Pregnancy and Anorexia Nervosa: Will, Weight and Feelings

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Abstract: A wide body of literature has identified obstetrical and gynecological consequences for the fetus and anorexia nervosa (AN) women during pregnancy. This mini review aims to analyze the effect of pregnancy on AN women, focusing on three specific and less well investigated domains of literature: the desire for pregnancy, weight modification and feelings experienced about pregnancy. The findings suggest that pregnancy may constitute an excellent time for case identification and treatment of AN women. Studies showed a higher prevalence of unplanned pregnancies, suggesting an underestimation of fertility during AN, together with specific trajectories of weight modification. Mixed feelings and higher depression risk were reported for AN women, especially post-partum, with a relapse risk, such as a revival of anorexic symptoms like restrictions, compensatory behaviors or other extreme weight-control modalities. Further studies are necessary on decision making about intentional pregnancy and feelings in AN women, with clearer guidelines for AN treatment during pregnancy.

Keywords: Anorexia, pregnancy, post-partum, body.

1. INTRODUCTION

Pregnancy implies transformational effects and challenges, especially in women with eating disorders (ED). Recently, authors have found a 4.4%-7% prevalence of eating disorders in pregnant women ([1]: 5%-7%; [2]: 4.4%; [3]: 4.5%). In Generation R, a prospective general population cohort study, the prevalence of AN in the year prior to pregnancy was 0.5% [4]. In particular, an earlier pregnancy age was observed in women with AN compared to mothers without eating disorders (26.2 years old versus 29.9 years old [5]). Interestingly, some beneficial effects of pregnancy are reported longitudinally in women with AN before pregnancy. Indeed, a remission of anorexic behaviors was described at 18 and 36 months post-partum (50%-59%, respectively), together with cases of AN persistence (37%-29%) and migration to another eating disorder (13% and 12% [6]). Moreover, symptoms such as self-induced vomiting could be mistaken for pregnancy-related vomiting, so it could be difficult to detect as an eating disorder symptom [7]. Overall, the prevalence of compensatory behaviors (such as excessive exercise, use of laxatives or diuretics) was reported to be lower during pregnancy than before pregnancy, with the exception of self-induced vomiting [7]. Consistent with this, many authors suggest that pregnancy may constitute an excellent time for case identification and AN treatment, given the substantial improvement in symptoms during this period, avoiding a return post-partum to pre-pregnancy levels [8, 9]. However, obstetrical nursing care should consider three critical points: 1) underestimation of concerns regarding the weight gain of ED patients during pregnancy, 2) women with eating disorders are reluctant to disclose symptoms to nurse clinicians, 3) the necessity for specific assessments as standardized practice to detect eating disorders [10, 11]. In this regard, specific guidelines for AN identification in pregnant women are available for clinical services at a regional level (e.g. in Lombardia, Italy [12]). While extensive literature has identified obstetrical and gynecological consequences for the fetus and AN women during pregnancy [11, 13-15], more limited data exists on the impact of pregnancy on AN behavior and symptoms [10]. This mini-review aims to collect recent scientific articles and reviews from 2000 to 2016 regarding the effects of pregnancy on AN women. The words “anorexia nervosa”, “pregnancy”, “post-partum”, were used as key terms in a PubMed search, considering only articles about AN groups or single cases, focusing attention on the most investigated domains: the will of pregnancy, weight modification and experienced feelings.

2. INTENTIONAL PREGNANCY AND WILL

During pregnancy, intentionality implies a willingness to conceive, followed by the consequent intention to carry the pregnancy to term. Unintentional pregnancies were common in women with lifetime eating disorders [4], confirming previous findings of large community-based cohort studies of pregnant

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E-ISSN: 2313-1047/16

women with AN [16, 5]. Recently, a Dutch cohort study recruited 170 pregnant women who reported having suffered from anorexia nervosa in the past. In this sample, the prevalence of unplanned pregnancies was higher for women with lifetime AN (32.3%) compared to other eating disorders [4] and the general population [16]. In particular, the highest prevalence was reported in women with AN in the year prior to pregnancy (55.2%) suggesting that unplanned pregnancies might be a consequence of wrongly underestimating one's own fertility during AN [4]. It is worth noting that clinicians should support and inform patients about sexuality, contraception, and pregnancy, against stereotypes and false beliefs about menstrual irregularities, infertility and sexual activity for women with AN. Moreover, patient will, together with severe weight loss and retardation of fetal growth should represent specific criteria to propose acute or long-term hospitalizations ([17, 18]), and child protective services in cases of inadequate child care [19]. In the literature, we found only a few warning signs and recommendations for AN patients during pregnancy (see Table **1**). Moreover, clearer guidelines for the treatment of AN during pregnancy needs consideration in the light of ethical evaluation, patient status and fetus risks [18], especially in cases of voluntary abortion.

3. WEIGHT MODIFICATION AND CONCERN

Pregnancy inevitably involves weight gain and body modifications that are potentially in conflict with the 'anorexic identity' [16]. Curiously, weight gain and loss for women with eating disorders follow specific trajectories during and after pregnancy. Indeed, before the child's birth, women with AN show a greater increase in body mass index (BMI) (0.66 units per month, [20]), compared to individuals with no eating disorders (0.57 units/month [20]) and a faster weight gain during pregnancy in comparison with women without eating disorders (a relative 0.07% greater increase/week, [21], with consequent protective effects on the developing fetus [2, 5, 1, 22] (see Table **2**). The rapid weight gain seems not to be achieved by a different dietary pattern during pregnancy. In their longitudinal study, Micali *et al*, [23] examined the dietary patterns and food intake of pregnant eating disorder women using questionnaires: AN women were more likely to describe themselves as vegetarian, with an dietary pattern characterized by lower consumption of meat compensated by higher consumption of soya and pulses than the general population. No differences were found between ED women and unexposed women in relation to macronutrients (carbohydrate, fat and protein). Furthermore, anorexic patients showed higher risk of caffeine consumption (>_2500 mg/week) during pregnancy compared to other eating disorders and the general population, with detrimental effects of caffeine on fetus weight and length [23]. However, at the time of the child's birth, women with AN still exhibited a lower BMI (-4.6 units) than the general population, suggesting a partial and insufficient recovery of body weight during pregnancy [20]. This finding is further supported by the study of Koubaa [24] which showed a significantly lower BMI for AN women in week 10 of gestation compared to bulimics and controls. In another study by Siega-Riz, AN women gained weight inadequately (21.9%), adequately (28.1%), and excessively (50%); excessive gain is thought to be protective for the infant, since the women

Table 1: Warning Signs in Pregnancy and Recommendations for General and Forced Treatment in Anorexia Nervosa

Warning Signs	Recommendations for General Treatment	Recommendations for Forced Treatment
• lack of weight gain in the second trimester • history of ED • hyperemesis gravidarum • *(Franko e Spurrell, 2000[37])* • inadequate BMI • fetal growth's retard • patient unable/unwilling to follow treatment or reccomandations • *(Mazer-Poline and Fornari, 2009[19])*	• weighed in scant clothing or a hospital gown • ask whether or not they want to know their weight • discuss the importance of nutrition fort the fetus's development • regular communication with other members of the team • explain consequences of inadequate weight gain • more frequent visit than healthy patients • make open questions to maximize disclosure • *(Franko e Spurrell, 2000[37])*	• coercion should not be used instead of psychoterapy • BMI of 13 kg/m2 is the suggested threshold for considering forced treatment, together with suicidality, electrolyte imbalance and cardiac arrhythmia • use coercion carefully and for the shortest time necessary • as little coercion as possible should be used to ensure feeding • protect the dignity and fragile self-esteem of the anorexic patient • involve the family • the aim is not a particular weight but the continuation of treatment without coercion • *(Thiels C, 2008[17])*

Table 2: Weights Modification (BMI, Weight Increase) in Anorexia Nervosa and Controls During Pregnancy

Study	Groups	Sample (n)	BMI before Pregnancy (Mean and p-Value)		Birth Weight Increase (kg and p-Value)		Evaluation of Weight Increase (*)
Koubaa *et al.* 2005[24]	AN Controls	24 67	19.3 22.3	p<0.001	10.3 12.1	p<0.05	
Micali *et al.* 2007[1]	AN Controls	175 10.636	21.5 22.9	p<0.01	-	-	I
Wentz *et al.* 2009[40]	AN Controls	27 31	-	-	14.3 15.1	p=0.25	A
Siega *et al.* 2011[25]	AN Controls	32 32.311	18.1 24.0	p<0.0001	17.3 14.9	p<0.0001	I (21.9%); A (28.1%); E (50%)
Micali *et al*. 2012[21]	AN Controls	129 3816	22.2 23.4	p=0.001	9.1 8.3	-	I
Zerwas *et al.* 2014[20]	AN Controls	56 60.520	18.2 23.9	-	-	-	-

(*) Adequate (A), Inadequate (I), Excessive (E) as indicated by 1990 - IOM guidelines for weight gain (Institute of Medicine. Nutrition During Pregnancy. Part I Weight Gain. Washington, DC: National Academy Press, 1990) or as reported by the Authors.

started from a much lower BMI [25]. In the post-partum period, significant physical modifications (e.g. body fat increase, abdominal muscle loss) may exacerbate body dissatisfaction. A total of 88.6% of women with AN were ‘‘very’’ or ‘‘somewhat’’ worried about weight gain during pregnancy [26]. Moreover, without the fear of harming the fetus, women with AN may lose the motivation to continue weight restoration [27]. Indeed, during the first 6 months post-partum, weight loss is quicker in women with eating disorders, suggesting the revival of restrictions, compensatory behaviors or other extreme weight-control modalities. Post-partum, for women with anorexia nervosa, BMI declines by 0.85 units per month, more rapidly than the general population (0.74 units/month). Quite surprisingly, authors show a stabilization of body weight from 6 months to 3 years post-partum, with similar trajectories for eating disorders (AN included) and the general population (0.01 unit/month, [20]). Unfortunately the relationship between weight gain and concern in that period has not been examined. In conclusion, pre-pregnancy BMI in pregnant AN women is, on average, slightly lower than in normal women but increases and decreases more quickly; then remains in the normal range for up to 3 years after pregnancy even though body image concerns might persist and, without the fear of harming the fetus, increasing the relapse risk.

4. NEGATIVE FEELINGS

Perinatal depression, defined as depressive episodes during pregnancy or within the first 6 months postpartum, is relatively common in all pregnant women (approximately 10%, [28]). Unlike other kinds of depression (like the baby blues), the symptoms of postpartum depression are not transient and may persist, varying in intensity, for several years. Therefore it has significant consequences not only for the woman's mental health, but also for the mother-child relationship and the whole family [29]. Patients with anorexia nervosa exhibit a specific emphasis on body image and weight (for diagnostic criteria cfr. DSM-V, [30]) influencing self-esteem, and express specific personality traits characterized by perfectionism, obsessionality, anxiety and depression [31], which may also adversely influence post-partum eating behavior [29, 32, 28]. In these women, the prevalence of post-partum depression is estimated to be more than three times (35%) the rate found in the general population (3%-12%, [33]). Similar sexual profiles were reported in women with anorexia nervosa and major depression, in terms of frequency of sexual encounters and reported problems with sex, and contrasts with that of post-partum women. However, general sexual enjoyment is reported in all samples (AN, major depression, post-partum; [34]). For anorexia nervosa, the post-partum period remains a high-risk time for women with a recurrence of previous symptoms and behaviors. This has consequences for the clinical management of anorexic women [35-37]. Body modifications due to pregnancy often imply huge changes: women with eating disorders (ED) may be terrified by this [32]. In a recent study, Micali *et al*., 2013 administered a questionnaire to pregnant women with lifetime ED, asking them to describe their feelings (from overjoyed to very unhappy) at the time they discovered their pregnancy and in the second trimester. Interestingly, women with AN had a five-fold increase in the

probability of continuing to have mixed feelings about the pregnancy in the second trimester [4]. Moreover, pregnancy and motherhood in an women are frequently considered to be a personal sacrifice which determines negative feelings. The feeling modification from "being happy" to "unhappy" showed a 1.8 times increase in probability (with higher depression risk) compared to the general population. As pregnancy inevitably involves weight gain, becoming a mother may be seen as threatening to a potentially valued 'anorexic identity' [16]. Generally, 71% of AN women reported positive feelings (overjoyed/pleased) when they discovered their intentional pregnancy [16] while only 40% of AN with unplanned pregnancies reported being pleased about the pregnancy [4]. Indeed, for many women with AN, pregnancy is unplanned and this fact elicits negative feelings upon its discovery [5]. These negative feelings are probably the result of a combination of the discovery of an unintentional pregnancy and the fear of gaining weight [16]. Despite previous research, a recent study shows that AN women with perinatal depression are also significantly more likely to report abuse, especially after AN onset and recovery, than women with ED whose symptom includes purging symptoms (i.e. bulimia nervosa). Considering the high prevalence of sexual and physical abuse of AN women (81.3%), mental health screening during pregnancy should consider depression and trauma histories, ED and other psychiatric symptoms, together with the feelings about being weighed. Consistent with a multidisciplinary approach and team work in obstetric settings, mental health clinicians and nutritionists should collaborate with obstetricians to collect histories of abuse and trauma [28].

In AN patients, childbearing was associated to a profound decrease in mortality (decrease of 65%), reflecting a selection effect. Indeed women with better health (e.g. a less severe form of AN) may be more likely to create a family and to have children [38]. Moreover in previous studies the role of parenthood has been associated with the perception of being needed and with better self-esteem, appearing as a protective factor for mental health disorders and substance abuse [39]. Indeed alcohol problems are related more to women without children.

CONCLUSION

A review of recent literature reveals that pregnancy can constitute the ideal time for the identification and treatment of anorexia nervosa, and that the complexity of eating disorders needs a multidisciplinary approach and collaborative work between obstetricians/ gynecologists and mental health clinicians. Moreover, specific weight trajectories emerged during and after pregnancy in this clinical group. Profound differences emerge between planned and unplanned pregnancy in terms of negative feelings and case management, suggesting even selection effects. Indeed, one of the main limitations of this review is due to the heterogeneity of the samples that were examined, without a clear distinction between the disorder's onset (lifetime AN, recent, or past and relapse). Furthermore, the samples that were considered were mainly made up of less severe types of AN (with better medical conditions and BMI), while the most severe ones were considered as single cases with negative outcomes. Most studies focused also on BMI or weight gain, regardless of concern related to the body's modification: it would be interesting to understand if weight concern decreased or intensified, among those who had reached a normal BMI in the post-partum period. Finally, further studies are necessary to better define guidelines about procedural (forced) treatment of AN pregnant women in hospital, taking into account ethical and clinical criteria, especially in the case of possible recurrence of ED symptoms (e.g. diet restriction, excessive exercise) during pregnancy with the subsequent negative consequences for fetus development.

ACKNOWLEDGMENTS

The authors thank the President of Maria Bianca Corno Foundation and Simona Anselmetti, member of Nutrimente Association, for their precious support.

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Received on 04-06-2016 Accepted on 25-06-2016 Published on 31-07-2016

DOI: http://dx.doi.org/10.12974/2313-1047.2016.03.01.4