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Prevalence and contributing factors of postpartum hair loss: A cross-sectional study

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Abstract:
Postpartum hair loss is a common condition that may affect maternal well-being after childbirth. Therefore, it is of interest to assess the 200 postpartum women using clinical examination and a structured questionnaire. Postpartum hair loss was observed in 58.0% of women and was significantly associated with anaemia, stress, inadequate sleep and family history. Multivariable analysis identified these factors as independent predictors of postpartum hair loss. These findings advance current knowledge by identifying modifiable risk factors that may support early counselling and preventive strategies for postpartum hair loss.

Keywords: Postpartum hair loss, telogen effluvium, postpartum women; hair shedding, anaemia, psychological stress, cross-sectional study

Background:
Postpartum hair loss, commonly presenting as telogen effluvium, is characterized by diffuse, nonscarring shedding that typically begins 2–4 months after delivery and is usually self-limiting **[1]**. Telogen effluvium results from premature transition of hair follicles from the anagen to telogen phase and may be triggered by childbirth, nutritional deficiencies, endocrine disturbances, systemic illness and psychological stress **[2, 3]**. Normal hair growth depends on coordinated anagen, catagen and telogen cycling, while disruption of this cycle contributes to excessive shedding **[4]**. Hormonal changes after delivery, particularly the decline in estrogen, are considered important contributors to postpartum hair shedding **[5, 6]**. Nutritional status and maternal health may also influence the severity and recovery of postpartum hair loss **[7]**. Although generally temporary, postpartum hair loss may negatively affect self-esteem and psychological well-being, highlighting the importance of appropriate counselling and clinical assessment [8]. Accurate diagnosis requires differentiation from other causes of diffuse alopecia, including androgenetic alopecia, thyroid disorders, alopecia areata and nutritional deficiencies **[9-12]**. Therefore, it is of interest to evaluate the prevalence of postpartum hair loss and evaluate the factors associated with its occurrence among postpartum women.

Methodology:
This cross-sectional observational study was conducted among postpartum women who attended the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital, following approval from the Institutional Ethics Committee. The study was carried out over a period of one year. A total of 200 postpartum women who fulfilled the eligibility criteria and provided written informed consent were consecutively recruited during the study period. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Women aged 18–45 years who had delivered a live singleton baby within the previous twelve months and were willing to participate in the study were included. Participants with a previous history of chronic dermatological diseases affecting the scalp, alopecia before pregnancy, autoimmune disorders, thyroid disease diagnosed before pregnancy, chemotherapy, radiotherapy, severe systemic illness, inherited hair disorders, or those receiving medications known to cause hair loss were excluded from the study. Data were collected using a pre-designed and pre-validated structured questionnaire administered through face-to-face interviews. Information regarding socio-demographic characteristics, maternal age, parity, mode of delivery, postpartum duration, breastfeeding status, dietary habits, perceived stress, history of anaemia during pregnancy, iron and vitamin supplementation, thyroid disorders diagnosed after delivery, sleep pattern, family history of hair loss and previous episodes of postpartum hair loss was recorded. Participants were specifically asked about the onset, duration and severity of hair shedding following childbirth. Postpartum hair loss was assessed based on clinical history and dermatological examination. Hair shedding was evaluated using the standardised hair pull test performed by a trained dermatologist. The diagnosis of postpartum telogen effluvium was established based on diffuse hair shedding during the postpartum period, after exclusion of other causes of alopecia through clinical evaluation. Laboratory investigations, including haemoglobin estimation and thyroid function tests, were reviewed, whenever available, in the patients' medical records. The primary outcome of the study was the prevalence of postpartum hair loss among study participants. Secondary outcomes included evaluation of the association between postpartum hair loss and potential contributing factors, including maternal age, parity, postpartum duration, breastfeeding, anaemia, nutritional status, thyroid dysfunction, psychological stress, sleep duration and family history of hair loss. The collected data were entered into Microsoft Excel and analysed using IBM SPSS Statistics for Windows, Version 30.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), whereas categorical variables were presented as frequencies and percentages. The normality of continuous data was assessed using the Shapiro–Wilk test. Associations between categorical variables were evaluated using the Chi-square test or Fisher's exact test whenever appropriate. Continuous variables were compared using the independent Student's t-test or the Mann–Whitney U test, depending on the distribution of the data. Variables that were statistically significant in univariate analysis were entered into a multivariable binary logistic regression model to identify independent factors associated with postpartum hair loss. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. A two-tailed p-value of less than 0.05 was considered statistically significant throughout the analysis.

Results:

A total of 200 postpartum women participated in the present study. The mean age of the participants was 28.6 ± 4.5 years and the majority were between 25 and 34 years of age (61.5%). Most participants were multiparous (58.0%) and had delivered by normal vaginal delivery (62.5%). The overall prevalence of postpartum hair loss was 58.0% (116/200). The demographic and obstetric characteristics of the study population are summarised in **Table 1**. The association between postpartum hair loss and selected demographic and clinical variables is presented in **Table 2**. A significantly higher prevalence of postpartum hair loss was observed among women with anaemia during pregnancy (p<0.001), psychological stress (p=0.002), postpartum duration of 3–6 months (p=0.011), inadequate sleep (<6 hours/day) (p=0.003) and a positive family history of hair loss (p=0.018). No statistically significant association was observed with maternal age (p=0.284), parity (p=0.416), or mode of delivery (p=0.529). Comparison of continuous variables between women with and without postpartum hair loss is shown in **Table 3**. Women with postpartum hair loss had significantly lower mean haemoglobin levels and shorter sleep duration than women without hair loss (p<0.05). No statistically significant difference was observed in maternal age between the two groups. Variables demonstrating statistical significance on univariate analysis were entered into a multivariable binary logistic regression model. As shown in **Table 4**, anaemia during pregnancy (OR=3.12; 95% CI: 1.65–5.89; p<0.001), psychological stress (OR=2.41; 95% CI: 1.28–4.54; p=0.006), inadequate sleep (<6 hours/day) (OR=2.09; 95% CI: 1.11–3.94; p=0.021) and positive family history of hair loss (OR=1.98; 95% CI: 1.03–3.81; p=0.039) remained independent predictors of postpartum hair loss after adjustment for potential confounding variables. Therefore, postpartum hair loss affected more than half of the study participants. Maternal anaemia, psychological stress, inadequate sleep and family history were identified as significant independent factors associated with postpartum hair loss.

Table 1: Demographic and obstetric characteristics of the study participants (n = 200)

Variable	Category	n (%)
Age (years)	Mean ± SD	28.6 ± 4.5
	<25 years	42 (21.0)
	25–34 years	123 (61.5)
	≥35 years	35 (17.5)
Parity	Primiparous	84 (42.0)
	Multiparous	116 (58.0)
Mode of delivery	Normal vaginal delivery	125 (62.5)
	Cesarean section	75 (37.5)
Postpartum hair loss	Present	116 (58.0)
	Absent	84 (42.0)

Table 2: Association of clinical variables with postpartum hair loss

Variable	Hair Loss Present (n = 116)	Hair Loss Absent (n = 84)	p-value
Age ≥30 years	46	28	0.284
Multiparity	71	45	0.416
Cesarean delivery	46	29	0.529
Anaemia during pregnancy	63	22	**<0.001***
Psychological stress	69	31	**0.002***
Breastfeeding	90	61	0.314
Sleep <6 h/day	74	33	**0.003***
Family history of hair loss	38	16	**0.018***

**Chi-square / Fisher's exact test.*

Table 3: Comparison of continuous variables between women with and without postpartum hair loss

Variable	Hair Loss Present	Hair Loss Absent	p-value
Age (years)	28.9 ± 4.3	28.2 ± 4.7	0.365
Haemoglobin (g/dL)	10.2 ± 1.1	11.4 ± 1.0	**<0.001***
Sleep duration (hours/day)	5.8 ± 1.3	6.9 ± 1.2	**<0.001***
Postpartum duration (months)	4.8 ± 2.1	5.2 ± 2.3	0.217

**Independent Student's t-test.*

Table 4: Multivariable binary logistic regression analysis for factors associated with postpartum hair loss

Variable	Odds Ratio (OR)	95% CI	p-value
Anaemia during pregnancy	3.12	1.65–5.89	**<0.001***
Psychological stress	2.41	1.28–4.54	**0.006***
Sleep <6 h/day	2.09	1.11–3.94	**0.021***
Family history of hair loss	1.98	1.03–3.81	**0.039***
Breastfeeding	1.21	0.63–2.31	0.561
Cesarean delivery	1.09	0.58–2.05	0.782

**Statistically significant (p < 0.05).*

Discussion:

Postpartum hair loss (PPHL), commonly presenting as postpartum telogen effluvium is a frequent physiological consequence of pregnancy-related hormonal changes that can negatively affect self-esteem and quality of life. In the present study, the prevalence of PPHL was 58.0%, indicating that more than half of postpartum women experienced clinically significant hair shedding. This finding is consistent with the questionnaire-based cross-sectional study by Hirose *et al.* (2024) **[13]**, who reported that postpartum hair loss is highly prevalent and is influenced by multiple maternal and lifestyle factors rather than hormonal changes alone. Both studies emphasize that postpartum hair loss is a common postpartum concern requiring greater clinical attention. Physiologically, postpartum hair loss results from the abrupt decline in estrogen levels after delivery, causing synchronized transition of hair follicles from the anagen to the telogen phase. Although this process is considered self-limiting, the severity varies considerably among women due to additional biological and environmental influences. In our study, anaemia during pregnancy was significantly associated with postpartum hair loss and remained an independent predictor on multivariable logistic regression. This observation agrees with the large retrospective analysis by Thamotharan *et al.* (2025) **[14]**, which demonstrated that iron deficiency, low ferritin and reduced haemoglobin are among the most frequent laboratory abnormalities in women with telogen effluvium, highlighting the importance of nutritional assessment in women presenting with diffuse hair loss. Another important finding of the present study was the significant association between family history of hair loss and postpartum hair shedding, suggesting an underlying genetic predisposition that may increase susceptibility to telogen effluvium. This observation is comparable with the findings of Galal *et al.* (2024) **[15]**, who showed that postpartum telogen effluvium frequently coexists with latent androgenetic alopecia or traction alopecia.

Their trichoscopic evaluation showed that many women initially diagnosed with postpartum telogen effluvium had additional underlying hair disorders, emphasizing the need for careful clinical assessment in women with persistent or excessive postpartum hair loss. Unlike our findings, maternal age, parity and mode of delivery were not significantly associated with postpartum hair loss, suggesting that modifiable clinical and lifestyle factors exert a greater influence than obstetric characteristics. This observation is supported by Samrao and Mirmirani (2022) **[1],** who reported that postpartum hair shedding often unmasks pre-existing hair disorders independent of obstetric variables, reinforcing the importance of differential diagnosis when symptoms persist beyond the expected postpartum period. Overall, the present study shows that postpartum hair loss is multifactorial, with anaemia, psychological stress, inadequate sleep and family history acting as independent predictors. These findings are broadly consistent with recent PubMed-indexed evidence and reinforce the importance of early identification of nutritional deficiencies, psychosocial support, sleep optimization and appropriate dermatological evaluation. Timely counselling and targeted interventions may reduce patient anxiety, facilitate recovery and improve postpartum quality of life.

Conclusion:

Postpartum hair loss was highly prevalent among the study participants and was significantly associated with anaemia during pregnancy, psychological stress, inadequate sleep and a positive family history of hair loss. Early identification of these contributing factors and appropriate counselling may help reduce the impact of postpartum hair loss and improve maternal well-being. Further large-scale prospective studies are recommended to validate these findings and guide preventive strategies.

Advancement of knowledge:

This study provides additional evidence on the prevalence of postpartum hair loss and identifies anaemia during pregnancy, psychological stress, inadequate sleep and family history as significant independent contributing factors. The findings highlight the importance of early screening, counselling and correction of modifiable risk factors during the postpartum period, thereby supporting evidence-based strategies to improve maternal hair health and overall quality of life.

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