So, it becomes very tricky to have one population group that the education is this, whereas this population needs so much more encouragement and enforcement. It's not just 'If you are underweighting you need to get 30 pounds, if you are normal weight you need to gain 20, overweight you shouldn't gain any'. Well, these poor patients believe they are overweight 'I'm not supposed to gain any weight'. So, is there a gap there? For sure, there is miscommunication in that part of the team."

Several participants noted that health care professionals without specialized training in EDs may be unaware of how to identify signs of EDs in their patients and consequently unable to conduct sensitive discussions around feeding choices with new mothers who have or had an ED:

"In the community it's difficult because even, which has been very fascinating to me, but like, to obstetricians or pediatricians the patient may say "Yes, I'm in recovery from an

eating disorder", quite few of my patients say that there are no questions about it "What does that mean? How does that affect nursing?". There is no extra vigilance in terms of making sure baby is on track. So, when I try to connect them with the dietitian there very, very, very small number of professionals that have some knowledge about eating disorders. I think they are well intentioned people, but they can't offer the support. So, it becomes really tricky. That's where a lot of consults come from."

"For the most it's just a gap in knowledge and there is so much secrecy in eating disorders, right? So much secrecy, so much profound shame that there is just a gap, like "is it ok to ask?" or I could ask the pediatrician "Could you just observe mom nurse the baby and give me your impression?" and they would ask me "Is that ok?" "- Yes, it is ok and that's actually really important!" (Smiling)."

In addition, we heard some reports on patients who were supported by their partners, who were available to care for their infants while the mothers were attending their appointments or while they were admitted on the ED inpatient program:

"She has a partner, the dad of the baby who lives with her and her mom is also in the city, so I think that she has that support."

"She came to see the physician here, the psychiatrist, and she was told that her weight…she had lost a lot of weight from her pre-pregnancy weight and the baby was just not satisfied enough. She agreed to come in as an inpatient while her husband looked after the baby."

Ideal support

Depicting an ideal approach to supporting new mothers with EDs with their infant feeding choices, from the professionals we interviewed was not straightforward as there are currently no

available clinical guidelines on breastfeeding in this population. Nevertheless, almost universally they agreed that an individualized approach to providing recommendations should always be considered, as opposed to strictly following Health Canada/WHO guidelines. Some stated that right from the beginning of the pregnancy they tried to have open discussions and normalize the fact that breastfeeding is not a universal choice and does not have to work for everyone. Moreover, they provided reassurance that infant formulas created for newborns and infants are equally or near-equally nutritious as breastmilk, emphasizing that bonding with their baby would be stronger if mom stayed healthy:

> "There aren't resources in terms of this mother has an illness, this is how we support them. I believe it's more of an experienced based, what have I learned from the previous client that I've had, what's worked and what hasn't and it's so different for everyone that I don't think you can have a resource per se, but I think what's helped the most is having a team to work within, to really get the psychological support, medical support, whether it would be medication or… you know, working as a team that's probably benefited the most."

> "If we are seeing that the balance is starting to get thrown off, we really should be at least discussing what else could you do if breastfeeding was actually starting to accelerate the likelihood that you would relapse as far as your eating disorder concerned. So, with any of the patients that were coming to me either right before having a baby out of concern of relapse during their maternity leaves it's a part of discussion right from the get-go. As far as where they feel they're at and what would they like to see for themselves; as far as breastfeeding is a concern before the baby even comes; and then just trying to have an open discussion along the way about "okay are both of your needs being met

appropriately and are you still doing okay to be able to continue to breastfeed?" but it is a really from my perspective I'm trying to have always an open discussion."

"Ahmmm, is being able to that kind of health care provider that's actually providing them with reassurance that is OK if it doesn't work or if they have to back off sooner than they thought they would. Rather than being the dietitian that's kinda pushing "It has to work, It must work!" It's a little bit more of the opposite where "You know what, it may be scientifically best, but if doing it is putting your ability to stay well at risk or if it's just not physically working for you and the baby, the reason that these baby formulas have been produced is so that you have options, and that you don't have to worry that your baby is not going to be well-nourished."

One of the interviewees had suggested that supporting these patients by various care providers that would deliver a similar message would be invaluable, a message that is sensitive to this population:

"Or what about our bulimic population group? They often get, I mean we don't do as many of the normal weight or overweight patients here in the clinic, but in my private practice, they are being told to lose weight. Many of our bulimics are normal or above normal weight, and when they conceive, and they go in "Oh, your blood pressure is elevated, did you know that your cholesterol is high? Did you know that your body weight, you need to lose weight?", and I just like "All I'm trying to do is normalize it, and say that weight is not a priority at this point in time", because once the eating normalizes, then we can address "Ok, is it healthy for you to increase your activity or cut back slightly on your intake", but normalized eating has to be implemented so, that's a

> huge… I guess because I'm here in the hospital right now I'm not thinking of that other disordered eating group."

The importance of having sensitive resources tailored to the specific post-partum and infant care needs of women with EDs was emphasized to enhance their ability to open up about potentially re-emerging ED symptoms and subsequently access available supports to treat these symptoms:

> "We've got so many wonderful resources, but the resources aren't sensitive to their concerns, and ones you become sensitive to their concerns, they open up so much more. They would be so much more willing to engage in proper nutrition and you know, but…they need to know that their thoughts are believed and acknowledged and real to others, I think."
>
> "We need it [guidelines] with everything, we need it with breastfeeding, nursing, pregnancy for this population group…"

Picturing the ideal advice given to mothers with EDs included being non-judgmental, as one of the difficulties that was reported to us was that once these patients disclosed their EDs symptoms to healthcare providers without specialty training in EDs, they were faced with significant judgement and feelings of shame, which may further negatively impact the trajectory of their illness:

> "I don't know other resources beyond that and I find some that have been more honest with health care professionals instead of being supported they've received quite a bit of judgement... like 'Do you know what you're doing to your baby? I told you to formula feed, you're putting your baby at risk, you're very sick…'. The words they choose…and the patients become ashamed. Some people have found it motivating, but very few."

A potential solution to this challenge suggested by the same study participant was to provide enhanced training in EDs, which would be valuable not just for psychiatry residents but also for primary care providers and obstetricians who care for these mothers in the community, including those less dramatically affected than women treated in a tertiary program, who nevertheless comprise a significant proportion of women with EDs who require just as much support as the patients receiving care in the ED program:

> "Training in eating disorders in general like, real gaps in training. Like you can go through the residency training here and you don't have to do an elective in the program. You can graduate as a child or adult psychiatrist and never to go through eating disorders. I always strongly encourage my residents, and when they've gone through it "I had no idea!", it's been eye-opening for them. So, eating disorders in general, and certainly pediatricians, or healthy beginning nurses, lactation consultants, family doctors for sure."

4. Discussion

The aim of this qualitative study was to explore the infant feeding choices in women with an ED from a healthcare provider's perspective, with a specific focus on applicability of current public health recommendations for exclusive and extended breast feeding in this particular population and whether breastfeeding may be overly used for weight loss purposes by women with ED.

To understand infant feeding choices in women with an ED, we aimed to consider the complexity of the relationship between maternal ability to breastfeed, women's own motivations to breastfeed, attitude towards motherhood, and specific individual barriers to feeding, including but not limited to ED symptoms. Our goal was to use the information we gathered to provide guidance on tailoring infant feeding advice when delivering health care services to mothers who had or have a current ED. Completion of content analysis of interviews from ED practitioners had identified five major themes they encountered when providing care to women with EDs: Women's perception of breastfeeding, practitioner's perception of breastfeeding, features of EDs in new mothers, denial/secrecy around infant feeding, and support for breastfeeding.

Our findings are of a great value for a number of reasons. Firstly, to our knowledge this is the first qualitative study that evaluated the healthcare providers' perception on infant feeding choices in mothers with EDs. This area of research is quite scarce and a common theme that came out strong in our study was that our healthcare providers lack specific guidance when it comes to providing infant feeding advice to new mothers with EDs. In other words, we wanted to explore how best to provide advice when it comes to breastfeeding in context of the current WHO/Health Canada guidelines (exclusive breastfeeding up to 6 months with continued breastfeeding for two or more years, with complementary feeding starting at six months (WHO, Health Canada) to women with past or present EDs. In the general public, breastfeeding has been

promoted due to its potential health benefits for the baby (e.g., to support baby's developing immune system), but is also recommended to mothers as a facilitator to return to their pre-pregnancy weight (Schalla et al., 2017). In the context of EDs, such breastfeeding advice may carry a certain degree of risk as the postpartum period in EDs is characterized by high rates of ED symptom relapse (Blais et al., 2000; Larsson & Andersson-Ellström, 2003; Rocco et al., 2005) even when the pregnancy showed weight and ED symptom stabilization (Bulik et al., 2007; Micali et al., 2012). From a healthcare provider perspective, identifying mothers at risk for ED relapse and/or inappropriate infant feeding and then tailoring infant feeding advice is further complicated by the high degree of ED symptom concealment (Smink et al., 2012).

Exploration of collateral sources in order to identify whether breastfeeding indeed may carry abuse potential in women with EDs rendered several sources pointing to excessive breastfeeding as a "trending behavior" not just amongst some mothers with EDs but also amongst new mothers without any particular ED. This may be explained by the fact that body shape and weight concerns are "normative" for the general population (Stein & Fairburn, 1996) and it's not seldom that new mothers embrace various diets and other weight loss promoting strategies in order to return to their pre-pregnancy body weight (Stein & Fairburn, 1996). Considering the amount of detail on some of our collateral sources, i.e., online forums that explicitly describe the amount of burnt calories per one oz of milk, and in the context of current public health recommendations for extensive and exclusive breastfeeding, it seems unsurprising (but yet alarming) that breastfeeding could be (mis-)construed purely as a means to lose pregnancy weight, irrespective of EDs. In conjunction with the initial clinical observations by Dr. Ostolosky around suspected excessive breastfeeding behaviours in some of her patients she shared with me at the start of this project, our study approached this topic from a qualitative

perspective by interviewing health care providers working in the tertiary level ED program and assess if they had also made such observations or if they suspected any abusive use of breastfeeding with the goal to lose weight.

4.1. Women's Intentions to Breastfeed and the Barriers to Safely Breastfeed

The first theme that emerged in our analysis of the interviews was the women's perception of breastfeeding: Unanimously, the ED healthcare providers indicated that almost all of their patients had a strong desire to breastfeed and that most of them initiated breastfeeding post-delivery. This observation is consistent with existing literature. For example, in their longitudinal population-based study (Micali et al. 2009) have reported that nearly 83% of women with a history of an ED initiated breastfeeding, 9% above the general population and 11% more than women with other psychiatric disorders (Micali et al., 2009). Our participants observed the duration of breastfeeding in their patients to be between 6 weeks to 4 years, a wide range that likely reflects the fluidity of patients' motivations to breastfeed, along with the support they received, as well as what other barriers to continued breastfeeding they experienced. Noteworthy, our participants reported that their patients' strong intentions to breastfeed were often precluded. Among the reported barriers were that their patients perceived being unable to generate sufficient breastmilk, their low tolerance to pain when breastfeeding or distress seeing their baby cry, their fear of transferring their current psychotropic medications to the baby via their breastmilk, and their need to return to work. Importantly, one of the reported reasons to prematurely terminate breastfeeding included women's intention to resume their ED coping strategies to lose weight without exposing their babies to health risks. Previous studies with eating-disordered women are somewhat inconsistent regarding the duration of their breastfeeding, with some studies favoring a similar duration of breastfeeding amongst mothers

with or without EDs (Agras et al., 1999; Allen et al., 2014; Brinch et al., 1988; Evans & le Grange, 1995; Hoffman et al., 2014; Martini et al., 2019; Nguyen et al., 2017), while in their systematic review Kass et al. (2021) with a much larger population suggested that women with EDs tend to cease breastfeeding earlier than women without an ED (Kass et al., 2021).

With respect to practitioners' own experience and how it affected the advice to the patients they were treating, our study participants all emphasized that they supported breastfeeding as the primary form of infant feeding if it did not interfere with the mother's wellbeing. They were universally cognizant of the fact that breastfeeding may not be an option for each of their patients, thus they all commented that even though they promoted breastmilk as the best option for infant nutrition, they tried to normalize other alternatives as much as they could, to avoid further distress in their patients.

4.2. Limited Emotional Attunement to Their Babies During Breastfeeding

Our third major theme reflected six distinct characteristics that new mothers with EDs may present with during their post-partum period. One of the features observed by our study participants was that some of the new mothers with EDs had great challenges bonding with their babies. Subsequently, they may have difficulty staying attuned to their child's emotional state and reading various types of their baby's cries, e.g., whether a cry indicated physical pain, hunger, or simple discomfort. This is also supported by (Squires et al., 2014). In their longitudinal observational study (N=28), the authors investigated the influence of EDs on mothers' sensitivity and adaptation during infant feeding. They established that the dyadic reciprocity between mother and child was inversely proportional with the severity of the mother's ED symptoms, evidenced by the mothers' difficulty interacting with their babies and their decreased sensitivity when feeding their babies compared with mothers with no ED

symptoms. The mothers with active ED had the proclivity to position their child in a less comfortable position during breastfeeding, they made fewer positive comments about the infant's feeding abilities and objectively looked sad or detached. Their babies seemed less jovial and did not smile during their interaction with their mothers (Squires et al., 2014). Similar to reports by our study participants, Squires et al., (2014) had emphasized that mothers who had "shape concerns" about their bodies or had "food preoccupations", the reciprocity between them and their infants was almost absent, with lack of visual or bodily reciprocation. Like other researchers in the field (Evans & le Grange, 1995), Squires and colleagues' observational study uncovered that mothers with an active ED can have great challenges identifying cues of hunger or satiety in their infants and struggled distinguishing these types of distress from purely search for contact, or just being in pain (Evans & le Grange, 1995; Squires et al., 2014). This ambiguity in trying to establish whether the baby is hungry or full was also reported by the healthcare providers in our study, which seemed to have been generated by these mother's inability to stay emotionally attuned to their infants. To them, some of these mothers seemed to be disjointed from their babies when observed to breastfeed. Breastfeeding was characterized as part of some sort of agenda that had to be completed, sometimes lacking the typical emotional engagement of a breastfeeding mother, such as eye contact, affection, and body positioning.

4.3. Repulsion with Post-Partum Body Functions and Appearance

Another ED-related feature identified by our study participants was body image distortions, characteristic for EDs regardless of obstetrical status. The types of women's body image distortions that were reported by our participants in the specific context of infant feeding included observations like women's repulsive perception of their engorged breasts that were now producing milk for their babies. One patient specifically was noted to be aversive to having a

typical female body, with menstrual cycles, with hips and lactating breasts post-partum. Similar observations were also made by (Patel et al., 2005) in their qualitative study, when the authors commented how their study participants with an active ED (N=14) recounted experiencing their body changes in pregnancy and postpartum period as similarly deplorable to those they had during adolescence. As a result, some of their study participants prematurely terminated breastfeeding as they could not tolerate seeing the types of body changes that come with pregnancy and post-partum (Patel et al., 2005). Interestingly, several of our study participants noted that some mothers could in fact tolerate their enlarged breasts and proceeded with prolonged breastfeeding, knowing that this came with caloric expenditure.

4.4. Extending Cognitive Rigidity and Need for Control to Breastfeeding

Our next subtheme had emphasized other core characteristics of EDs, namely inflexibility/rigidity in thinking, need for control, and cognitive distortions such as black-and-white thinking and mental filters. These characteristics expanded to infant feeding. For example, several practitioners noted that some of the mothers were rather controlling over their breastfeeding routine; they had distinct and specific ideas about how and when to breastfeed. Some mothers were reported not to give much space to their partners to help bottle-feed their babies, as they perceived breastfeeding as being “their own thing”, and they generally seemed to be resistant to receive support from the fathers of their babies. Interestingly, in their qualitative study (Patel et al., 2005) commented that mothers with ED and those at risk for an ED were more likely to interpret their partner’s offers for support in a negative way, describing them as critical, which likely expands to breastfeeding as well. Thus, if women perceive their partner’s attempts to support their infant feeding as judgmental or dismissive of their own abilities with feeding, indicating ED-typical cognitive distortions and difficulty giving up full control - in this context

ultimately resulting in less support for infant feeding altogether and, for example, premature termination of breastfeeding.

Cognitive inflexibility has often been reported as a core characteristic in EDs (Stewart Agras, 2017) and may also expand to infant feeding. For example, our participants reported some of the mothers believed that breastmilk is the only good option for their infants, and that they had great difficulty accepting any other options. These mothers then may become very disappointed if they are unable to breastfeed or prolong breastfeeding for a combination of reasons, among which a rigid belief in breastfeeding as the one optimal choice plays an important role. A related observation was that some mothers equated breastfeeding success with qualifying them as "good mothers".

4.5. Breastfeeding as a Purging Behavior in Women with EDs

Another subtheme that emerged was the use of breastfeeding as a compensatory behavior, which was the core hypothesis initiating this research project. While little scientific evidence exists to support the expansion of compensatory behaviors in EDs including purging and excessive exercising to breastfeeding, our collateral sources outlined that the idea of using breastfeeding for accelerated weight loss purposes circulates in the ED population. In their qualitative study, Stapleton and colleagues identified two out of 16 women with ED symptoms chose to prolong their breastfeeding due to its potential contribution to additional weight loss, allowing them also to have a less restrictive diet as they used breastfeeding as an outlet for caloric expenditure (Stapleton et al., 2008). Our interviewed ED healthcare providers universally reported such compensatory component in their patients' breastfeeding behavior. This behavior, like many other purging methods, was also reported to be likely concealed by the women due to the shame associated with having an ED. Using breastfeeding in such a way is likely even more

underreported and/or unrecognizable given the societal promotion of breastfeeding as the best feeding choice. Owing to our participants' reports, in the particular context of an ED, it should at least be considered that the nutritional function of breastfeeding for the infant may be converted into something deviant that is part of the ED. Our study participants indicated that some of their patients extended their breastfeeding, in one extreme case to up to 4 years; we have heard that some practitioners observed their patients to calculate how many calories would be consumed each time they breastfeed, how many calories would be lost if they breastfed while standing or whether they could do it when walking; and other patients were observed to be pumping excessively and dumping the milk before they were weighed on the inpatient unit. Such 'deviant' uses of breastfeeding are unlikely to be readily disclosed by women with EDs in general or obstetric care settings but were uncovered in the current study involving ED practitioners in a tertiary care setting.

4.6. The Dual Role of Pregnancy in EDs - a Gate to Recovery and a Risk for Relapse

Our next subthemes depicted two aspects of pregnancy in the ED population, namely that pregnancy can be a gate for recovery even if temporary, but also that pregnancy and post-partum are vulnerable time periods when some mothers with EDs return to their pre-pregnancy abnormal eating patterns and ED-driven behaviors. Destabilization of physical but also mental wellbeing post-partum is well supported by the current literature, including large-scale studies such as the Norwegian Mother and Child Cohort prospective study (N>100.000) (Watson et al., 2014) and the Avon Longitudinal Study of Parents and Children (N= 12.254) (Micali et al., 2011). While some findings support the idea of short-term remission of ED symptoms during pregnancy motivated by the mothers' concerns for their fetus' wellbeing (Blais et al., 2000; Bulik et al., 2007; Crow et al., 2008; Micali et al., 2012), the same authors also report that many new mothers

experience a resurgence of their ED symptoms at different points in time after delivery. One of our study participants had shared with us the case of one of their patients who was only free of ED symptomatology during pregnancy. This indeed motivated the patient to have six pregnancies at which point the care team had to intervene and help her identify copying strategies other than pregnancy in order to handle her ED symptoms. In light of our observations, pregnancy may be a time when women with EDs might be better able to focus on their wellbeing as opposed to their disordered eating as these behaviors may not only be detrimental to themselves but to their babies. Thus, we suggest that pregnancy is a time window of great opportunity for intervention, a time when the health care support for women with EDs should be maximized and tailored through a biopsychosocial lens. Namely, we suggest that capitalizing on the often relatively symptom-free time period during pregnancy their psychotherapeutic supports should be enhanced, and their family physicians, obstetricians, and midwives should be actively engaged not just for the duration of the pregnancy but prepared and educated for the post-partum period. By escalating these supports during remission, there is a possibility of prolonging the symptom-free period and thus, preventing an early relapse during post-partum – a crucial time for moms but also for their developing infants. While enhanced supports are more accessible for the patients who receive ED treatment in a tertiary level hospital, it remains much harder to maximize these interventions in the community where a lot of these patients do not necessarily see their family doctors for their EDs. As discussed in our 4th theme, women with EDs are not forthcoming about their problematic eating.

By definition, women who receive treatment in the ED program have an eating disorder, but even there they are concealing a lot of the strategies they use to cope or compensate for their consumed calories throughout the day. In our case, we aimed to explore whether this secrecy

expands to their infant feeding choices and whether they are ED-driven decisions. Our results suggest that this observed concealment does expand to breastfeeding choices, as our study participants have reported that while their patients did not verbatim express that they were breastfeeding for weight loss purposes, eventually some of them did acknowledge that the caloric losses were one of the reasons for choosing to breastfeed.

4.7. The Absence of Individualized Protocols for Infant Feeding Support in EDs

Our final theme was the current supports new mothers with EDs receive around infant feeding choices, and what would be optimal supports that these mothers and their infants should receive. Unfortunately, apart from the Health Canada/WHO recommendations regarding breastfeeding, there are no existing amendments or specific guidelines to infant feeding recommendations for mothers who struggle with an ED. Our study participants were aware about the current public breastfeeding guidelines and their limitations in the population they serve, thus they would hold conversations regarding breastfeeding before their patients delivered their babies. Namely, they emphasized the educational component and tried to re-assure their patients that there are other healthy options for infant feeding, as breastfeeding is not an option for everyone. This was not the case beyond the ED program borders according to our interview results.

Firstly, our results depicted a lack of awareness by other health care professionals outside the ED field on how to identify signs of EDs, especially in the bulimic population who often have either normal or above normal BMI. As such, misidentification of EDs in pregnant women precludes their family physicians, obstetricians, midwives, and nurses to have sensitive discussions with their patients, especially with respect to post-partum health and to infant feeding choices. As a result, some of the messages these patients receive are universal and not tailored towards EDs. For example, women were advised to promptly initiate breastfeeding shortly after

their delivery and their practitioners would emphasize the additional benefits of breastfeeding for post-partum weight loss (Carwell & Spatz, 2011). Messages like that could precipitate relapsing ED symptoms and conversely, prolonged breastfeeding could carry abuse potential as was observed by some of our study participants and how it was suggested in some of our collateral sources of information. Previous findings support the idea that irrespective of EDs, mothers who reached out for professional advice regarding infant feeding often receive invalidating, improper, deficient and sometimes inconsistent messages from their healthcare providers (Nelson, 2006). In the ED population this is further complicated by this reported denial and concealment of their struggles with their disturbed eating and their possible secondary motivation to breastfeed, i.e., weight loss. (Fogarty et al., 2018) had also suggested in their meta-ethnographic study that a large proportion of women with EDs were reluctant to divulge their disordered eating to their obstetricians, midwives, maternity nurses but also to their significant others. Consequently, when specific breastfeeding and other infant feeding recommendations are made to any woman, the possibility of concealed EDs should be considered irrespective of their known ED status.

Emerging from the theme of existing and ideal supports for infant feeding choices in women with EDs were several suggestions made by our interviewed healthcare providers. All our study participants had agreed that the ED population they treat require individualized infant feeding recommendations as opposed to strictly urging these women to follow the current public health guidelines. Although our practitioners identified the many lactation resources available within the borders of our healthcare system, our study participants noted that these resources were not sensitive enough for the ED population. Given the lack of awareness about the nuances of infant feeding choices in women with ED, it makes it harder to deliver tailored advice. As such, one of our healthcare providers had recommended that the level of training in identifying

signs and symptoms of EDs should be enhanced, not just for doctors who train to be psychiatrists, but also for physicians who train to be family doctors, obstetricians, or gynecologists, as well as for nurses, midwives, and other healthcare providers who support and treat women during and after pregnancy.

5. Conclusions and Outlook

Our findings derived from the evaluation of specialists' perspectives on their experiences with infant feeding choices, and especially, breastfeeding practices, in women with EDs contribute clinical insight for providers outside the ED specialty. We hope that these observations increase the awareness of the existing challenges that women with EDs face when they seek out advice regarding infant feeding, especially breastfeeding. The support they receive may be perceived as insensitive, non-specific and sometimes even judgmental, and it may simply be ill-informed and insufficient since outside specialized ED treatment, healthcare providers such as family doctors, midwives and nurses are often unaware that their patients may have an ED, with relapsing symptoms driven by their post-partum body shape and the related cognitive distortions. At the core of our work was the question whether breastfeeding has the potential of abuse, in the ED population specifically, due to current public health messaging promoting the benefits of breastfeeding to include post-partum weight loss. From a qualitative perspective we can confirm that this type of behavior has been observed by our interviewed ED specialists, resonating with the original clinical observations that started this project, and these behaviours included extensive periods of breastfeeding, in one observation up to 4 years, i.e. substantially beyond the recommended timeline, the observation of "pumping and dumping" of breastmilk by some patients during treatment in the ED program, as well as obsessive-compulsive-like behaviors such as counting the expended calories associated with each breastfeeding. While these behaviors are not something that patients themselves would likely be forthcoming about, similar to concealment of other purging methods, we can conclude that abusive breastfeeding is a possible and likely phenomenon in some mothers with EDs. This observation also implies that new mothers, especially those with a past or present ED should receive enhanced infant feeding

supports following the delivery of their babies, coupled with support to safely lose weight. As such, it may be necessary to implement specific breastfeeding protocols for this population, balancing the need to promote healthy breastfeeding with the patients' personal needs. Ultimately, the care around infant feeding choices should facilitate physical/mental well-being for both baby and mother and facilitate secure attachments.

Based on our results and literature analysis we conclude this work by summarizing our recommendations aimed at promoting sensitive and individualized care to new mothers, especially mothers with suspected ED:

1. Enhanced training in the ED field not just for psychiatry residents, but also for family doctors, midwives, nurse practitioners, obstetricians, and pediatricians, so they have increased exposure to this population of women and become aware of various aspects ED during their pregnancy or post-partum period.
2. Provision of evidenced based educational pamphlets that emphasize the difference and similarities between formula and breastmilk by highlighting that infant formulas are just as nutritionally rich as breastmilk is.
3. Inclusion of dietitians in post-partum care for women with ED who receive care in the community outside specialized ED programs, to assist new mothers with safe weight loss strategies while supporting their infant feeding goals and their own nutritional needs in context thereof.
4. Inclusion of ED-specialized psychologists in post-partum care for women who have preconceived ideas about breastfeeding and its attribution to good mothering skills.
5. Delivery of universal messages regarding infant feeding advice across all healthcare professionals, from family physicians, midwives and nurses to pediatricians and dietitians.

These should consider women's cultural background, their breastfeeding capacity, their goals, comfort level with their bodies, tolerance level with breastfeeding challenges but also patients' flexibility to life adjustments that breastfeeding requires.

6. Future Directions

As described in the introduction, this project was intended to explore the insights of the health care providers delivering care to new mothers with past or current EDs, but we also wanted to gather the experiences with infant feeding choices, specifically breastfeeding, from the perspective of the mothers. This perspective would complement the results of our study regarding the presence, scope, motivation, and general experience of making infant feeding choices and receiving infant feeding advice while dealing with a past or present ED. Moreover, based on the emerged themes which depicted several other aspects of infant feeding in the context of EDs beyond breastfeeding, it would be worthwhile to explore major facets of the post-partum period in mothers with EDs: Their adjustment to embracing their new identity as a mother, the type of supports (partner, extended family, friends or health care providers) they received during post-partum period and how their eating patterns changed after their babies were born. Secondly, it would be invaluable to obtain information from the mothers themselves around their experiences, practices, and attitudes on breastfeeding. Another valuable angle of exploration on this topic, would be the perspective of the health care providers outside the borders of the specialized ED, such as family doctors, nurse practitioners, midwives, obstetricians etc. Lastly, it would be interesting to explore the impact of infant feeding choices of mothers with EDs on their long-term relationship with their children, and their children's eating patterns.

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