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ASSESSING THE CORRELATION OF THYROID DYSFUNCTION IN PATIENT WITH ABNORMAL UTERINE BLEEDING IN SKBZ/CMH RAWALKOT

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ABSTRACT

Objective To determine the frequency of thyroid dysfunction in females presenting with Abnormal Uterine Bleeding (AUB) and to assess its correlation with various demographic and clinical factors at a tertiary care hospital in the Rawalkot region.

Methodology This was a cross-sectional study conducted at Obstetrics and Gynaecology Department of CMH Rawalakot from July 2025 to October 2025. A total of 200 non-pregnant females aged 18-45 years, presenting with AUB according to the operational definition (irregular, excessive, or frequent uterine bleeding), were selected using non-probability consecutive sampling. Thyroid dysfunction was defined as a serum TSH>5 IU/L. Data were analyzed using SPSS v.22, and the Chi-square test was applied for stratified analysis to control for potential effect modifiers.

Results The overall frequency of thyroid dysfunction was found in 16.0(n=32) of AUB patients. Stratification revealed statistically significant correlations between thyroid dysfunction and age (P=0.001), BMI ≥ 25 kg/m2 (P=0.02), anemia (P=0.04), and a family history of thyroid dysfunction (P=0.005). The prevalence was highest in the 36-45 year age group (28.3%) and among patients with a positive family history (33.3%).

Conclusion The frequency of thyroid dysfunction in females with Abnormal Uterine Bleeding in the local population is substantial (16.0%). Given the significant associations with AUB and the readily treatable nature of thyroid dysfunction, routine screening using thyroid function tests should be implemented for all females presenting with Abnormal Uterine Bleeding in this setting.

KEYWORDS: Abnormal Uterine Bleeding, Cross-sectional Study, Hypothyroidism, TSH, Thyroid Dysfunction.

INTRODUCTION

Abnormal uterine bleeding is a broad term that describes irregularities in the menstrual cycle involving frequency, regularity, duration, and volume of flow outside of pregnancy. Up to one-third of women will experience abnormal uterine bleeding in their life, with irregularities most commonly occurring at menarche and perimenopause. A normal

menstrual cycle has a frequency of 24 to 38 days and lasts 2 to 7, with 5 to 80 milliliters of blood loss. Variations in any of these 4 parameters constitute abnormal uterine bleeding[1].

The prevalence rate of abnormal uterine bleeding in child-bearing age women around the world is reported to be 3% to 30%, with high prevalence during menarche ages and perimenopause ages. Most of the research is centered on the heavy uterine bleeding, but taking into consideration the irregular and intermenstrual bleeding, the rate increases to 35% and above[2,3].Use of menstrual tracking data to understand abnormal bleeding patterns has been limited because of lack of incorporation of key demographic and health characteristics and confirmation of menstrual tracking accuracy[4,5].

Thyroid dysfunction, including both hypothyroidism and hyperthyroidism, accounts for 30%-40% of systemic disorders causing AUB and can be readily diagnosed by thyroid function tests[6,7]. Both hypothyroidism and hyperthyroidism are associated with a variety of changes, including delayed onset of puberty, anovulatory cycles, and abnormally high fetal wastage[8,9].

Thakur et al., conducted a study in Nepal on 79 females with abnormal uterine bleeding. The percentage of thyroid dysfunction was noted in 15.2% females, out of which 13.9% had hypothyroidism, 1.3% had hyperthyroidism, 84.8% were euthyroid.8 Kumar et al., reported that out of 200 cases 19% cases had thyroid dysfunction, out of which 16.5% were hypothyroid and 2.5% were hyperthyroid[10]. Singh et al.., found that out of 400 cases, 26% had hypothyroid, and 9% had hyperthyroidism (total 35% thyroid dysfunction)[11]. In the study done by Komathi et al., about 30% of abnormal uterine bleeding had thyroid dysfunction out of which 27% had hypothyroid and 3% had hyperthyroidism[12].

The rationale of this study is to determine the frequency of thyroid dysfunction in females presenting with complaints of abnormal uterine bleeding. Literature showed that there is variation in the occurrence of thyroid dysfunction in females belonging to different parts of the world (form 15.2-30%). Also no local study had been conducted yet that would help us to decide whether the chances of detecting thyroid dysfunction in females with abnormal uterine bleeding is high or low. Therefore, we want to conduct this study to get evidence for the local population and to implement the regular screening of females for presence or absence of thyroid dysfunction, in order to diagnose in early stages.

MATERIALS & METHODS

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology of CMH Rawalakot. Prior to data collection, technical approval was secured from the Institutional Research Board (IRB) and ethical approval was obtained from the Institutional Ethical Committee (IEC) . All participants provided written informed consent. The study population comprised non-pregnant females aged 18–45 years presenting with Abnormal Uterine Bleeding (AUB). The required sample size was calculated as 196 using the WHO Sample Size Calculator, based on a 95% confidence level, a 5% margin of error, and an anticipated thyroid dysfunction prevalence of 15.1% in females 8. Non-probability consecutive sampling was used to enroll 200 participants. Inclusion criteria included non-pregnant females, aged 18–45 years, presenting with AUB defined as irregular, excessive, or frequent uterine bleeding. Known thyroid disorders, pregnancy, and diagnosed uterine/cervical or severe systemic pathology were criteria for exclusion. At enrollment, a detailed history and examination were performed and AUB was confirmed. Approximately 5ml of venous blood was collected for serum Thyroid-Stimulating Hormone (TSH) level measurement using a Chemiluminescent Immunoassay (CLIA) technique on the Architect i1000SR Immunoassay Analyzer. Thyroid dysfunction, the dependent variable, was defined as a serum TSH level>5 IU/L. The demographic variables (Age, Residence, Parity), as well as the categorical variable of AUB (independent variable), were collected via a structured Performa. Statistical analysis was performed on the collected data with the aid of SPSS version 22 (IBM, Armonk, New York, USA). Descriptive statistics entailed calculating the mean and standard deviation for continuous variables, and median, interquartile range for categorical variables, depending on whether the variable is normal. The prevalence of thyroid dysfunction was estimated with a 95% Confidence Interval. Inferential analysis involved the application of the Chi-square test (chi2test) for stratified analysis to control for potential confounding variables, specifically Age Group and Parity Group, with a p-value of<0.05 considered statistically significant.

RESULTS

The cross-sectional study initially recruited 200 non-pregnant females aged 18-45 years presenting with Abnormal Uterine Bleeding. Since the design did not call for any intervention or follow-up, all 200 subjects completed the initial assessment, ensuring availability of the entire enrolled sample size. There was no subject death, dropout, or loss to follow-up.

The descriptive analysis of the cohort confirmed an overall prevalence of thyroid dysfunction (serum TSH>5IU/L) in 16.0% (n=32) of the AUB patients. The estimation of this parameter at a 95% confidence level indicated that the true prevalence of thyroid dysfunction in the population of AUB patients is between approximately 11.0% and 22.0%.

The median age of the participants was 30 years (IQR: 25-36 years). When stratified by age, the largest group was 26-35 years (n=78, 39.0%). Analysis of the continuous TSH level revealed a mean TSH of 3.5 ± 1.8 IU/L in the overall sample.

Thyroid Status	Frequency (n)	Percentage (%)	95% Confidence Interval for Prevalence
Dysfunction (TSH>5 IU/L)	32	16	11.0%–22.0%
Normal (TSH≤5 IU/L)	168	84	
Total	200	100	

The inferential analysis utilized the Chi-square test to examine the association between thyroid dysfunction and several clinical and demographic factors. The stratification revealed a statistically significant association between thyroid dysfunction and age group (P=0.001). The prevalence was highest in the older age group of 36-45 years (28.8%, n=15), compared to the 18-25 year group (7.1%, n=5).

Furthermore, a statistically significant correlation was found between thyroid dysfunction and elevated Body Mass Index (BMI ≥ 25 kg/m2) (P=0.02), where the prevalence reached 24.0% (n=18) in the overweight/obese group compared to 11.2% (n=14) in the normal BMI group. Anemia was also significantly associated with thyroid dysfunction (P=0.04), showing a prevalence of 23.6% (n=13) in anemic patients.

Most notably, a positive family history of thyroid dysfunction demonstrated a highly significant association with the patient's own thyroid status (P=0.005), with a high prevalence of 33.3% (n=15) in this subgroup. Variables such as parity and residence showed no statistically significant association with thyroid dysfunction. These findings support the rejection of the null hypothesis in favor of a significant association between thyroid dysfunction and the identified risk factors within the AUB cohort.

Variable	Category	Frequency (n)	Prevalence of Thyroid Dysfunction (n)	Prevalence (%)	P-value
Age Group (Years)	18-25	70	5	7.1	0.001
	26-35	78	12	15.4	
	36-45	52	15	28.8	
BMI	<25 kg/m2 (Normal)	125	14	11.2	0.02
	≥ 25 kg/m2 (Overweight/Obese)	75	18	24	
Anemia	No	145	19	13.1	0.04
	Yes	55	13	23.6	
Family History of Thyroid Dysfunction	Negative	155	17	11	0.005
	Positive	45	15	33.3	

DISCUSSION

Our study, conducted at DHQ Hospital, Mirpur, found that the overall frequency (prevalence) of thyroid dysfunction (defined as serum TSH>5 IU/L) in females presenting with Abnormal Uterine Bleeding (AUB) was 16.0% (n=32). This finding is substantial, suggesting that thyroid screening is a relevant part of the diagnostic workup for AUB in our local population.

The prevalence we observed is comparable to several regional and global studies, reinforcing the correlation between thyroid pathology and menstrual irregularity.

Similar Findings (15% - 20%): Our rate of 16.0% aligns closely with the findings of Thakur et al. (Nepal, N=79), who reported a thyroid dysfunction rate of 15.2% (13.9% hypothyroidism) in AUB patients (Thakur et al., 2020)[8]. Similarly, Joshi et al. (Nepal, duration not specified, N=200) reported a comparable overall prevalence of 15.5% (Joshi et al., 2021)[6]. Ashok Kumar et al. (India, duration not specified, N=200) observed an overall thyroid dysfunction rate of 19% (16.5% hypothyroid and 2.5% hyperthyroid), which falls near the upper end of our study's 95% confidence interval (11.0%-22.0%) (Ashok Kumar et al., 2017)[10].

Higher Findings (26% - 35%): Higher rates have been reported elsewhere, such as by Komathi et al. (India, duration not specified, N=100), who reported a higher prevalence of 30% thyroid dysfunction in AUB patients (27% hypothyroid and 3% hyperthyroid) (Komathi et al., 2016)[12]. Singh et al. (India, duration not specified, N=400) reported the highest frequency, finding a total thyroid dysfunction prevalence of 35% (26% hypothyroid and 9% hyperthyroid) (Singh et al., 2018)[12]. The reasons for variations in prevalence, which have been cited in the literature (ranging from 15.2% to 30%, as cited in the Introduction), may vary owing to the genetic makeup, nutritional factors (iodine deficiency), environment, or the cut-off value used for the definition of TSH dysfunction. Our consistency with regional data like Thakur et al. (2020)[8] strengthens the relevance of our findings for the local context.

Our inferential analysis identified several demographic and clinical factors that significantly correlate with thyroid dysfunction in the AUB cohort.

A statistically significant association was found between thyroid dysfunction and Age Group (P=0.001), with the prevalence rising from 7.1% in the 18-25 year group to 28.8% in the 36-45 year group. This trend is consistent with global epidemiological data for both AUB (often linked to perimenopause) and the increasing incidence of acquired thyroid disease with age (Critchley et al., 2020)[2].

The presence of thyroid dysfunction was significantly associated with high BMI (above 25 kg/m2) (P=0.02), with a prevalence of 24.0% against 11.2% in the normal BMI group.

Remove Object This result is consistent with the pathophysiological relation described, which exists between obesity, inflammation, thyroid hormone metabolism, possibly explaining high TSH values, and is a known systemic cause of AUB (Davis&Sparzak, 2025).

There was a significant association between thyroid dysfunction and anemia (P=0.04), with a prevalence rate of 23.6% in anemic patients compared with 13.1% in non-anemic patients. Hypothyroidism can result in anemia because of reduced secretion of erythropoietin, with chronic AUB contributing to blood loss, thus making a probable causal association.

The strongest association was with Family History of Thyroid Dysfunction (P=0.005), with a prevalence rate of 33.3% against 11.0% in patients with negative family history, thus supporting the established genetic predilection for thyroid disorders, with a positive family history being a strong predictor of the patient's own thyroid function.

Given the substantial prevalence of 16.0% and equally imperative associations attributed to AUB, besides thyroid dysfunction being a wide-ranging, easily diagnosable, and treatable condition that may resolve AUB, we recommend routine, mandatory screening using serum TSH levels for all non-pregnant females presenting with Abnormal Uterine Bleeding in tertiary care settings within the Rawalkot region. This simple intervention can prevent unnecessary diagnostic procedures and provide effective, targeted treatment.

CONCLUSION

This cross-sectional study established that the frequency of thyroid dysfunction in non-pregnant females aged 18-45 years presenting with Abnormal Uterine Bleeding in the local population is substantial, measured at 16.0%. Our analysis demonstrated statistically significant associations between thyroid dysfunction and increasing age (specifically the 36-45 year group), elevated BMI ($\geq$ 25 kg/m2), the presence of anemia, and a positive family history of thyroid dysfunction. These results confirm that thyroid pathology is a clinically relevant, underlying factor in a significant proportion of AUB cases in this setting.

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