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# Health Problems: Menstrual Cycles, Hairfall, tiredness and Muscle Ache of Hypothyroidism After Pregnancy.

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## ABSTRACT

Background: The thyroid gland is located in the anterior part of the lower neck, beneath the larynx, or voice box. It is the first glandular tissue to appear during the development of the. embryo in mammals. It develops into a structure with two lobes after starting as two sections of the endodermal pharynx

**Materials and Methods:** Over 470 willing and eligible women were evaluated for this study during and after their pregnancies. One year five months were allotted for the study. The study was conducted in the Obstetrics & Gynecology and Pathology (Biochemistry) departments of Rajeev Gandhi College and General Hospital in Bhopal, Madhya Pradesh

**Results:** The total number of patients studied was 470 from December 2022 to Aug. 2025. Of the 470 individuals who took part in the study, 122 had hypothyroidism, which shows that 25.95% of people have hypothyroidism. Twelve people (9.83%) had subclinical hypothyroidism, and 35 people (28.68%) had overt hypothyroidism out of the 122 participants with hypothyroidism. According to the above table, the maximum number of patients in the study group belongs to the age group of 21-30 years, 39 (31.96%), and in the age group 31- 40 years, 31 cases were seen (25.40%). According to the above table, the maximum number of patients in the study group belongs to the age group of 21-30 years, 39 (31.96%), and in the age group 31-40 years, 31 cases were seen (25.40%), and according to this data is significant. Chi square = 3.28; P = 0.32 (NS). Total of 122 individuals who complained of various bleeding patterns are included in the column above. Menorrhagia was the most prevalent (26.22%). Acyclical (MPH) was found in 20.49% of patients, oligomenorrhea in 23.77%, polymenorrhea in 14.75%, polymenorrhea in 6.55%, hypomenorrhea in 4.1%, and metrorrhagia in 4.1% of cases. Menorrhagia was the most common complaint among patients, followed by oligomenorrhea, and according to this data is significant. Chi square = 8.28; P = 0.032 (S). This table illustrates how the various forms of clinically recognized DUB cases relate to hypothyroidism, subclinical hypothyroidism, and hyperthyroidism. 34.1% of patients with menorrhagia were euthyroid, and 25% and 100% of patients with polymenorrhea had hypothyroidism and hyperthyroidism, respectively. In contrast, 50% of patients with oligomenorrhea had subclinical hypothyroidism, whereas only 16.6% of individuals with menorrhagia had hypothyroidism. 50% of patients with oligomenorrhea had subclinical hypothyroidism, 16.6% had hypothyroidism, and 0% had hyperthyroidism. 40% of patients with polymenorrhea also had subclinical hypothyroidism. Thus, only 50% of patients with subclinical hypothyroidism had oligomenorrhea, while 40% of patients presented with polymenorrhea and 5% with menorrhagia. The majority of hypothyroid and euthyroid individuals had acyclical metropathia (MPH); the respective percentages were 19.31% and 16.6%. Conversely, hyperthyroid individuals were only exhibiting polymenorrhea or oligomenorrhea. The most common bleeding patterns in subclinical hypothyroid patients are polymenorrhea and menorrhagia and according to this data is significant. Chi square = 8.28; P = 0.032 (S).

**Conclusion:** These findings emphasize the need for increased awareness and monitoring of thyroid health in women during and after pregnancy to mitigate potential complications. This study highlights the significant prevalence of thyroid dysfunctions among patients with dysfunctional uterine bleeding (DUB), particularly noting the high incidence of

hypothyroidism and hyperthyroidism in specific menstrual irregularities.

**KEYWORDS**: Uterine Bleeding, Hyperthyroid, Acyclical Metropathia, Hypothyroidism, Obstetrics & Gynecology.

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## INTRODUCTION

The thyroid gland is situated beneath the larynx, or voice box, in the anterior region of the lower neck. In mammals, it is the earliest glandular tissue to emerge during embryonic development. It begins as two areas of the endodermal pharynx and eventually grows into a structure with two lobes[1].

This diverse collection of disorders includes persistent anovulation, hyperinsulinemia, and hyperandrogenism (ovarian). Polycystic ovarian syndrome is the most frequent cause of hyperandrogenism and prolonged anovulation. Since there are just few unruptured immature follicles, the term "polycystic ovary" is truly misleading. A little gland at the front of the neck is called the thyroid. The thyroid gland produces two vital hormones: thyroxine (T4) and triiodothyronine (T3). They support the healthy operation of every bodily system. They move throughout the body and control metabolism, brain development, and body weight. Hypothyroidism is caused by an underactive thyroid gland[2]. This disorder affects 5% of the population, with women more likely to be afflicted than men. It goes undiagnosed in some people. A normal physiologic function of the female reproductive system is menstruation. The uterine lining thickens during this monthly cycle in anticipation of a potential pregnancy.[3] The body loses this uterine lining in the absence of pregnancy, which causes blood and other materials to exit the body through the vagina. Hormones like progesterone and oestrogen regulate this process, which typically follows a regular, cyclical pattern. Menstrual abnormalities affect 35.7 and 64.2 percent of women in India, respectively, according to multiple studies. The main reasons for irregular menstruation include insufficient sleep, alcohol usage, stress, anemia, genetic factors, and obesity. At several levels of the female reproductive axis, hypothyroidism has both direct and indirect impacts on female fertility[1,5,7].

The most prevalent endocrine condition affecting women in the reproductive age range is polycystic ovarian syndrome, or PCOS[2-3]. A case series of around seven women with amenorrhea, hirsutism, and bilaterally enlarged ovaries later identified as polycystic ovarian syndrome (PCOS) was initially described in 1935 by Irving F. Stein and Michael L. Leventhal. There have been several modifications to the definition of PCOS, and it remains unclear [4- 6].

## AIMS & OBJECTIVES

To study the pervasiveness of hypothyroidism after pregnancy outcomes.Measurement of Anthropometric Indices including weight, height and BMI (Basal Metabolic Rate).The early history status of menstrual cycle, whether it is regular or irregular. Measurement of hair fall with the help of a dermatologist by physical test, including Pull Test and Tug Test, and Card Test.Tiredness and muscle disease (increased CK in myopathy), determine CK (creatinine kinase) by UV kinetic method. Muscle-related symptoms can be symptoms of several different conditions. your provider may order other tests along with a CK test.To determine the T3, T4, and TSH level by enzymatic method.

## METHODOLOGY :

For this study, more than 470 eligible and consenting women were assessed both during and after pregnancy. The usual patients received treatment as controls. diagnosis based on symptoms such as menstrual cycle problems, fatigue, muscle soreness, hair loss, and other factors, along with blood tests. The TSH level, which depends on the patient's symptoms and is assessed by some blood tests, is the primary indicator of hypothyroidism.

**Study Area:** The study was carried out at Rajeev Gandhi College and General Hospital in Bhopal, Madhya Pradesh, in the departments of Obstetrics and Gynaecology and Pathology (Biochemistry).**Study Duration:** One year five months were allotted for the study.**Study Methods:** An interview and a self-administered questionnaire were used to gather data. The subjects' body mass index (BMI) was determined by anthropometric measures. Participants' weight in kilograms and height in meters were noted.

**Inclusion criteria :**studies conducted in hospitals or the community;studies reporting the prevalence of hypothyroidism (subclinical, overt, or category unspecified);Study types: data-based analysis, cohort studies, or cross-sectional studies;TSH-level-based diagnosis.

**Exclusion criteria**: All expectant moms and postpartum women with underlying medical conditions, including Research done on specific population groups, such as mothers with diabetes or pregnancy losses, etc. Research that has not disclosed screening techniques; T3, T4 & TSH-level-only diagnosis.

Every patient had a thyroid function test performed on her sera (T3, T4, and TSH). Competitive chemi luminescent immunoassay is used to detect T3 and T4, whereas ultrasensitive sandwich chemi luminescent immunoassay is used to measure thyroid stimulating hormone (TSH).

Measurement of Anthropometric Indices: Participants were instructed to stand upright, feet together, and arms at their sides. Measurements were taken of the following: A portable, conventional weighing device was used to record the weight (in kilos).A stadiometer was used to measure height (in centimeters) to the closest 0.5 cm. Quetelet's Index was used to determine the body mass index (BMI).

The menstrual cycle's early history, including whether it is regular or erratic.

Dermatologists use physical tests, such as the Pull, Tug, and Card tests, to measure hair loss (alopecia totalis).

Use the UV kinetic method to measure CK (creatinine kinase), for muscle ache

blood urea nitrogen (BUN) is measured using the BERTHELOT METHOD.

Creatinine is determined using the Jaffe method.

To use an enzymatic technique to measure the T3, T4, and TSH levels.

## STATISTICAL ANALYSIS

Statistical analysis is done by SPSS software version 17.

To compare age, BMI, WHR, FBS, PPBS, ovarian volume, testosterone, and HOMA- IR between the two, the student t-test and chi-square test were used.

Categories of people with PCOS who have hypothyroidism and euthyroidism.

Total Testosterone & WHR and TSH & Testosterone were correlated using the Pearson coefficient.

## RESULTS AND OBSERVATIONS

Over 470 willing and qualified women were screened during and after pregnancy for this research. As controls, the typical patients were treated. Diagnosis based on symptoms such as women's menstrual cycle issues, fatigue, muscular aches, hair loss, and other symptoms, including blood investigations. The main sign of hypothyroidism is the TSH level, which is determined by various blood tests and relies on the patient's symptoms.

The total number of patients studied was 470 .Of the 470 individuals who took part in the study, 122 had hypothyroidism, which shows that 25.95% of people have hypothyroidism. Twelve people (9.83%) had subclinical hypothyroidism, and 35 people (28.68%) had overt hypothyroidism out of the 122 participants with hypothyroidism.

| Hypothyroidism conditions | Total Number |
|---|---|
| **Subclinical hypothyroidism=n (%)** | 12 (9.83) |
| **Overt hypothyroidism =n (%)** | 35 (28.68) |
| **Other conditions=n (%)** | 75 (61.49) |
| **Total Hypothyroidism patients=n (%)** | 122 (25.95) out of 470 |

**Table no.-1: The Table shows the total number of patients with hypothyroidism, including other clinical conditions.**

| Age group (years) | No. of cases (%) |
|---|---|
| **< 20** | **18 (14.75)** |
| **21-30** | **45 (36.88)** |
| **31-40** | **33 (27.0)** |
| **41-45** | **26 (21.31)** |
| **TOTAL** | **122 (100)** |

**Table 2: The table shows the patients with hypothyroidism, with the distribution of patients according to age group.**

According to the above table, the maximum number of patients in the study group belongs to the age group of 21-30 years, 39 (31.96%), and in the age group 31-40 years, 31 cases were seen (25.40%). According to the above table, the maximum number of patients in the study group belongs to the age group of 21-30 years, 39 (31.96%), and in the age group 31-40 years, 31 cases were seen (25.40%), and according to this data is significant. Chi square = 3.28; P = 0.32 (NS)

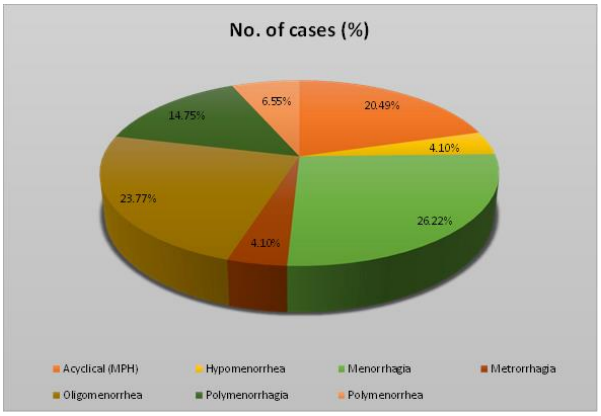
**Table 3: The table shows the patients with hypothyroidism, with the distribution of patients according to age group.**

| Age group (years) | Pulse Rate | | SpO2 | | Blood Pressure (BP) | |
|---|---|---|---|---|---|---|
| | High (%) | Low (%) | High (%) | Low (%) | High (%) | Low (%) |
| < 20 (18) | 10 (8.2) | 8 (6.5) | 6 (4.9) | 12 (9.8) | 6 (4.9) | 12 (9.9) |
| 21-30 (45) | 29 (23.8) | 16 (13.1) | 11 (9.0) | 34 (27.9) | 26 (21.3) | 19 (15.6) |
| 31-40 (33) | 18 (14.8) | 15 (12.3) | 10 (8.2) | 23 (18.8) | 19 (15.6) | 14 (11.4) |
| 41-45 (26) | 12 (9.8) | 14 (11.4) | 15 (12.3) | 11 (9.0) | 14 (11.5) | 12 (9.8) |
| TOTAL (122) | 69 (56.6) | 53 (43.4) | 42 (34.4) | 80 (65.6) | 65 (53.3) | 57 (46.7) |

**Table 4:Distribution of Patients According to Symptoms**

| Type of bleeding | No. of cases (%) |
|---|---|
| Acyclical (MPH) | 25 (20.49) |
| Hypomenorrhea | 5 (4.1) |
| Menorrhagia | 32 (26.22) |
| Metrorrhagia | 5 (4.1) |
| Oligomenorrhea | 29 (23.77) |
| Polymenorrhagia | 18 (14.75) |
| Polymenorrhea | 8 (6.55) |
| Total | 122 |

Total of 122 individuals who complained of various bleeding patterns are included in the column above. Menorrhagia was the most prevalent (26.22%). Acyclical (MPH) was found in 20.49% of patients, oligomenorrhea in 23.77%, polymenorrhea in 14.75%, polymenorrhea in 6.55%, hypomenorrhea in 4.1%, and metrorrhagia in 4.1% of cases. Menorrhagia was the most common complaint among patients, followed by oligomenorrhea, and according to this data is significant. Chi square = 8.28; P = 0.032 (S)




**Graph 1: Distribution of Patients According to Symptoms**

**Table 5 : Distribution of patients according to thyroid function.**

| Thyroid function | No. of cases | Percentage |
|---|---|---|
| **Euthyroid** | 84 | **68.8%** |
| **Hypothyroid** | 10 | **8.19%** |
| **Subclinical Hypothyroid** | 23 | **18.8%** |
| **Hyper thyroid** | 5 | **4.1%** |
| **Total** | **122** | **100%** |

According to this table maximum number of apparently normal patients with DUB belonged to the category of Euthyroid, 68.8%. Hormonal levels revealing profound hypothyroidism in patients without any symptoms were present in only 18.8 % of cases. 8.19% of cases had hyperthyroidism, though they were clinically normal, and this data is significant. Chi square = 9.28; P = 0.022 (S)

**Table 6: Distribution of patients according to thyroid function correlation between hair fall (Alopecia totalis) by the help of a dermatologist, by physical test including Pull Test, Tug Test, and Card Test.**

| Thyroid function | Hair fall (Alopecia totalis) | Percentage |
|---|---|---|
| **Euthyroid** | 41 | **34.2%** |
| **Hypothyroid** | 52 | **43.3%** |
| **Subclinical Hypothyroid** | 22 | **18.3%** |
| **Hyper thyroid** | 07 | **5.8%** |
| **Total** | **122** | **100%** |

According this table maximum number of apparently normal patients with DUB belonged to the category of hypothyroid, 43.3%. And very low in hyperthyroidism, 5.8% of cases had hyperthyroidism, and this data is significant. Chi square = 9.48; P = 0.032 (S).

**Table 7: thyroid dysfunction in different age groups.**

| AGE | No. of cases | Euthyroid (%) | Hypo Thyroid (%) | Sub- hypothyroid (%) | Hypert hyroid (%) |
|---|---|---|---|---|---|
| **< 20** | 18 (14.75) | 9 (10.22) | 3 (25) | 6 (30) | **0** |
| **21 -30** | 45 (36.88) | 30 (34.1) | 3 (25) | 11 (55) | **1 (50)** |
| **31 –40** | 33 (27.0) | 28 (31.8) | 3 (25) | 1 (5) | **1 (50)** |
| **41 - 45** | 26 (21.31) | 21 (23.9) | 3 (25) | 2 (10) | **0** |
| **Total** | **122 (100)** | **88 (72.13)** | **12 (9.83)** | **20 (16.39)** | **2 (1.63)** |

**TABLE 8: The table shows the difference between CKMB, Urea and Creatinine in different age groups.**

| AGE | No. of cases (%) | CKMB (%) | Urea (%) | Creatinine (%) |
|---|---|---|---|---|
| **< 20** | 18 (14.75) | 4 (14.8) | 8 (16.66) | 6 (12.5) |
| **21 -30** | 45 (36.88) | 9 (33.33) | 18 (37.5) | 18 (37.5) |
| **31 –40** | 33 (27.0) | 8 (29.62) | 12 (25.0) | 13 (27.1) |
| **41 - 45** | 26 (21.31) | 6 (22.22) | 10 (20.83) | 10 (20.83) |
| **Total** | **122 (100)** | **27 (22.13)** | **48 (39.34)** | **47 (38.52)** |

**Table9 shows the difference between CKMB, Urea, and Creatinine in different thyroid groups.**

| Types of Bleeding | No. of Cases (%) | Euthyroid (%) | Hypothyroid (%) | Subclinical hypothyroid (%) | Hyperthyroid (%) |
|---|---|---|---|---|---|
| **CKMB** | 27 (22.13) | 20 (22.72) | 2 (16.6) | 6 (30.0) | 1 (50.0) |
| **Urea** | 48 (39.34) | 30 (34.1) | 7 (58.3) | 8 (40.0) | 1 (50.0) |
| **Creatinine** | 47 (38.52) | 38 (43.2) | 3 (25) | 6 (30.0) | 0 (0.0) |
| **Total** | **122 (100)** | **88 (72.13)** | **12 (9.83)** | **20 (16.39)** | **2 (1.63)** |

## DISCUSSION

For this study, more than 470 eligible and consenting women were assessed both during and after pregnancy. The usual patients received treatment as controls. diagnosis based on symptoms such as menstrual cycle problems, exhaustion, muscle soreness, hair loss, and other questions, such as blood tests. The TSH level, which depends on the patient's symptoms and is assessed by several blood tests, is the primary indicator of hypothyroidism.. The study found that 122 out of the 470 participants had hypothyroidism, indicating that 25.95% of participants had the condition. Of the 100 patients with hypothyroidism, 12 (9.83%) had subclinical hypothyroidism and 35 (28.68%) had overt hypothyroidism.

According to another study, Vaishali Deshmuki *et al*,[8] Seventy-three recently diagnosed PCOS women who were seeking treatment for irregular menstruation and infertility at the Gynecology & Endocrinology outpatient department participated in a cross-sectional study. Determined that the prevalence of hypothyroidism among 73 newly diagnosed PCOS women is approximately 22%, using a serum TSH level of 5μU/L as the cut-off point to diagnose hypothyroidism. According to a case-control study by Maryam *et al*., autoimmune thyroiditis and goiter are much more common in PCOS.

Twenty-two percent of our patients had hypothyroidism, which supports the findings of Maryam *et al*. & Sridhar *et al*.[9] that there is a correlation between thyroid dysfunction and PCOS. Sridhar *et al*. reported a prevalence of 1.04% (2/13), of polycystic ovaries among hypothyroid patients. Onno E. Janssen *et al*.'s study also found hypothyroidism among PCOS women (20.6%) Sridhar GR *et al*[10]

The sociodemographic and clinical characteristics of individuals with drug use disorders were examined in a research that was published in the Indian Journal of Psychiatry. Important conclusions: Most drug users were in the 21–30 age range, which corresponds to the highest prevalence in your statistics. The majority of users fall within the age range of 21 to 40, which is consistent with similar trends observed in previous surveys this results found in another one study Brabant, G *et al*[11] and one more study Twenty-one to thirty years old (most drug users) Most drug users in the same age range Maraka S *et al*[12]

Two groups were formed from the overall research population based on a TSH cut-off value of 5μU/mL. PCOS with hypothyroidism and PCOS with euthyroidism make up Groups 1 and 2. 78% of women with PCOS were euthyroid, while 22% were hypothyroid. Sanjay. S *et al*, and Williamson's K et.al[13,14]

The highest number of patients in the study group, as indicated by the above table, are between the ages of 21 and 30. They have high blood pressure (21.3%), high pulse (23.8%), and high SpO2. Additionally, blood pressure was 15.6%, SpO2 was 8.2%, and pulse rate was 14.8% in the 31–40 age group. The age group of 21–30 years and 31–40 years, respectively, comprise the largest number of patients in the study group. According to this study, the incidence of hypertension rises gradually, 22.4% of adults between the ages of 18 and 39 54.5% of people in the 40–59 age range 74.5% of persons 60 years of age Tejomani M *et al*[15]

Even after controlling for age, BMI, and thyroid autoimmunity, greater TSH levels are linked to raised free testosterone and free androgen index (FAI), which are indicators of hyperandrogenism, according to another study conducted in euthyroid PCOS women. Ochs, N *et al*[16]

Among women with menstrual problems, 44% had thyroid abnormalities. Subclinical hypothyroidism (20%) and overt hypothyroidism (14%) were common. Menstrual irregularities such as menorrhagia and oligomenorrhea were most frequent in thyroid diseases Beyer IW *et al*[17]

34% of hypothyroid women had aberrant cycles compared to 13.4% in normal thyroid group. Polymenorrhea and hypomenorrhea were closely connected to hypothyroidism. Menorrhagia was the most prevalent disturbance (40.33%). Heavy bleeding patterns and hypothyroidism are significantly correlated.. Van Zonneveld P *et al*[18]

A tertiary-care research in Gwalior, India, produced similar findings, showing that the age group most often impacted by thyroid diseases was 20–39 years old. This lends credence to the idea that people may be more susceptible to thyroid disorders due to elevated physiological demands during reproductive age, such as metabolic and hormonal needs. Sherman BM *et al* Wallance RB, *et al* [19,20]

In their 2018 study, Park SM, *et al*[21] examined cardiac biomarkers in individuals with acute coronary syndrome and discovered Patients between the ages of 21 and 40 had the largest percentage of increased CK-MB levels (35%), followed by those between the ages of 41 and 50 (28%). This is in line with your findings that the prevalence of CK-MB was 29.62% in those aged 31 to 40 and 33.33% in people aged 21 to 30, Roberts, *et al*[22] conducted a cross-sectional study that revealed, Although serum urea levels typically rise with age, younger persons (20–40 years old) showed greater amounts during periods of acute sickness or stress. In a 2019 research on renal function testing, Imani B *et al*[23] Patients with metabolic and cardiovascular stress were most likely to have elevated creatinine in the age range of 31–40 years (30%), followed by those aged 21–30 years (28%). These patterns are closely aligned with your findings (27.1% and 37.5% creatinine instances in 31–40 years).

## CONCLUSION

In conclusion, the study highlights a significant prevalence of hypothyroidism among postpartum women, particularly affecting those aged 21-30, and underscores the association between thyroid dysfunction and various health issues, including menstrual

irregularities. These findings emphasize the need for increased awareness and monitoring of thyroid health in women during and after pregnancy to mitigate potential complications. This study highlights the significant prevalence of thyroid dysfunctions among patients with dysfunctional uterine bleeding (DUB), particularly noting the high incidence of hypothyroidism and hyperthyroidism in specific menstrual irregularities. The findings underscore the importance of monitoring thyroid health in women, especially those with a history of thyroid issues, to effectively manage symptoms and improve overall reproductive health. Increased CK and LDH enzyme levels are a sign of tissue injury and cellular necrosis. Therefore, Patients with myopathy who have an inexplicable increase in their blood muscle enzymes should be evaluated for hypothyroidism. Thus, screening and early diagnosis of hypothyroidism can be achieved by measuring thyroid function tests in conjunction with muscle enzymes.

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**Conflicts of Interest: none**

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