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THE IMPACT OF PREGNANCY SPECIFIC DISTRESS ON HAIR LOSS IN WOMEN IN THEIR THIRD TRIMESTER

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Abstract

Objectives: This study aimed to investigate the relationship between pregnancy-specific distress and hair loss in women in their third trimester.

Materials and Methods: This cross-sectional study included 138 pregnant women in their third trimester who attended the İstanbul Medipol University Hospital Gynaecology and Obstetrics Clinics. Data were collected through a face-to-face interview using an information form (covering sociodemographic and obstetric history, and hair loss status) and the Tilburg Pregnancy Distress Scale. Results of hematologic and hormonal parameters measured during follow-up were also recorded.

Results: Hair loss during pregnancy was reported by 41 participants (29.7%). Based on TPDS total scores, 17 women (12.3%) were classified as at-risk for distress, and 8 (5.8%) according to the Negative Affect (NA) subscale. Women reporting hair loss had higher TPDS total and subscale scores compared to those without hair loss. No significant differences were observed between hair loss and laboratory parameters, suggesting a potential independent role of distress. Number of pregnancies was positively correlated with PI scores ($r=0.284$, $p=0.001$), while age showed a negative correlation with NA scores ($r=-0.184$, $p=0.03$).

Conclusion: Pregnant women who complain of hair loss should be screened for pregnancy-specific distress, even in the absence of laboratory abnormalities. Incorporating psychological assessment and support into routine prenatal care may reduce distress-related somatic complaints and improve maternal well-being.

Keywords: Hair loss, pregnancy, pregnancy third trimester, psychological distress

Introduction

Pregnancy is a complicated period of physiological, psychological, and hormonal changes that can have a substantial impact on a woman's body, including her hair.[1] These changes are more noticeable in the third trimester, which is marked by increased hormonal fluctuations and psychological stress, both of which can contribute to hair loss. While hormonal changes during pregnancy, such as prolonged anagen phase due to increased estrogen levels, are usually associated with better hair health, some women report hair loss during this time.[1-5] This variability highlights the multifaceted nature of hair loss during pregnancy, in which physiological, psychological, and dietary variables interact.

Pregnancy-specific distress, encompassing anxiety, depression, and stress related to pregnancy, has been identified as a risk factor for adverse maternal and fetal outcomes, including preterm birth and low birth weight.[6,7] Elevated cortisol concentrations, a biomarker of chronic stress, have been shown to increase progressively across pregnancy, reaching their highest levels in the third trimester.[8,9] In addition, visible bodily changes during pregnancy, including alterations in skin and hair, may further contribute to psychological distress, potentially reinforcing stress-related symptoms.

Despite the known associations between stress and hair loss, the relationship between pregnancy-specific distress and hair loss in pregnant women remains underexplored. Previous studies have primarily focused on postpartum hair loss, while few have addressed this issue during pregnancy itself.[10,11] Therefore, the present study aimed to examine the association between pregnancy-specific distress, assessed using the Tilburg Pregnancy Distress Scale (TPDS), and self-reported hair loss among women in their third trimester. By addressing this gap, the study seeks to contribute to a more comprehensive understanding of stress-related hair changes during pregnancy and to highlight the relevance of psychological well-being in prenatal care.

Materials and Methods

Universe and Sample of the Study

This single-centre, cross-sectional study included women who attended the Department of Gynaecology and Obstetrics at İstanbul Medipol University Hospital for third-trimester pregnancy follow-ups between September 1 and November 1, 2023. All eligible participants underwent the necessary clinical and laboratory evaluations.

The sample size was calculated at a 95% confidence level based on 210 third-trimester pregnancy follow-up visits recorded in the outpatient clinic during the preceding two months, yielding a planned minimum of 137 participants.

After obtaining informed consent, each participant completed a questionnaire administered by the researcher. The questionnaire collected sociodemographic characteristics, obstetric history, and information regarding hair loss. The Tilburg Pregnancy Distress Scale (TPDS) was applied through face-to-face interviews. Laboratory results obtained during third-trimester follow-ups—including haemoglobin (Hb), platelet count (Plt), lymphocyte count (Lym), neutrophil count (Neu), thyroid-stimulating hormone (TSH), free T4 (sT4), and ferritin levels—were recorded from hospital files. These laboratory parameters were used to identify and exclude participants with potential organic or physiological causes of hair loss.

Participants were excluded if they were not in the third trimester, had a history of hair loss, were diagnosed with scalp disorders, had chronic diseases, or were taking regular medications for conditions unrelated to pregnancy. To eliminate physiological causes of hair loss, women with thyroid dysfunction, chronic dermatologic conditions, iron-deficiency–related anemia, or any laboratory abnormality outside normal reference ranges were not included in the study.

Data Collection Tools

The data collection form consisted of items assessing age, smoking and alcohol consumption, obstetric history (including number of pregnancies and previous delivery details), use of pregnancy supplements, and self-reported hair loss status. Women who reported experiencing hair loss at any time during the current pregnancy, beginning from early gestation, were considered to have pregnancy-related hair loss.

Tilburg Pregnancy Distress Scale (TPDS)

The Tilburg Pregnancy Distress Scale (TPDS) was developed by Pop et al. in 2011 to assess psychological stress specific to pregnancy[12] and includes two subscales: Negative Affect (NA), which assesses pregnancy-related worries, fears, and negative emotional states, and Partner Involvement (PI), which reflects perceived support and involvement of the partner during pregnancy.

The scale was constructed following qualitative interviews with pregnant and postpartum women as well as healthcare professionals, and its final structure was established through factor analysis. It consists of 16 items, each rated on a 4-point Likert scale: “very often” (0 points), “often” (1 point), “sometimes” (2 points), and “rarely or never” (3 points). The total score ranges from 0 to 48, whereas scores for the NA subscale range from 0 to 33, and those for the PI subscale range from 0 to 15.

The Turkish validity and reliability study of the TPDS was conducted by Çapık and Pasinlioğlu.[13] In this study, the scale demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.83 for the total scale, 0.83 for the NA subscale, and 0.72 for the PI subscale. Factor analyses confirmed the original two-factor structure. Based on the Turkish validation study, the cut-off value for the total TPDS score was determined as 28, while cut-off values were defined as 22.40 for the NA subscale and 10.40 for the PI subscale, corresponding to the 90th percentile of the score distribution. In the present study, the validated Turkish version of the TPDS was used, and scoring was performed in accordance with these established cut-off values.

Statistical analysis

All statistical analyses were performed using SPSS version 20.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were reported as frequency (n), percentage (%), mean ± standard deviation, or minimum–maximum values where appropriate. The distribution of continuous variables was assessed using the Kolmogorov–Smirnov test.

For group comparisons, the Student's t-test was applied for normally distributed continuous variables, while the Mann–Whitney U test was used for non-normally distributed variables. Comparisons involving more than two groups were performed using the Kruskal–Wallis test. Categorical variables, including distress risk classification according to TPDS cut-off values and the presence of hair loss, were compared using the Chi-square test.

Correlation analyses between continuous variables (such as age, number of pregnancies, and TPDS subscale scores) were performed using Pearson correlation for normally distributed variables and Spearman correlation for non-normally distributed variables. Based on data distribution, the correlation between gravidity and PI scores and the correlation between age and NA scores were evaluated using Spearman's rho. Statistical significance was set at $p < 0.05$.

Ethical approval

Ethical approval for the study was obtained from the İstanbul Medipol University Non-Interventional Clinical Research Ethics Committee (Decision No: 722; Date: August 31, 2023).

Results

A total of 138 pregnant women were included in the study. Sociodemographic characteristics, smoking and alcohol use, and use of recommended supplements are presented in Table 1.

Table 1: Sociodemographic characteristics, obstetric histories, smoking, alcohol use, and supplement intake among participants

Variables		Mean ± SD (min, max)
Age		30.49±4.71 (20, 42)
Gestational Age		33.95±4.19 (28, 40)
Gravidity		2.12±1.32 (1, 6)
Parity		0.78±0.96 (0, 4)
Abortion		0.36±0.70 (0, 3)
		n (%)
Smoking status	Smoked during pregnancy	6 (4.3%)
	Quit smoking while pregnant	15 (10.9%)
	Never smoked	117 (84.8%)
Alcohol consumption	Used alcohol during pregnancy	2 (1.4%)
	Quit alcohol while pregnant	7 (5.1%)
	Never used alcohol	129 (93.5%)
Use of recommended supplements	Regularly used	119 (86.2%)
	Did not use	19 (13.8%)

The mean TPDS total score was 14.60 ± 7.68. The mean scores of the Negative Affect (NA) and Partner Involvement (PI) subscales were 11.18 ± 6.56 and 3.42 ± 2.21, respectively. Based on TPDS cut-off values, 17 participants (12.3%) were identified as being at risk for pregnancy-related distress according to the total score, and 8 (5.8%) according to the NA subscale. No participants exceeded the risk threshold for the PI subscale.

No significant associations were found between TPDS scores and gestational week, age, gravidity, or parity (p= 0.687, p=0.770, p=0.068, p=0.098). Similarly, distress risk did not differ according to the presence of hair loss or the use of recommended supplements (p= 0.128).

A weak positive correlation was observed between the number of pregnancies and PI scores (r = 0.284, p = 0.001). In contrast, age was weakly and negatively correlated with NA scores (r = −0.184, p = 0.03).

Hair loss during pregnancy was reported by 41 women (29.7%). Among these, most reported the onset of symptoms during the first trimester (n = 32, 23.2%). Hair loss was not associated with gestational age, gravidity, parity, or the number of previous abortions (all p > 0.05).

Comparisons of TPDS total and subscale scores between women with and without hair loss are presented in Table 2. In addition to statistical significance, effect size analyses were performed. The differences in TPDS total and Negative Affect subscale scores showed effect sizes in the small-to-moderate range (r = 0.29 and r = 0.27, respectively). When TPDS cut-off values were used, no differences were found for the total or PI subscale risk classifications (p > 0.05), whereas women with hair loss were more likely to exceed the NA subscale cut-off (p = 0.037).

Table 2. Comparison of TPDS total scores and subscale scores between women with and without hair loss complaints

Variable	Hair Loss (+) (Mean ± SD)	Hair Loss (-) (Mean ± SD)	p value
TPDS Total Score*	18.00±7.77	13.16±7.21	0.001
NA Subscale Score*	13.85±6.57	10.05±6.24	0.001
PI Subscale Score*	4.14±2.40	3.11±2.06	0.019

*Mann-Whitney U test, TPDS = Tilburg Pregnancy Distress Scale; NA = Negative Affect; PI = Partner Involvement.

Discussion

Physiological hormonal changes during pregnancy, particularly the prolonged anagen phase, typically result in thicker hair and a marked reduction in natural hair loss.[2,3,5] Nevertheless, many women report hair loss during pregnancy, indicating that non-hormonal contributors-especially psychological distress-may be associated with hair loss complaints during pregnancy.[14,15] The present study provides evidence supporting this association, demonstrating that women who reported hair loss had significantly higher TPDS total, NA, and PI scores compared with those without hair loss.

In this study, the absence of abnormal laboratory findings and the exclusion of physiological causes of hair loss support the possibility that psychological distress may be associated with hair loss complaints, after minimising potential organic confounding factors. This interpretation is biologically plausible, as previous studies suggest that stress may activate neuroendocrine–immune pathways that can affect the hair cycle.[15,16]

Elevated cortisol levels associated with chronic stress have been shown to prematurely trigger the catagen phase, impairing hair growth and increasing hair loss.[8,9]

Experimental studies also support these mechanisms. Animal models have demonstrated that stress can disrupt hair cycling through activation of the sympathetic nervous system, leading to impaired hair follicle stem cell function.[17] Similarly, a study conducted among medical students during exam periods showed that acute academic stress is associated with reduced hair growth and increased hair loss.[18]

Partner relationships and social support are also known determinants of prenatal distress. Conflict with partners and inadequate perceived support have been associated with higher rates of antenatal anxiety and depressive symptoms, whereas strong partner involvement is protective.[19,20] In a study of 562 pregnant women, dissatisfaction with partner support was associated with a fourfold increase in perinatal distress.[21] Our finding that women with hair loss had higher PI and NA scores suggests that emotional well-being, perceived partner involvement, and hair loss complaints may be interrelated, and that heightened distress, particularly negative affect, may be associated with increased symptom awareness or reporting. These results align with international evidence showing an association between anxiety and hair loss during the perinatal period; for instance, Hirose et al. found significantly higher anxiety scores in women with postpartum hair loss, with a 4.58-fold increased odds of anxiety in those with severe symptoms.[22]

While international research on pregnancy-specific distress and hair loss is growing, there remains a lack of national data from Türkiye. Cultural and social dynamics, healthcare access, and perceptions of cosmetic versus medical symptoms may influence how pregnant women interpret and report hair loss. Therefore, integrating psychosocial screening into antenatal follow-up protocols and generating country-specific evidence would enhance preventive maternal care and mental health support.

Clinically, self-reported hair loss during pregnancy may be considered as a potential indicator of increased pregnancy-related distress, pending confirmation in longitudinal studies, even in the absence of physical abnormalities. Healthcare providers-including physicians, midwives, and nurses-should remain alert to this symptom and offer guidance on modifiable stress-related factors. Previous literature suggests that pregnancy-related psychological distress may be associated with disruptions in homeostasis, altered immune responses, and an increased risk of adverse pregnancy outcomes. [23,24] Thus, supporting mental well-being during pregnancy is as critical as promoting physical health. While these findings have important clinical implications, the use of self-reported hair loss should be considered when interpreting the results. Psychological distress may influence symptom perception and reporting; therefore, the observed association may partly reflect subjective awareness rather than objectively measured hair loss, although self-reported hair loss remains a clinically relevant concern during pregnancy. This reliance on self-reported hair loss may have led to an

overestimation of the observed association, as women with higher psychological distress may be more likely to perceive or report hair loss symptoms.

This study has several limitations. Its cross-sectional, single-centre design limits causal inference and generalizability. The sample size, although adequate, may not have been sufficient to detect weaker associations. In addition, multivariate analyses were not performed because the relatively small sample size and the limited number of participants exceeding distress cut-off values could reduce the stability and reliability of multivariable models. Hair loss was self-reported rather than objectively assessed through clinical methods such as trichoscopy, hair-pull testing, or photographic evaluation, which may introduce recall or reporting bias. Participants' subjective perception of hair loss may differ from clinically measurable hair changes, particularly in the context of heightened psychological distress. Although laboratory parameters such as ferritin, haemoglobin, and thyroid hormones were within normal ranges, other potential contributors were not assessed. In addition, while information on the regular use of recommended pregnancy supplements was recorded, the specific content and dosage of individual components were not analysed separately. Therefore, the results should be interpreted with caution. Future research should employ longitudinal designs with larger and more diverse samples and incorporate objective dermatologic and psychometric evaluations to more fully characterise hair loss mechanisms during pregnancy.

In conclusion, TPDS total scores, NA and PI subscale scores were significantly higher in women with hair loss complaints than in women without hair loss. Ensuring the mental well-being of pregnant women is an essential component of comprehensive prenatal care, given its potential relevance to both physical symptoms and overall maternal health.

Integrating validated tools such as the Tilburg Pregnancy Distress Scale (TPDS) into regular follow-ups may help identify women at higher levels of distress; however, due to the cross-sectional design, these findings should be interpreted as associative rather than causal.

Ethical Considerations: Ethical approval for the study was obtained from the İstanbul Medipol University Non-Interventional Clinical Research Ethics Committee (Decision No: 722; Date: August 31, 2023).

Conflict of Interest: The authors declare no conflict of interest.

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