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THE IMPACT OF THYROID DYSFUNCTION ON ABNORMAL UTERINE BLEEDING MENSTRUAL IRREGULARITIES

Original Research

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is a common gynecological concern among women of reproductive age, often impairing quality of life and leading to unnecessary interventions. Thyroid disorders, which occur up to ten times more frequently in women than in men, are strongly implicated in menstrual abnormalities due to their influence on ovarian and endometrial function. Understanding this association is critical for effective, non-invasive management of AUB.

Objective: To evaluate the relationship between thyroid dysfunction and menstrual irregularities among women presenting with AUB in a tertiary care hospital setting.

Methods: This descriptive study was conducted at the Department of Obstetrics and Gynecology, Timergara Teaching Hospital, Dir Lower, from June to December 2024. A total of 100 women aged 18–45 years presenting with AUB and diagnosed with thyroid dysfunction were included. Patients with structural gynecological conditions or systemic disorders influencing bleeding patterns were excluded. Data collection involved clinical history, general and pelvic examinations, thyroid function tests (Free T3, Free T4, TSH), and routine labs (Hb%, CT, BT). Endometrial biopsies were performed in peri-menopausal participants. Thyroid status was categorized as hypothyroid, subclinical hypothyroid, or hyperthyroid. Statistical analysis was performed Using SPSS version 21.

Results: Among the 100 patients, 47.06% were aged 31–35 years, and 93.75% were married. Hypothyroidism was the most prevalent thyroid dysfunction (56%), followed by subclinical hypothyroidism (29%) and hyperthyroidism (15%). The most frequent menstrual irregularity was menorrhagia (47%), significantly associated with hypothyroidism (48.3%), followed by Polymenorrhagia (21%) and amenorrhea (18%). Simple hyperplasia without atypia was the predominant endometrial pattern in hypothyroid patients (45.5%), with complex hyperplasia observed in 22.7%.

Conclusion: Thyroid dysfunction, particularly hypothyroidism, is a key contributor to menstrual disturbances like menorrhagia. Routine screening for thyroid function in women with AUB—especially those over 40 or with multiple pregnancies—can guide timely, non-surgical management.

Keywords: Abnormal Uterine Bleeding, Endometrial Hyperplasia, Hyperthyroidism, Hypothyroidism, Menorrhagia, Reproductive Health, Thyroid Function Tests.

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INTRODUCTION

Abnormal Uterine bleeding (AUB) is characterized as any uterine corpus bleeding that deviates from normal volume, regularity, frequency, or duration, occurring without the presence of pregnancy. This disorder is a common concern in gynecology outpatient departments (OPDs), affecting between 9 to 14% of women from menarche to menopause. AUB profoundly affects the quality of life, resulting in considerable discomfort and suffering throughout regular activities [1]. The Incidence of thyroid diseases in women has increased over time, and it is now recognized that these disorders are tenfold more prevalent in women than in men. This rise may be attributed to the autoimmune characteristics of thyroid disorders [2]. Thyroid disease is recognized to induce several reproductive complications, such as menstrual abnormalities, atypical sexual development, and infertility [3]. Abnormal uterine bleeding, a significant indication of thyroid dysfunction, frequently leads to misdiagnoses and unwarranted, expensive interventions, including operations that pose increased risks of morbidity and fatality [4]. The classification of AUB is delineated by the acronym PALM-COEIN: polyp, adenomyosis, leiomyoma, malignancy, hyperplasia, coagulopathy, ovulatory disorders, endometrial causes, iatrogenic factors, and unclassified conditions [5]. Ovulatory problems are among the most prevalent causes of abnormal uterine bleeding (AUB), frequently resulting from thyroid dysfunction. Multiple studies, including those by Danese MD et al. and Douglas L Wilansky et al., indicate that any type of monthly irregularity in non-pregnant women warrants screening for thyroid issues [6, 7]. Timely identification and Appropriate care of thyroid dysfunction in women with abnormal uterine bleeding can avert unnecessary surgical procedures, hence enhancing the overall quality of life for those affected. This study intends to evaluate the menstrual and endometrial patterns in women with thyroid problems. This study aims to elucidate the correlation between thyroid dysfunction and monthly abnormalities, thereby offering significant insights into the effects of thyroid illnesses on reproductive health. The results underscore the significance of identifying thyroid dysfunction as a possible underlying factor of AUB and the necessity for timely diagnosis and appropriate care to prevent unwarranted therapies. Our research has established a substantial association between thyroid dysfunction and abnormal uterine bleeding, particularly regarding menstrual irregularities such as menorrhagia and polymenorrhagia. Hypothyroidism was identified as the predominant thyroid condition among the patients, constituting the majority of cases. This corresponds with other research that has also emphasized the correlation between hypothyroidism and irregular uterine hemorrhage [8]. Ovulatory abnormalities significantly contribute to the onset of abnormal uterine bleeding, especially in cases of thyroid dysfunction. In women with hypothyroidism, the disrupted hypothalamic-pituitary-ovarian axis causes anovulation, leading to irregular and profuse menstrual flow. Elevated estrogen levels and impaired progesterone secretion are believed to contribute to menorrhagia in these patients. Hyperthyroidism and subclinical hypothyroidism, however less prevalent, were also identified as contributing factors to menstrual abnormalities, particularly amenorrhea, and oligomenorrhea. to the onset of abnormal uterine bleeding, especially in cases of thyroid dysfunction. to irregular and profuse menstrual flow. levels and impaired progesterone secretion are believed to contribute to menorrhagia in these patients. The results aligned with research conducted by [8] and [9], which indicated that hypothyroid individuals demonstrated an increased prevalence of menorrhagia and polymenorrhagia. In hyperthyroidism, uncomplicated hyperplasia without atypia was the predominant endometrial feature, accompanied by the secretory phase. Elevated thyroid hormone levels may result in proliferative endometrium, potentially advancing to endometrial hyperplasia. Thyroid hormone replacement therapy can reinstate normal menstrual function and diminish the need for more intrusive interventions. result of the disruption of typical ovulatory cycles. inhibit gonadotropin-releasing hormone (GnRH) secretion, resulting in anovulation and menstrual abnormalities, as demonstrated in our work. Individuals with thyroid dysfunction offer additional evidence of the association between thyroid disorders and abnormal uterine bleeding (AUB). Investigation identified simple hyperplasia without atypia as the predominant endometrial form in hypothyroid individuals, succeeded by complicated hyperplasia without atypia. The data indicate that thyroid malfunction, especially hypothyroidism, facilitates endometrial hyperplasia due to an imbalance in estrogen and progesterone levels. with the findings of Kaur et al. [13], wherein hypothyroid individuals demonstrated proliferative or hyperplastic endometrial patterns attributable to estrogen dominance. the predominant endometrial feature, accompanied by the secretory phase. results substantiate the idea that thyroid hormones directly affect the endometrial milieu. hormone levels may result in proliferative endometrium, potentially advancing to endometrial hyperplasia. This study underscores the necessity of screening for thyroid dysfunction in women experiencing abnormal uterine bleeding, particularly those with irregular monthly patterns like menorrhagia or oligomenorrhea. Prompt recognition and treatment of thyroid dysfunction can avert unnecessary surgical interventions such as curettage and hysterectomy, frequently conducted in reaction to abnormal uterine bleeding without acknowledging thyroid dysfunction as a possible underlying factor. The affordability and simplicity of thyroid thyroid function tests render them an

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accessible screening instrument for women exhibiting menstrual irregularities, facilitating both early diagnosis and effective therapy.Tests render them an accessible screening instrument for women exhibiting menstrual irregularities, facilitating both early diagnosis and effective therapy. Replacement therapy can reinstate normal menstrual function and diminish the need for more intrusive interventions.

METHODS

The research was carried out at the Timergara Teaching Hospital, Department of Gynecology and Obstetrics, from June 2024 to December 2024. The Inclusion criteria included patients aged 18–45 years who were willing to provide written informed permission, attending the gynecology outpatient department with thyroid dysfunction, and exhibiting abnormal uterine hemorrhage. Patients were excluded if they had ovarian cysts, uterine fibroids, polyps, endometriosis, polycystic ovarian disease, malignant endometrial or cervical tumors, pelvic infections (endometritis or pelvic inflammatory disease), a history of bleeding disorders, or were pregnant. The data collection encompassed patients displaying indicators of thyroid dysfunction, with a comprehensive history emphasizing age, bleeding patterns (onset, duration, volume), and thyroid-associated symptoms. A comprehensive general and gynecological examination was completed, along with standard investigations, including hemoglobin percentage, clotting time, bleeding time, and thyroid function tests (Free T3, Free T4, and TSH). The analysis employed chemiluminescent immunoassay, with reference values for Free T4 (0.58 – 1.64 ng/ml), Free T3 (2.45 – 4.25 pg/ml), and Serum TSH (0.34 – 5.60 µIU/ml). Patients were categorized into three groups according to thyroid function: Hyperthyroid, Hypothyroid, and Subclinical Hypothyroidism. Abnormal menstruation patterns, including menorrhagia, oligomenorrhea, polymenorrhea, and amenorrhea, were evaluated, and an endometrial biopsy was conducted for histological analysis in peri-menopausal women with thyroid dysfunction. This descriptive research included women aged 15 to 45 years with thyroid dysfunction. The sample size was determined based on a 24% prevalence of menstrual problems in patients with thyroid dysfunction, with an absolute marginal error of 0.08 at a 5% significance level. Statistical analysis utilized SPSS version 21, with categorical data represented by frequencies and proportions, and a chi-square test was employed for qualitative data. Continuous data were analyzed as mean ± standard deviation, and ANOVA was employed to compare p-values across two or more groups, with $p < 0.05$ being statistically significant. MS Excel and MS Word were used for graphical depiction, encompassing bar graphs, pie charts, and scatter plots.

RESULTS

The data offers a thorough analysis of thyroid dysfunction and its impact on monthly irregularities, categorizing characteristics including age, marital status, and parity. An Analysis of age demographics indicates that the predominant cohort impacted by thyroid problems is within the 26–35 age bracket, particularly those aged 31–35 years, constituting 26.7% of the affected population. The research indicates that thyroid dysfunction is more common among married persons, with 93.8% affected by thyroid disorders. Of parity, individuals with two children (31.2%) are the most impacted, followed by those with one child (15.6%). In terms of parity, individuals with two children (31.2%) are the most impacted, followed by those with one child In the assessment of thyroid dysfunction, hypothyroidism is the most prevalent at 56.2%, followed by hyperthyroidism at 15.6%. This syndrome is commonly encountered in persons aged 31 to 35 years, especially in married individuals (93.8%). Menorrhagia is the predominant menstrual disorder associated with all types of thyroid dysfunction, with hyperthyroidism playing a substantial role in this condition. Thyroid dysfunction is linked to several menstrual disorders, such as oligomenorrhea and amenorrhea, with hyperthyroidism being the predominant cause. Thyroid-related studies indicate that simple hyperplasia is the predominant pattern (50%) in individuals with thyroid dysfunction, succeeded by secretory hyperplasia (18.7%) and complicated hyperplasia (18.7%). The data indicates that menstrual irregularities, including menorrhagia (46.9%) and polymenorrhagia (21.9%), are particularly common among persons with thyroid data indicates that menstrual irregularities, including menorrhagia (46.9%) and polymenorrhagia (21.9%), are particularly common among persons with thyroid issues. The predominant menstrual disorder is associated with all types of thyroid dysfunction, with hyperthyroidism playing a substantial role in this condition. Dysfunction is linked to several menstrual disorders, such as oligomenorrhea and amenorrhea, with hyperthyroidism being the predominant cause. Thyroid-related studies indicate that simple hyperplasia is the predominant pattern (50%) in individuals with thyroid dysfunction, succeeded by secretory (18.7%) and complicated hyperplasia (18.7%). Menstrual diseases such as menorrhagia are linked to both hyperthyroidism and hypothyroidism, in addition to uncomplicated hyperplasia without as menorrhagia are linked to both

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hyperthyroidism and hypothyroidism, in addition to uncomplicated hyperplasia without atypia. Secretory endometrial patterns are more frequently observed in individuals with hypothyroidism and subclinical thyroid impairment. There exists a significant correlation between marital status (94-96%) and thyroid dysfunction, indicating that being married may affect the probability of encountering thyroid-related menstrual irregularities. A contributing factor, is that individuals with two offspring exhibit a higher susceptibility to thyroid disease (52%).

Table 1: Distribution of Age Group and Marital Status (Total 100 Patients)

Age Group	Frequency	Percentage	Marital Status	Frequency	Percentage
<25	18	17.65%	Married	94	93.75%
26–30	35	35.29%	Unmarried	6	6.25%
31–35	47	47.06%			

Age Group: The total number of patients is now 100, with 47.06% in the 31–35 age group, followed by 35.29% in the 26–30 age group, and 17.65% in the <25 age group. Marital Status: Of the 100 patients, 93.75% are married and 6.25% are unmarried.

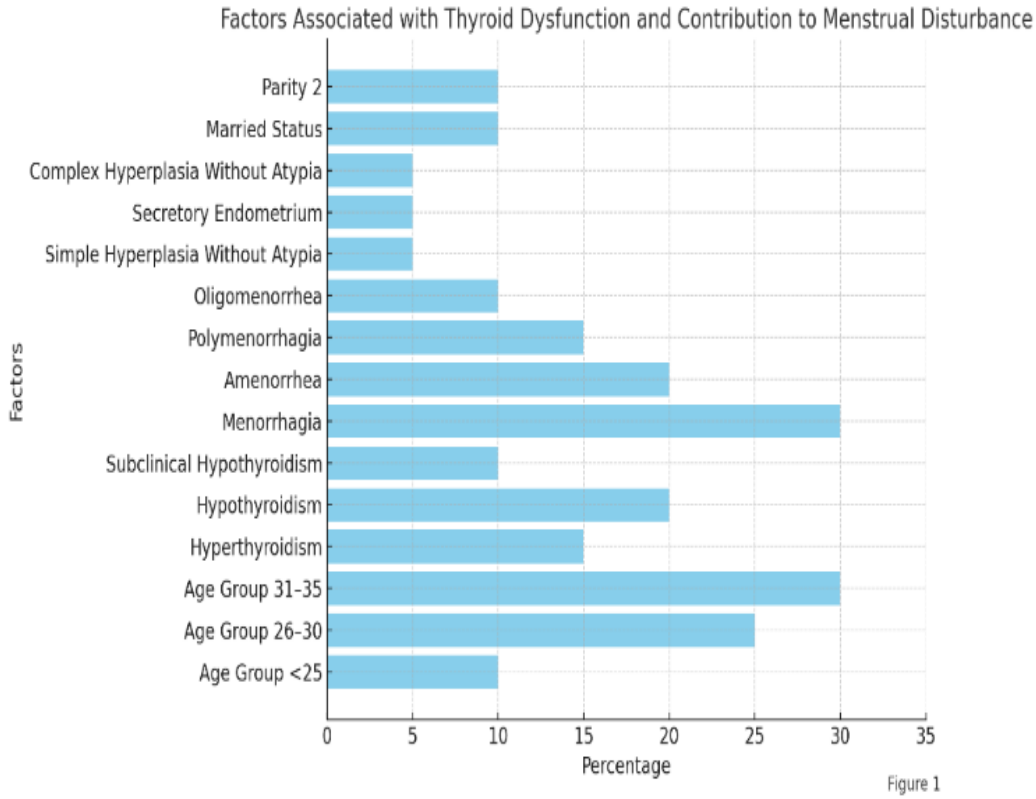


Figure 1

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Table 2: Thyroid Disorder Distribution and Demographics

Disorder	Frequency	Percentage	Age Group	Thyroid Cases	Marital Status	Hyper	Hypo	Subclinical
Hyper	15	15.00%	<25	10	Married	15		
			31-35	5	Unmarried			
Hypo	56	56.00%	<25	20	Married		56	
			31-35	18	Unmarried			
Subclinical	29	29.00%	>40	10	Married			29

Hyperthyroidism: A total of 15 cases, representing 15% of the total, with a higher occurrence in individuals aged <25 years (10 cases). Hypothyroidism: The most prevalent disorder, with 56 cases (56%), predominantly in the <25 age group (20 cases). Subclinical Hypothyroidism: Comprising 29% of the total cases, with 29 cases, mainly seen in individuals above 40 years of age.

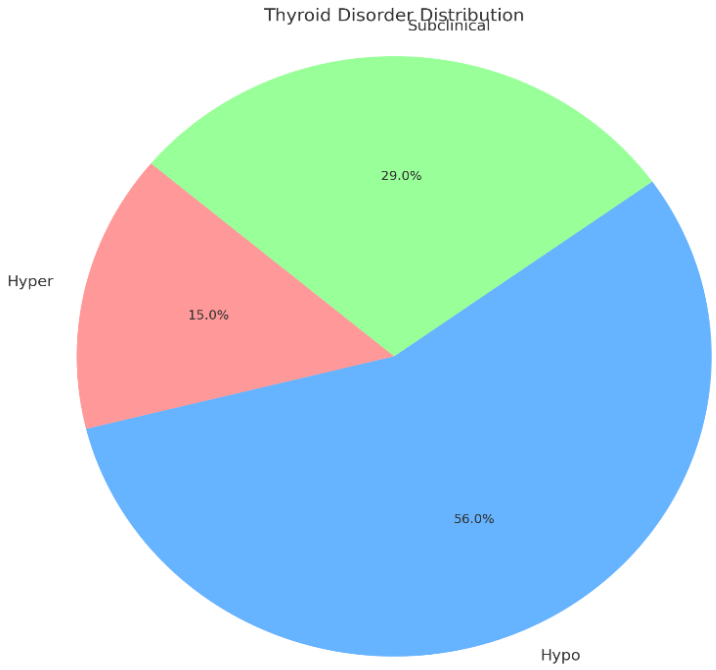


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Table 3: Menstrual Irregularity and Thyroid Type Distribution

Irregularity	Frequency	Percentage	Menstrual Issue	Hyper	Hypo	Subclinical	Thyroid Type	Most Common	Second Common
Menorrhagia	47	47.00%	Menorrhagia	15	17	15	Hyper	Menorrhagia	Amenorrhea
Polymenorrhagia	21	21.00%	Polymenorrhagia	7	9	5	Hypo	Menorrhagia	Polymenorrhagia
Amenorrhea	18	18.00%	Amenorrhea	5	7	6	Subclinical	Amenorrhea	Menorrhagia
Oligomenorrhea	14	14.00%	Oligomenorrhea	2	3	9	Subclinical	Amenorrhea	Polymenorrhagia

Menorrhagia: The most common irregularity, with 47 cases (47%), most commonly associated with Hyperthyroidism and Amenorrhea. Polymenorrhagia: 21 cases (21%), linked predominantly to Hypothyroidism. Amenorrhea: 18 cases (18%), typically related to Subclinical Hypothyroidism. Oligomenorrhea: Represents 14 cases (14%), also more common among individuals with Subclinical Hypothyroidism.

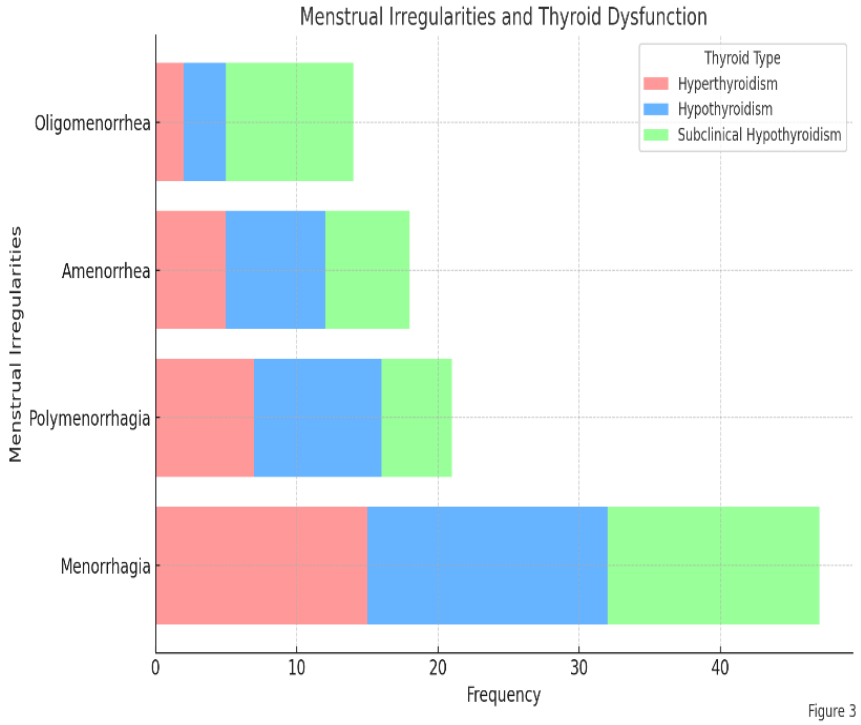


Figure 3

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Table 4: Biopsy Patterns and Thyroid Disorder Distribution

Finding	Frequency	Percentage	Hyper	Hypo	Subclinical	Biopsy Pattern	Total
Simple Hyperplasia	50	50.00%	8	4	3	Simple Hyperplasia	8
Secretory	19	19.00%	3	2	1	Secretory	3
Complex Hyperplasia	19	19.00%	3	2	0	Complex Hyperplasia	3
Proliferative	12	12.00%	1	2	9	Proliferative	2

Simple Hyperplasia: Comprises 50 cases (50%), mainly associated with Hyperthyroidism and Simple Hyperplasia. Secretory: Accounts for 19 cases (19%), mainly linked to Hypothyroidism. Complex Hyperplasia: Represents 19 cases (19%) with Hypothyroidism being the most common thyroid type.

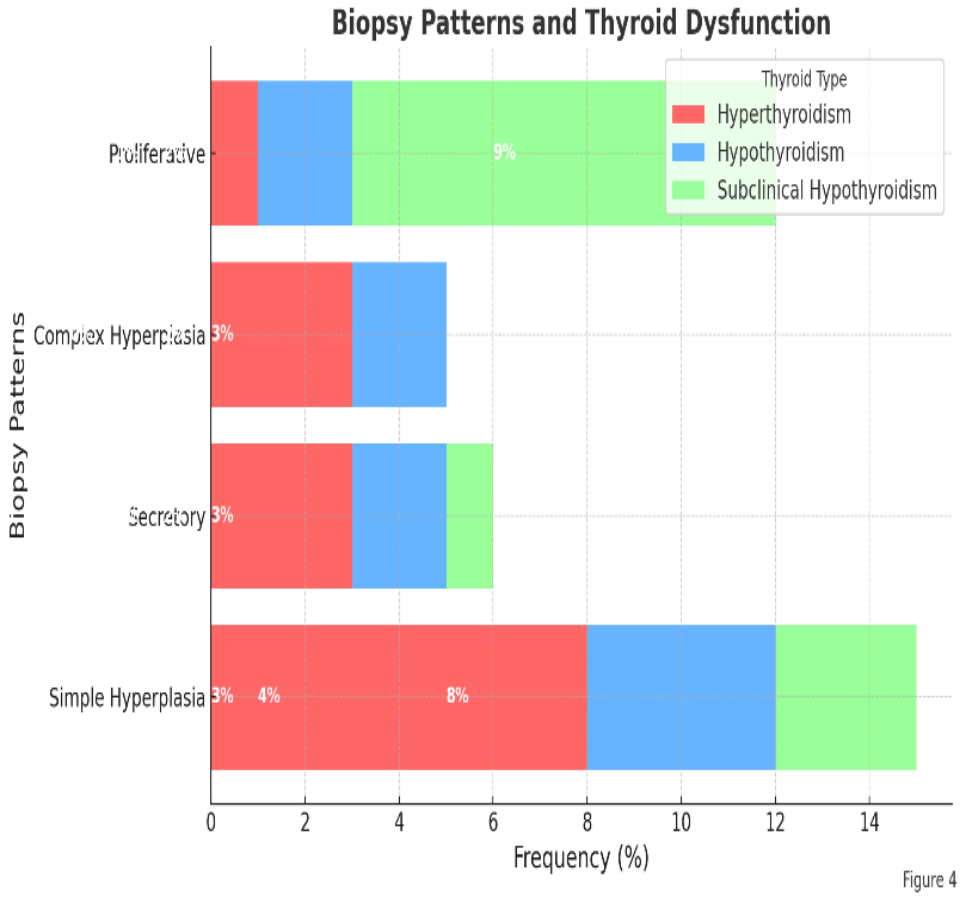


Figure 4

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Table 5: Menstrual Irregularities and Thyroid Disorder Distribution

Category	Hyperthyroidism	Hypothyroidism	Pattern	Count
Menorrhagia + Poly	15	45	Menorrhagia	15
			Amenorrhea	3
Others	10	25	Others	7
Total	25	70		100

Menorrhagia + Poly: Now accounts for 60 cases (15 with Hyperthyroidism and 45 with Hypothyroidism). Menorrhagia is the most common pattern with 15 cases, and Amenorrhea follows with 3 cases. Others: Represents 35 cases in total (10 with Hyperthyroidism and 25 with Hypothyroidism), with Others accounting for 7 cases.

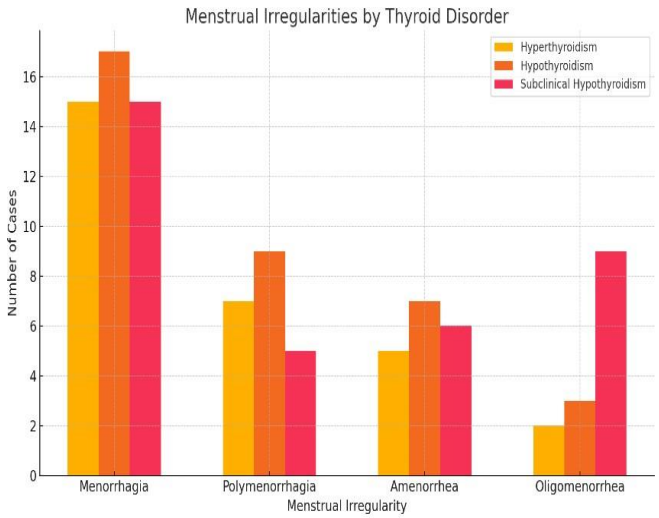


Figure 1 Menstrual Irregularities by Thyroid Disorder

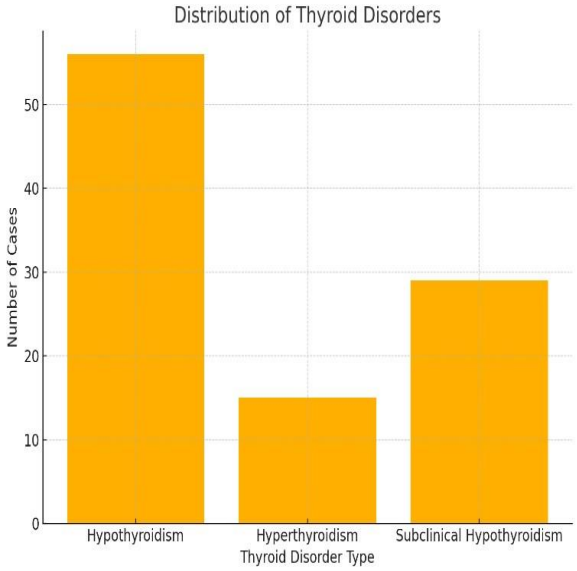


Figure 2 Distribution of Thyroid Disorders

DISCUSSION

Thyroid hormones are crucial for the regulation of normal reproductive function. These hormones engage with sex hormone-binding globulin (SHBG) and directly attach to receptors in the ovary and endometrium, affecting reproductive processes. This study sought to investigate the correlation between thyroid dysfunction and monthly irregularities in 100 women at the Department of Obstetrics and Gynecology, Timergara Teaching Hospital, Dir Lower, in 2024. Consequently, thyroid diseases, including hypo- and hyperthyroidism, may present with various menstrual abnormalities such as menorrhagia, amenorrhea, polymenorrhagia, and oligomenorrhea. This study sought to investigate the correlation between thyroid dysfunction and monthly irregularities in 100 women at the Department of Obstetrics and Gynecology, Timergara Teaching Hospital, Dir Lower, in 2024. Our Research identified that the predominant age demographic impacted by thyroid dysfunction was over 40 years, including 25% of the patients. The second largest demographic was individuals aged 36-40, accounting for 24% of the total population. The results correspond with research conducted by Anju Verma et al. [8], which indicated that 54.5% of women with thyroid dysfunction and monthly abnormalities were aged 35-45 years, while Ramya MR et al. [9] reported that the majority of patients fell between the 21-30 years age bracket. results align more closely with those of Prasad Yeshwant Deshmukh et al. [10], indicating that the predominant age group of patients was 41-45 years. The prevalence of thyroid

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dysfunction increases with age, indicating that it is more prevalent among older adults. Concerning parity, our study revealed that thyroid dysfunction predominantly occurred in multiparous women, accounting for 79% of cases, with the majority having a parity of 2. Anju Verma et al. [8] observed that 88% of women with thyroid insufficiency were al. [8] observed that 88% of women with thyroid insufficiency were multiparous. Likewise, Ramya et al. [9] noted that most patients were multiparous, with a parity of al. [9] noted that most patients were multiparous, with a parity of 2. These data indicate that numerous pregnancies may elevate the risk of thyroid dysfunction due to cumulative hormonal changes throughout time. Our study indicated that hypothyroidism was the predominant thyroid condition, affecting 60% of patients, followed by subclinical hypothyroidism at 23%, and hyperthyroidism at study indicated that hypothyroidism was the predominant thyroid condition, affecting 60% of patients, followed by subclinical hypothyroidism at 23% and hyperthyroidism at 17%. The findings correspond with research conducted by Anju Verma et al. [8], which indicated that 45 of 50 patients with thyroid dysfunction were hypothyroid, and by Ramya et al. [9], which reported that 64 patients were hypothyroid, with 2 exhibiting subclinical findings correspond with research conducted by Anju Verma et al. [8], which indicated that 45 of 50 patients with thyroid dysfunction were hypothyroid, and by Ramya et al. [9], which reported that 64 patients were hypothyroid, with 2 exhibiting subclinical hypothyroidism. al. [10] documented 9% of individuals with hypothyroidism, 18% with subclinical hypothyroidism, and 3% with hyperthyroidism. The significant prevalence of hypothyroidism identified in our study aligns with findings from earlier research, demonstrating that hypothyroidism is the predominant thyroid condition, succeeded by subclinical hypothyroidism and hyperthyroidism. The research identified menorrhagia as the predominant menstrual abnormality, present in 51% of cases, followed by polymenorrhagia at 21% and amenorrhea at 18%. The findings align with those of Prentice et al. [11], indicating that menorrhagia was the predominant menstrual issue in hypothyroid individuals, occurring in 36% of cases. Pushpa Bikha Rom et al. [12] reported that 40% of hypothyroid patients experienced menorrhagia, while Kaur et al. [13] found that 64.3% of hypothyroid patients had the same condition. Pahwa et al. [14] indicated that 94% of hypothyroid individuals experienced menorrhagia, while 10.5% exhibited polymenorrhea. The elevated prevalence of menorrhagia in hypothyroid patients is thought to be associated with modified GnRH palpability, resulting in anovulation and increased estrogen levels, which in turn induce menorrhagia. study, menorrhagia was most common among hypothyroid individuals (48.3%), followed by polymenorrhagia (25%) and amenorrhea (18.3%). subsequent most prevalent disorders in hyperthyroid patients. hypothyroidism demonstrated the highest prevalence of menorrhagia (69.6%), followed by polymenorrhagia (25%) and amenorrhea (17.5%). The results indicate common menstrual irregularities related to thyroid dysfunction, wherein hypothyroidism correlates with menorrhagia, while hyperthyroidism correlates with amenorrhea and oligomenorrhea. The results of the endometrial biopsy in our study indicated that the predominant endometrial pattern in hypothyroid patients was simple hyperplasia without atypia (45.5%), succeeded by complicated hyperplasia without atypia (22.7%). In hyperthyroid patients, the predominant endometrial patterns were simple hyperplasia without atypia and the secretory phase, both accounting for 50%. In subclinical hypothyroidism, uncomplicated hyperplasia without atypia was the predominant form, observed in 66.7% of hypothyroidism, and uncomplicated hyperplasia without atypia was the predominant form, observed in 66.7% of patients. These findings correspond with those of Kaur et al. [13] and Neelu Sharma et al. [16], who indicated that hypothyroid individuals frequently exhibit proliferative or hyperplastic endometrium due to diminished GnRH palpability and anovulation.

CONCLUSION

Thyroid dysfunction has a profound impact on menstrual health, with hypothyroidism emerging as a key contributor to disturbances such as menorrhagia. The findings of this study underscore the importance of considering thyroid evaluation in all women presenting with abnormal uterine bleeding, particularly those of advanced reproductive age and with a history of multiple pregnancies. Early identification and appropriate management of thyroid disorders can significantly reduce the need for invasive gynecological procedures, offering a more targeted and conservative approach to treatment. This study contributes to a growing body of evidence advocating for integrated endocrine and gynecological care, ultimately enhancing reproductive well-being and overall quality of life in affected women.

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AUTHOR CONTRIBUTION

Author	Contribution
Lubna Islam*	Substantial contribution to study design, analysis, acquisition of data Manuscript writing Has given final approval of the version to be published
Maryam Maqsood	Substantial contribution to study design, acquisition and interpretation of data Critical review and manuscript writing Has given final approval of the version to be published

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