

Eating Disorders and Pregnancy: The Case of Anorexia

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Abstract

The question of the link between pregnancy and eating disorders is an important question. At the moment, there are few concrete answers for these patients. Despite common fertility challenges, patients who suffer from ED are able to access maternity. ED and pregnancy can either have an easy evolution or experience a lot of trouble. Many studies describe obstetrical and foetal complications (low birthweight, inadequate intra-uterine growth, small head circumference, miscarriage, caesarean section). Those patients are frequently reluctant to address their disease with their specialist, who also often doesn't know how to screen the signs. The lack of official data to train the specialists further increases these difficulties. However, ED are frequent in the general population and young patients are likely to eventually want to become mothers. It is thus essential to know how to screen those patients early and accurately to improve their treatment and care. Eating disorders impact the pregnancy, the delivery and the postpartum as well as the growth of the baby. It is an important public health problem. The evolution from being a woman to becoming a mother is a difficult one, and even more so when the women is suffering from ED. Those patients must handle their nutritional fears, the anxiety about their body changing with pregnancy and the daily challenges. The early interactions with their baby have consequences on their development. It seems necessary to evaluate how to improve the screening and the patient care in ED patients. Screening should begin from the pregnancy desire to the postpartum. This patient care should be based on a multidisciplinary care team.

Keywords

Eating Disorders, Anorexia, Pregnancy, Child, Postpartum

1. Introduction

The Diagnostic and Statistical Manual of Mental Disorders, DSM-5, is the refer-

ence classification in psychiatry [1]. There are several types of Eating Disorders (EDBs). The most often cited are anorexia and bulimia [1]. TCAs are part of addictions without substances [2]. These chronic disorders are major public health problems. Anorexia nervosa is defined by dysmorphophobia with excessive dieting leading to weight loss and a pathological fear of becoming fat [1]. According to the DSM-5, it is defined according to the criteria:

- Restriction of energy intake compared to needs leading to a significantly low weight,
- Intense fear of gaining weight and becoming fat, despite being underweight,
- Altered perception of one's own body weight or shape (dysmorphophobia), low self-esteem (excessively influenced by body weight or shape), or persistent lack of recognition of the seriousness of current thinness.

Two forms are described: the pure restrictive form (food deprivation without an episode of compulsive eating or vomiting over the last 3 months) and the "bulimic" form (compulsive eating crises which end with vomiting or the taking of compensatory treatments) [1]. There is real interest in the study of adolescent EDs [3]-[7]. However, the question of "becoming a mother" among this population of young girls is little explored. However, these women may wish to become mothers. The transition to motherhood is a period of upheaval: physiological, psychological, cognitive, emotional and identity but also family. This is what we call the "motherhood process". This inaugurates "the intimate encounter with oneself" as Monique Bydlowski said [8].

2. The Pregnancy

Pregnancy is a time marked by the possible re-emergence of problems around eating habits, especially if the woman has a history of TCA [9]. Nutritional needs are increased and numerous recommendations will guide pregnant women in their diet (foods to avoid for listeriosis and toxoplasmosis, to consume in larger quantities, diversify intake). These pressures to "eat healthy" may be responsible for the increased interest or concern of certain pregnant women about food [10] [11]. 5% to 7% of women of childbearing age are affected by TCA [9] [12]. 15% of them present a sub-syndromic form [13]. The prevalence of pregnant women with ED has been estimated between 1% and 3%. Among these women: 8% will actually have symptoms of TCA during their pregnancy. This prevalence is probably underestimated [14]. In fact, the latter do not highlight their disorder during prenatal consultations. Shame and denial of disorders mean that treatment is not optimal [15]-[18].

Maternity is a period conducive to the resurgence or worsening of ED symptoms [19] [20]. It would be linked to conflicts dating from adolescence which would not be resolved and therefore revived by the pregnancy [21]. Studies even mention the appearance of a psychotic state [22]. Micali *et al.* showed that 30% of pregnant women exhibit at least one compensatory behavior (physical activity, self-induced vomiting, use of diuretics and laxatives) during their pregnancy

[9]. Koubaa *et al.* determined that women with ED are more likely to have hyperemesis gravidarum [19] [23].

Smoking is common among TCA patients, with a prevalence of 40% [24] [25]. This consumption would continue in these women during their pregnancy [26]. The prevalence is estimated at 17% in the first trimester and 14% in the third [27]. However, we note a drop in consumption since the prevalence outside of pregnancy is 37% [27]. A Norwegian study of 35,929 women suffering from ED found the same prevalence (prevalences for all EDs combined, between 14 and 37% versus 9% in the general population). Pregnant anorexic patients seem to be the most affected with a prevalence of 37.1% versus 9.2% in the general population [28].

Regarding alcohol, anorexic patients do not consume more alcohol than the general population, unlike those suffering from bulimia, binge eating disorder and those in the EDNOS group [24] [29] [30]. Houet *et al.* estimated that alcohol consumption increases from 79% antepartum to reach 43% during pregnancy. The prospective study specifies a risky use rate of 9.9% [31]. In the general population, alcohol consumption beyond the first trimester is 25% (equivalent rate for simple use and misuse) [32]. Bulik *et al.* warn that patients with ED during pregnancy are at greater risk of multiple addictions [27].

Cannabis use among pregnant women has not been studied much.

Pregnancy can be experienced by patients with an ED as a dilemma. They must ensure that they eat properly so as not to hinder the survival of the fetus and succeed in regulating the anxiety associated with eating. Thus the pleasure of eating is absent and the increase in appetite is a source of anxiety. The impact of significant nutritional restriction in the first trimester increases the risk of failure of the fetal neural tube to close (due to vitamin B9 deficiency). This malnutrition can induce metabolic alkalosis. In cases where this is significant at the end of pregnancy, cases of hypochloremic metabolic acidosis of the newborn have been noted [33]-[35]. The perception of fetal movements seems to be an element in favor of improving the patient's eating habits [16].

The pregnancy rate in women with a history of anorexia is 15% to 87%. For some patients, subfertility leads them to plan their pregnancy, for others unwanted pregnancies can become problematic. The average age at first birth is higher than among women without TCA [36]. The prevalence of anorexia during pregnancy is 1% [36] [37].

Concerning weight gain during pregnancy, studies are contradictory. It seems that the majority of pregnant anorexic women gain more weight. This is a protective factor in view of the low preconceptual Body Mass Index [28] [38] [39]. Some studies, however, mention weight gain less than or equal to control women [40].

The rate of spontaneous miscarriages in anorexic women was shown to be higher than in the general population in a study published in 2005 [19]. This finding is corroborated in other studies [38] [41]-[43]. The course of the pregnancy would be more complicated. Indeed, studies have estimated an increased frequency of infections, pyelonephritis, anemia and vomiting [10]. The risk of

bleeding would also be increased [44]. Ferritin levels in anorexic patients appear to be lower than in the general population [45]. In utero deaths have also been reported [21] [24] [46]. These are pregnancies classified as “high risk” by the medical profession [47]. Micali *et al.* demonstrated that anorexia nervosa is associated with Intrauterine Growth Retardation (IUGR). Weight gain during pregnancy is the determining factor. A woman who does not gain weight will have an even greater IUGR [2] [48] [49].

3. Childbirth

According to Sebire *et al.*, thinness would be a protective factor against the need for medical induction of childbirth. Anorexic women are more likely to induce labor spontaneously [50]. Anorexic women have a narrower pelvis. This could explain the higher frequency of cesarean section than in the general population [13] [51]. However, some of them will be able to have a vaginal delivery. In this case, there is an increased frequency of episiotomy [52]. The duration of work does not seem to be impacted by the presence or absence of TCA [50].

It has been reported that anorexic women give birth to girls more often. This would be linked to a diet that is harmful to the male fetus: low in calories and fat [28] [53]-[55].

Prematurity and extreme prematurity are thought to be the result of excessive physical activity, nutritional deficiencies, high cortisol levels and greater tobacco consumption than in the control population [56]-[59]. The respective estimated prevalences were 3.2% to 9.6% depending on the studies [38] [44] and 1% (60). For comparison, the prevalence of prematurity among control women was 4% and 0.3% for extreme prematurity [38,60]. The decrease in placental 11 beta-HSD is linked to maternal undernutrition. This would cause dysregulation of glucocorticoid production and induce hypercortisolemia. The latter would simulate a stress response [61]-[63]. Prematurity, like low birth weight, is a function of the BMI and nutritional status of the woman before conception [33] [64]. Two studies report an increased prevalence of threat of premature birth (*i.e.*: before 37 weeks) linked to underweight [50] [65]-[67]. Prematurity, the leading cause of infant mortality, would be all the more severe as anorexia is present [68]. Babies of anorexic women more often have a low birth weight [15] [47] [50] [61] [69]-[73]. The latter seems to be reversible at three months of life [74] [75]. The rate of low birth weight in the general population has been estimated at 6.8% versus 14.5% for anorexic women [76]. The study by Watanabe *et al.* specifies that a weight gain of less than 9 kg in a woman of slight build before conception is a risk factor [77].

Anorexia often appears to be associated with obstetric and neonatal complications [78]. The head circumference of babies at birth is lower than controls [19] [68]. The latter has been linked to nutritional deficiencies, stress and negative emotions in pregnant women [15] [45]. Insufficient head circumference is positively correlated with cognitive development [79]. Very severe anorexia during

pregnancy impacts the fetus, the latter also suffering from malnutrition. This induces various poor prognostic consequences: neonatal hypotrophy, hypoglycemia and hypoxia [80]-[82]. Malformations are said to be more frequent, notably cleft lip and palate [47] [83]. The APGAR score of the newborn is a source of discordance. Retrospective studies report a lower score at 5 minutes compared to the general population [83] [84] while others (prospective) identify no difference [19] [28]. Franko also did not observe any difference between current versus past anorexia [47].

Thinness appears to be a protective factor against gestational diabetes, pregnancy-related hypertension and pre-eclampsia [50] [67]. Doherty *et al.* add that anorexic women would be less affected by retained placenta during delivery [69]. The disturbances resulting from anorexia in pregnancy are not general. Various studies point out that these pregnancies can go well [47] [85] [86]. The distinction is based on the severity of anorexia and its temporality. Current anorexia will be more harmful than if it is a history [9].

4. The Consequences for the Anorexic Mother

For women suffering from ED, pregnancy means a loss of control over their weight, their body and their diet [21]. This can be a source of anxiety and guilt regarding the image reported by our societies. These patients would experience a loss of control during their pregnancy. This would concern: 72.5% of women with current TCA, 42.8% with past TCA versus 36% of control women [9].

When there is a history of TCA, the changes induced by pregnancy seem to be better accepted. These fears can cause a feeling of shame, increasing the difficulty in broaching the subject with health professionals [87]. Access to maternity presents two aspects for these women: on the one hand it can allow the patient to transcend her disorder and on the other hand it gives access to a new identity: “a maternal identity” [88] [89]. The perception of these patients regarding their new identity as mother by those around them is quite negative and critical [16] [90]. Patients with ED do not seem worried about the new responsibilities that motherhood entails. The fears expressed despite everything are often expressed minimally and rather trivialized. This is consistent with the idea of a certain idealization of motherhood by these patients [91] [92]. Far from the image of pregnancy as a source of fullness, the induced modifications jeopardize the body image of women with TCA [93]. They are more concerned about their figure than women in the general population. This observation is applicable during pregnancy and postpartum [94] [95]. Having a history of ED or a current form is a risk factor for body dissatisfaction during pregnancy [9] [17] [20] [96]. The obstacle posed by variations in body image inherent to pregnancy is better accepted and overcome through projection into the postpartum period. Indeed, it is by telling themselves that they will regain their pre-pregnancy figure that these patients manage to overcome their fears [97] [98].

The perception of their own body will have repercussions on the way they ex-

perience their pregnancy and especially their motherhood [97] [98]. A very idealized vision of the baby would be more present in women with ED than in control women. Women suffering from ED have a greater need to anchor the reality of the fetus in their daily lives than control women.

5. Breastfeeding

Women with ED would be bothered by the lack of ability to control the amounts the baby suckles. They would feel the need to know the volume ingested. The literature mentions that it is impossible for women with TCA to conceive of a “body to body” with their baby [90] [99]. This physical proximity seems difficult. In addition, looking at their body would be a source of excessive discomfort [100]. Patients with ED would prioritize weight loss in the immediate postpartum period and would therefore not be inclined to consider breastfeeding [90]. Generally speaking, it seems that patients suffering from ED have more difficulty initiating breastfeeding than control women [100]-[105]. They also have more problems adapting and meeting the needs of the newborn. A study carried out on 11,900 English women estimated that women who had no concerns about their physique expressed an intention to breastfeed 1.25 times greater [106]. The perception of their body would thus be a factor determining the intentionality of breastfeeding and its continuation over time. A negative body image during pregnancy is associated with a fear of body degradation through breastfeeding [107] [108].

Studies focusing on postpartum outcomes in anorexic women are few in number. The study by Sebire *et al.* is one of the rare ones found in the literature. It leads to the conclusion that women with a BMI less than 18.5 kg/m² breastfeed less than others (OR = 0.93 99% CI [0.90 - 0.96]) [50]. And when they do, they tend to interrupt it, fearing that they will underfeed their child due to milk insufficiency [100] [104] [109] [110]. Several studies have reached the same conclusion: anorexic women who choose to breastfeed do so for non-nutritive purposes. They would use breastfeeding as an “emotional reward”. The anorexic mother does not seem to be able to respond in any other way to the baby’s distress signals. It would confuse the physical and psychological needs of the child. She would not be able to manage the negative emotions of the latter by, for example, implementing a nursing activity or by seeking to determine the origin of this discomfort. One article mentions this as an activity with “anxiolytic purposes” [111]. Barbosa describes that when breastfeeding has been established in patients with a TCA, weaning is more complicated than for the general population. The author highlights that the weaning stage takes up the symbolism of separation. However, the woman with a TCA presents difficulties in the context of the identification/separation of her child [100] [102].

6. The Dyadic Relationship

The dyad in the context of TCA is an exclusive and fused dyad leaving very little

space for a third party [112] [113]. Concerning attachment modes, two studies highlighted that the latter were more frequently of the avoidant and insecure type [101] [113]-[116]. When the child's dietary diversification begins, new difficulties seem to appear. Women with ED feel the need to control their child's nutritional intake, denying their child's self-regulation abilities. This need for regulation of energy intake has frequently been noted in the literature [10] [117]. It was possible to note the existence of deficiencies in these children. Some authors describe "starving children" suffering as a sort of "BT by proxy" [105] [118]-[121]. This alarming picture of undernutrition cannot be generalized [100] [122]. The extreme forms described are the prerogative of current, severe EDs, often marked by maternal denial of the disorder.

Women with TCA are rigorous/rigid in implementing nutritional recommendations, advice from pediatricians, childcare workers, midwives or reference books that they may have read. It is also because they are aware of not being a "good example" in terms of nutritional habits that they need so much support from the medical and paramedical profession [123]. This lack of flexibility would be a means of reassurance for them. The need for this weight control would depend on the perception of the body and the body image of the mother. The more negative the latter, the more obsessive the fear of seeing one's child being overweight would become [88] [119] [124]. This is how various methods of restricting intake and monitoring food intake punctuate the child's daily life without his knowledge and to his detriment [154]. The more conflictual the meal, the less weight the child would gain [125]. This excessive weight concern is also described for the physical appearance of the child, especially if the child is a girl [61]. Anorexic patients tend to underestimate their child's energy needs. They deliberately underfeed their child, fearing that the latter will become overweight [105] [126]. Mothers suffering from ED would have difficulty distinguishing between self and other. They are challenged in assessing the nutritional needs of their child as they are for their own [127] [128]. The existence of these failing food interactions and the mother's dichotomous discourse (healthy versus unhealthy) hinder the child's acquisition of autonomy, the development of self-awareness but also the creation of social interactions [129] [130].

7. The Evolution

Restrictive behaviors and compensatory behaviors (intensive physical activity, laxative use, self-induced vomiting) appear to decrease in frequency during pregnancy [9] [20] [89] [131] [132]. This improvement would be more marked from the second trimester of pregnancy [17] [88] [133] and would be at its optimum in the last trimester. "Period of indulgence" is a name used by some to describe the third trimester of pregnancy. The fact of carrying a child and being responsible for its life would justify the fact of eating properly for these women [97]. The MoBa prospective cohort study showed a remission rate for all TCAs of between 29% and 78% [26]. Despite this improvement in symptoms, the need

for control seems to persist. The induced weight gain, which is extremely anxiety-provoking outside of pregnancy, would be experienced as transient, beneficial for the baby and therefore better accepted [16] [26]. 15% of pregnant women with ED pursue at least weight control strategies [134].

Patients suffering from a current disorder at conception seem to be those in whom an increase in the disorder is to be deplored. It would be among these women that fetal and obstetric morbidity would be the greatest [19] [49] [52] [135] [136]. A risk factor for decompensation would be having a history of anorexia during adolescence. Pregnancy would reactivate the disorder [19]. Patients suffering from ED may find their food preoccupations become very overwhelming during pregnancy [137]. Even among those whose symptoms improved during pregnancy, a significant proportion (80%) of them will relapse postpartum [91].

Pregnancy, associated with the appearance of new anxieties, would for certain patients be synonymous with the resurgence/appearance of obsessive-compulsive disorders mainly of behavioral expression (hygiene for example) [103]. The beginning of the postpartum period is accompanied by a decline in the relief of the eating symptoms that some may have experienced during pregnancy. A certain consensus tends to specify that the symptoms of TCA reappear in an amplified manner postpartum [40] [88] [92] [101] [138] [139]. Micali *et al.* showed that postpartum is associated with the resurgence of nutritional concerns. Patients would then be as anxious, if not more so, about eating than they were before pregnancy. This observation is found for both current and past TCAs [13]. The hypotheses to explain these relapses are diverse [66]:

- Greater sensitivity to postpartum hormonal variations
- Vulnerability to mood disorders, sometimes with pre-existing comorbidity
- A drop in motivation to cope with the disorder [11], particularly due to the absence of the fetus in the body [124]
- Stress caused by the presence of the child, changes in the pace of life [124]
- Less family or friend support.

The risk of recurrence during the postpartum period for stabilized anorexic women is estimated to be 50% [34]. Anxio-depressive symptoms are more common in patients with ED than in the general population, particularly in anorexic subjects [140]-[145]. The lifetime prevalence of depression in women in the general population would be 17% while it would be 64 and 96% in anorexic patients [146]. It seems that these symptoms are particularly comorbid in the perinatal period in these patients with an ED [26] [28] [49] [93] [100] [147]-[149]. Koubaa *et al.* estimate that more than half of patients with TCA were followed during the postpartum period in a specialized center for the management of depression or a psychiatric disorder [147].

The presence of a TCA is a risk factor for prenatal depression [148]. The prevalence of the latter in the general population is between 10% and 20% [150]. This prevalence among anorexic women would be 36.1% [149]. Two frequency

peaks have been described during the postpartum period: around the 10th week and at the 9th month [151] [152].

Regarding the prevalence of postnatal depression, studies estimate [13]:

- a prevalence in the general population of 10% to 15% [153]-[155]
- a prevalence in patients with a TCA of 33% [156] [157]
- a prevalence among anorexic patients of 45.5% [149].

In the case of women suffering from ED whose remission occurred during pregnancy, they would have a 29% risk of postpartum depression. The presence of depression in the prenatal period is a prognostic factor for the occurrence of postnatal depression. Postpartum depression will have an impact on the mother but also on the child [158]. Interactions between mother and child are altered by the presence of maternal depressive symptomatology [158]. A vicious circle would set in: being depressed would reinforce body dissatisfaction which itself would impact depression [132] [159] [160]. In the short term, there would be a risk of anxiety and acting out. The latter can relate to both the patient and the baby [161]. In the literature, we can find guidelines for women who have an eating disorder and who are pregnant, particularly for gynecological monitoring [162].

8. Conclusions

Pregnancy has become one of the most medicalized periods of a woman's life. This is therefore a good time to screen for an eating disorder. The importance of the impact makes this area of prevention-care a real public health issue. It would be interesting to implement therapeutic education for patients with ED who want or are going to become mothers. Regular pregnancy consultations are favorable to the implementation of follow-up. Various ED screening tools are available to practitioners such as the SCOFF for example. However, no tool has been validated for the specific population of pregnant women.

From the beginning of pregnancy, it is necessary to carry out a physical and psychological assessment. Screening for TCA and/or its intensity could be systematic. Suggestive signs were described in the previous section (*i.e.*: low BMI, low weight gain, concerns about weight gain and body shape, nutritional deficiencies and hyperemesis gravidarum). The first prenatal consultation (around the 10th week) could be an opportunity to carry out a SCOFF screening questionnaire. The early prenatal interview takes place in the 4th month of pregnancy. It was described as being a good time for screening, monitoring the disorder and discussing the patient's concerns.

Screening should be done at each "high point" of the pregnancy (prenatal consultations, childbirth preparation classes, hospitalization or even a trip to the emergency room). Postpartum depression is not only the most common condition in women who have just given birth, but it is also more common in patients with an ED.

Knowing the repercussions of TCA on maternity (depression, anxiety, nega-

tive emotions) and the development of the child (prematurity, intrauterine growth retardation, motor and cognitive disorders, risk of transmission of the disorder to the child, etc.), he seems essential to improve: screening, from the preconception stage, prevention for these patients and the development of specialized networks to ensure support for the mother and then for the dyad. The continuation of prospective longitudinal studies covering the different stages of pregnancy and the deepening of knowledge combining TCA and pregnancy should make it possible to produce official recommendations facilitating screening and treatment. Other studies seem necessary to perfect our knowledge and methods of care. The use of what is done internationally could also be considered.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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