

ASSOCIATION BETWEEN THYROID STATUS AND MENSTRUAL DISORDERS IN A TERTIARY CARE SETTING: A CROSS-SECTIONAL ANALYSIS

Obstetrics & Gynaecology

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ABSTRACT

Background: Thyroid hormones significantly influence reproductive function by regulating gonadotropin secretion, ovarian activity, and menstrual cyclicity. Even mild thyroid abnormalities may lead to menstrual irregularities. **Objective:** To evaluate the prevalence of thyroid dysfunction among women with menstrual disorders in a tertiary care centre and assess the association between thyroid abnormalities and specific menstrual patterns. **Methods:** A cross-sectional study was conducted among women aged 15–45 years presenting with menstrual complaints. Detailed menstrual history, clinical examination, and thyroid function tests (TSH, FT3, FT4) were performed. Patients were categorized as hypothyroid, subclinical hypothyroid, or hyperthyroid. **Results:** Thyroid dysfunction was observed in 55% of women with menstrual irregularities. Hypothyroidism was most commonly associated with oligomenorrhea and menorrhagia, while hyperthyroidism was linked to polymenorrhea and hypomenorrhea. The association between abnormal TSH levels and menstrual disturbances was statistically significant. **Conclusion:** Thyroid dysfunction is a major and often underdiagnosed cause of menstrual disorders. Routine thyroid screening is recommended for all women presenting with menstrual abnormalities.

KEYWORDS

INTRODUCTION

Menstrual disorders impose a significant clinical and psychosocial burden on women attending tertiary gynecology clinics in India. Abnormal uterine bleeding (AUB) is frequently categorized as dysfunctional uterine bleeding when structural causes are not evident; however, endocrine abnormalities remain important contributors. Among these, thyroid dysfunction is particularly relevant because thyroid hormones influence sex steroid synthesis, metabolism, and endometrial responsiveness.

Hypothyroidism is known to cause menorrhagia, polymenorrhea, and anovulatory cycles, whereas hyperthyroidism is more often associated with oligomenorrhea and amenorrhea_{5,6}. In Indian tertiary-care settings, Ajmani et al. demonstrated that a large proportion of women presenting with menstrual disorders in Delhi had abnormal thyroid profile, most being previously undiagnosed hypothyroidism₁. A similar Andhra Pradesh study reported significant representation of thyroid disorders in reproductive-age women with DUB₂. Sharma et al. also confirmed value of thyroid profiling in menstrual abnormalities₄.

The overlap between thyroid disease and reproductive dysfunction extends to infertility and metabolic disorders. Sinha et al. showed higher frequency of thyroid disorders in PCOS subjects₃; therefore PCOS itself may confound the relationship between thyroid status and bleeding pattern. Reviews in Fertility & Sterility and Endocrine Reviews emphasized that evaluation of thyroid function forms a rational part of assessment of menstrual cycle disturbances₇. National guidance by the Indian Thyroid Society advocates structured screening and treatment of thyroid dysfunction in women with AUB and infertility₈.

This study aims to determine the prevalence of thyroid dysfunction in women presenting with menstrual disorders and analyze the association between specific thyroid abnormalities and menstrual patterns.

MATERIALS AND METHODS

Study Design: Cross-sectional observational study

Study Setting: Department of Obstetrics and Gynecology, Tertiary Care Centre - AIMS & RC

Study Duration: 6–12 months

Study Population: Women aged 15–45 years presenting with menstrual complaints

A. Inclusion Criteria:

1. Menstrual irregularities: oligomenorrhea, polymenorrhea
2. Amenorrhea

3. Menorrhagia
4. Hypomenorrhea
5. Irregular cycles

B. Exclusion Criteria:

1. Known thyroid disorders on treatment
2. Pregnancy or lactational amenorrhea
3. PCOS diagnosed by Rotterdam criteria
4. Hormonal contraceptive users
5. Other Chronic systemic diseases affecting menstruation such as hyperprolactinemia, diabetes mellitus, SLE, Inflammatory bowel disease, RA.

C. Data Collection:

1. Detailed menstrual history: cycle length, amount of flow, clots
2. General and systemic examination
3. Thyroid function tests:

TSH

Free T3 (FT3)

Free T4 (FT4)

D. Classification of Thyroid Status

Hypothyroid: elevated TSH with low FT3/FT4

Subclinical hypothyroid: elevated TSH with normal FT3/FT4

Hyperthyroid: suppressed TSH with high FT3/FT4

E. Statistical Analysis

Data were entered in MS Excel and analyzed using basic descriptive statistics. Associations were tested using Chi-square test; $p < 0.05$ was considered statistically significant.

RESULTS

Total participants: 200 women with menstrual disorders

Age wise distribution of Thyroid status:

Age Group (yrs)	Hyperthyroid	Hypothyroid	Subclinical Hypothyroid	Total Patients
16–25 years	15	18	17	52
26–35 years	17	30	23	70
36–45 years	23	33	22	78
Total				200

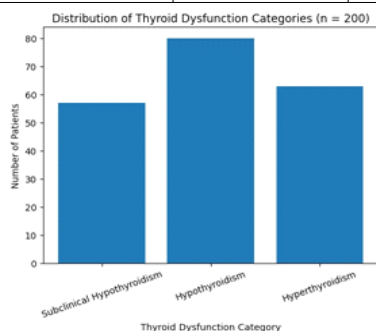
BMI Distribution Among 200 Patients With Thyroid status:

BMI Category	Hypo-thyroidism (80)	Subclinical Hypo-thyroidism (57)	Hyper-thyroidism (63)	Total
Underweight <18.5	2	2	2	6

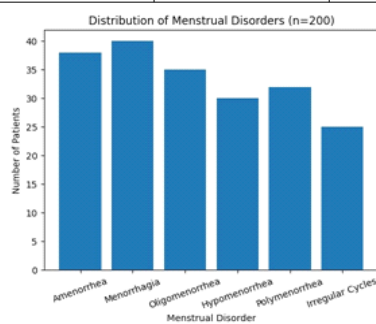
Normal BMI 18.5–24.9	32	22	25	79
Overweight 25–29.9	27	20	21	68
Obese ≥ 30	19	13	15	47
Total				200

Distribution of Thyroid Dysfunction among Study Participants:

Thyroid Dysfunction Category	Number of Patients	Percentage (%)
Subclinical hypothyroidism	57	28.5
Hypothyroidism	80	40
Hyperthyroidism	63	31.5
Total	200	100

**DISTRIBUTION OF MENSTRUAL DISORDERS:**

Type of Menstrual Disorder	Number of Patients	Percentage (%) =
Amenorrhea	38	19
Menorrhagia	40	20
Oligomenorrhea	35	17.5
Hypomenorrhea	30	15
Polymenorrhea	32	16
Irregular Cycles	25	12.5
Total	200	

**ASSOCIATION OF THYROID STATUS AND MENSTRUAL DISORDERS:**

Thyroid Status	Hypomenorrhea	Oligomenorrhea	Menorrhagia	Amenorrhea	Irregular cycles	Polymenorrhea
Hypothyroidism – 80	12	15	16	14	10	13
Subclinical hypothyroid – 57	11	10	9	9	7	11
Hyperthyroidism – 63	13	11	10	10	8	12

A statistically significant correlation was found between abnormal thyroid function and menstrual irregularities ($p < 0.05$).

DISCUSSION:

Thyroid dysfunction represents a significant endocrine contributor to menstrual disorders encountered in Indian tertiary care centres. Ajmani et al., in their Delhi hospital cohort, demonstrated that a substantial proportion of women presenting with abnormal uterine bleeding and menstrual irregularity had previously undiagnosed thyroid disease, with hypothyroidism forming the predominant category¹. Comparable findings were reported by Padmaleela et al. from Andhra Pradesh where thyroid dysfunction was frequently detected among reproductive-age women labelled as dysfunctional

uterine bleeding (DUB)². Sharma et al. also observed meaningful abnormalities in thyroid profile across different menstrual disorders in their Kashmiri tertiary population⁴. These concordant Indian studies highlight that many patients attending tertiary hospitals have not undergone prior endocrine evaluation^{1,2,4}.

The association between thyroid status and type of menstrual disturbance is biologically plausible and well supported by classical literature. Koutras described disturbances of menstruation as common manifestations of thyroid disease and emphasized that thyroid hormones influence ovulation through modulation of GnRH pulsatility and LH surge⁵. Hypothyroidism increases hypothalamic TRH secretion leading to hyperprolactinemia, which suppresses gonadotropin pulsatility and produces anovulatory cycles and irregular prolonged bleeding^{5,6}. Krassas further detailed that reduced thyroid function lowers SHBG levels, increasing free estrogen fraction and causing unopposed endometrial stimulation, mechanisms underlying menorrhagia and polymenorrhea⁶. Contemporary endocrine reviews reiterated the central role of thyroid hormones in cycle regulation^{7,8}.

Peripheral hemostatic alterations additionally aggravate blood loss in hypothyroidism. Impaired platelet aggregation and changes in coagulation factors VII, VIII, IX, and XI have been reported, which can exaggerate menstrual bleeding^{5,6,7}. Such mechanisms explain why tertiary-care cohorts in Delhi and Andhra Pradesh observed higher frequency of heavy menstrual bleeding in hypothyroid women compared with hyperthyroid subjects^{1,2}. Hyperthyroidism, in contrast, is more often associated with oligomenorrhea or amenorrhea due to increased SHBG and altered estrogen metabolism^{5,6}. Restoration of euthyroid state has been shown in several reviews to normalize cycles in many patients^{6,7}.

The overlap between thyroid disease and PCOS has been reported in Eastern India by Sinha et al.³ and by endocrine reviews⁷; however PCOS itself predisposes to anovulation and AUB. The present tertiary-care study excluded PCOS subjects to evaluate the independent contribution of thyroid dysfunction, a strategy justified by earlier Indian and review literature^{1–7}. Even after such exclusion, the burden remained substantial, reinforcing conclusions of Ajmani and Padmaleela cohorts¹².

Routine screening with serum TSH in women with menstrual disorders is inexpensive and highly impactful. Ajmani et al. documented that initiation of levothyroxine led to improvement in bleeding pattern and restoration of regular cycles in a majority of hypothyroid patients¹. Similar Andhra Pradesh evidence suggested reduction in severity of DUB after correction². Endocrine Reviews emphasized that thyroid evaluation should precede empirical hormonal therapy or invasive procedures⁷. The Indian Thyroid Society guidelines recommend TSH estimation in all women with unexplained AUB, infertility, and adolescents with irregular cycles⁹; the collective tertiary-care Indian evidence strongly supports this^{1,2,5,8}.

Limitations across literature include cross-sectional design and heterogeneity of DUB definitions^{1,2,4,7}. Future prospective interventional studies in tertiary centres are required to determine causal pathways and cost-effectiveness of universal screening⁹.

In summary, thyroid dysfunction—particularly hypothyroidism and subclinical hypothyroidism—plays a medically correctable role in women presenting with menstrual disorders at tertiary care level in India, warranting routine incorporation of thyroid profile into diagnostic algorithms^{1,2,5,9}.

CONCLUSION

Thyroid dysfunction is a major, frequently underdiagnosed cause of menstrual disorders. Hypothyroidism is strongly associated with oligomenorrhea and menorrhagia, while hyperthyroidism correlates with polymenorrhea and hypomenorrhea. Routine thyroid screening should be integrated into the evaluation of all women presenting with menstrual complaints in tertiary care centres to ensure early detection and effective management.

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