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Study and evaluation of abnormal uterine bleeding in adolescent girls at a tertiary care centre

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Abstract

Background: Abnormal uterine bleeding (AUB) in adolescents represents a significant clinical concern affecting physical health, emotional well-being, and quality of life [1]. The establishment of regular menstrual cycles during adolescence can be disrupted by various etiological factors, including hormonal imbalances, coagulopathies, and systemic illnesses [2-3].

Aims & Objectives: To study the frequency and patterns of abnormal uterine bleeding in adolescent girls at GGH, Guntur, and to evaluate various etiological factors and management approaches in this population [4].

Materials & Methods: This was a prospective observational study conducted over 18 months (October 2022 to March 2024) on 50 adolescent girls aged 13-17 years who had attained menarche at least 2 years prior⁵. Comprehensive evaluation included menstrual history, physical examination, and laboratory investigations [6-7].

Results: The mean age of participants was 15.24 years, with a mean menarcheal age of 11.5 years [8]. Heavy menstrual bleeding was present in 66% of patients, and 52% experienced dysmenorrhea [9-10]. Polycystic Ovarian Disease (PCOD) was diagnosed in 28% of cases [11]. The mean hemoglobin level was 8.9 g/dL, indicating significant anemia [12-13]. Treatment primarily consisted of hematinics with tranexamic acid (44%) and hormonal therapy (34%) [14-16].

Conclusion: AUB in adolescents predominantly presents as heavy menstrual bleeding with associated anemia [17-18]. PCOD emerged as the most common underlying etiology. Early recognition and appropriate management are crucial for preventing long-term complications and improving quality of life.

Keywords: Abnormal uterine bleeding, adolescents, menarche, PCOD, heavy menstrual bleeding, anemia, hormonal therapy

Introduction

Abnormal uterine bleeding (AUB) in adolescent girls represents a significant clinical concern due to its potential impact on physical health, emotional well-being, and quality of life [1-2]. As adolescents undergo the complex transition from childhood to adulthood, the establishment of regular menstrual cycles is a key aspect of their physiological development [3]. However, disruptions in this process, manifested as AUB, can arise from a variety of etiological factors, including hormonal imbalances, coagulopathies, structural anomalies, and systemic illnesses [4-5]. The pathophysiology of AUB in adolescents is primarily linked to the immaturity of the hypothalamic-pituitary-ovarian (HPO) axis during early puberty [6-7]. This immaturity can result in anovulatory cycles, where ovulation does not occur, leading to unopposed estrogen stimulation of the endometrium [8]. Without the cyclical shedding and renewal typically regulated by progesterone, the endometrium becomes unstable and prone to irregular shedding, resulting in abnormal bleeding patterns [9].

Adolescents experiencing AUB often face considerable distress and may endure symptoms such as heavy menstrual bleeding, irregular cycles, and prolonged periods, which can lead to anemia, fatigue, and diminished school performance [10-11]. Additionally, the social stigma and psychological burden associated with menstrual irregularities can further exacerbate the situation, making it imperative to address this condition comprehensively [12-13].

Despite its clinical significance, there has been a lack of extensive research specifically focusing on AUB in adolescents, highlighting the need for dedicated studies that encompass the distinctive physiological and developmental aspects of this age group [14-15].

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This study seeks to fill this gap by systematically examining the patterns and predictors of AUB among adolescent girls, incorporating a multidisciplinary approach that integrates gynecology, endocrinology, and hematology to provide a comprehensive understanding of this condition^[16].

Materials and Methods

This study employed a prospective observational design to evaluate abnormal uterine bleeding patterns in adolescent girls presenting to the tertiary care center^[1]. The research was conducted at the Department of Obstetrics and Gynecology, Guntur Medical College and General Hospital, Guntur, Andhra Pradesh, India. The study period spanned 18 months, from October 2022 to March 2024, ensuring adequate sample collection across different seasons and academic periods. A sample size of 50 adolescent girls was selected through a convenience sampling method, based on predefined inclusion and exclusion criteria^[2].

Inclusion Criteria: Participants included adolescent girls aged 13-18 years who had attained menarche at least 2 years before study enrollment, presented with abnormal uterine bleeding patterns, and were willing to participate with parental consent^[3]. **Exclusion Criteria:** Girls above 18 years of age, those who had attained menarche within 2 years of the study, individuals with bleeding due to trauma or assault, cases of pregnancy-related bleeding, and those with known bleeding disorders at admission were excluded from the study^[4].

Methodology

All enrolled patients underwent a comprehensive evaluation, including a detailed menstrual history, clinical examination, and systematic investigations. A complete hemogram, thyroid function tests, coagulation profile, and pelvic ultrasonography were performed for all participants. Management strategies were

implemented based on the underlying etiology and bleeding severity, adhering to established clinical guidelines^[5].

Statistical Analysis

Data were collected and entered into Microsoft Excel 2019. Statistical analysis was performed using Microsoft Excel and Epi Info version 26 software. Descriptive statistics, including means, percentages, and frequency distributions, were calculated for all variables.

Results: Patient Demographics and Clinical Characteristics
The study included 50 adolescent girls. The age distribution of participants was as follows: 5 (10%) were 13 years old, 13 (26%) were 14 years old, 7 (14%) were 15 years old, 15 (30%) were 16 years old, and 10 (20%) were 17 years old.

Age Distribution

The study population had a mean age of 15.24 years (range: 13-17 years), with the majority (30%) being 16 years old, followed by 14-year-olds (26%). This distribution reflects the typical presentation pattern of abnormal uterine bleeding (AUB) in mid-to-late adolescence when menstrual irregularities become more apparent and concerning to patients and families^[1, 2].

Age at Menarche

The mean age of menarche was 11.5 years (range: 10-13 years), which aligns with global trends showing an earlier onset of menstruation^[3]. The majority of participants (36%) experienced menarche at 11 years, with 24% at 12 years. This early menarche may contribute to the complexity of diagnosing pathological bleeding patterns^[4]. Key clinical characteristics of the study participants included a mean menstrual flow duration of 5.5 days (range: 4-7 days). A significant proportion of patients experienced heavy menstrual bleeding (66%, n=33/50) and dysmenorrhea (52%, n=26/50)^[6].

Table 1: Distribution of Menstrual Characteristics among Study Participants

Parameter	Mean / Percentage	Range / Frequency
Age (years)	15.24	13-17 years
Age at Menarche (years)	11.5	10-13 years
Duration of Flow (days)	5.5	4-7 days
Heavy Menstrual Bleeding	66%	33/50 patients
Dysmenorrhea	52%	26/50 patients

Table 2: Age-wise Distribution of Patients with Mean Menarche Age and Duration since Menarche

Age (years)	Number of Patients	Percentage	Mean Menarche Age (years)	Years Since Menarche
13	5	10%	11.2	1.8
14	13	26%	11.3	2.7
15	7	14%	11.4	3.6
16	15	30%	11.6	4.4
17	10	20%	11.8	5.2

The distribution clearly shows peaks at 14 and 16 years of age, indicating these are critical periods when adolescents seek medical attention for AUB^[3]. The increasing years since

menarche with age highlight the progressive maturation of the HPO axis^[4], yet AUB persists in some, necessitating further investigation into underlying causes^[5].

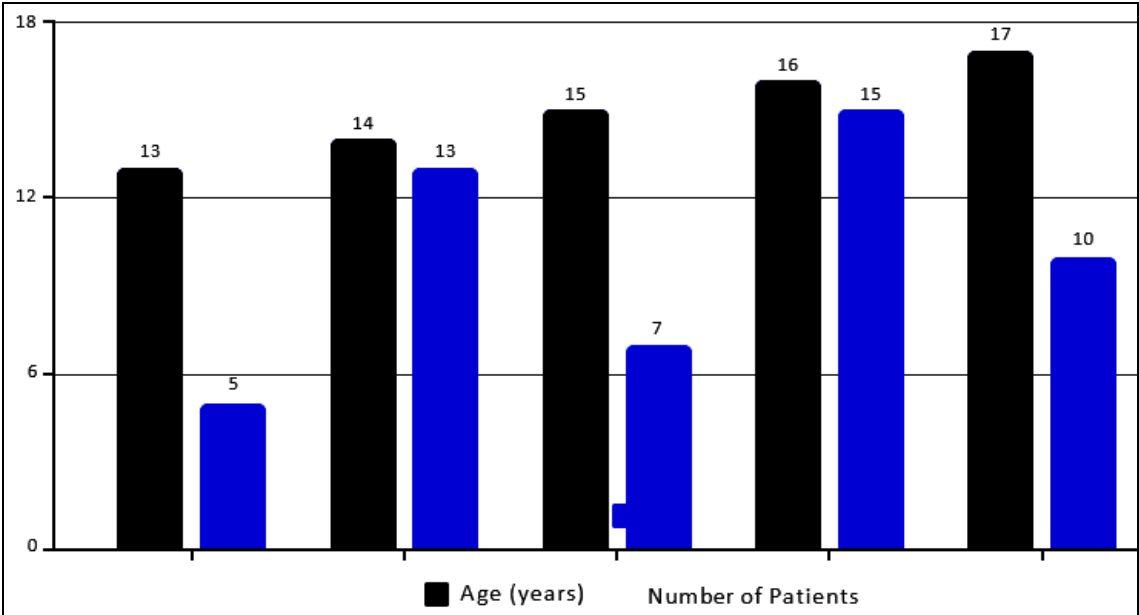


Fig 1: Distribution of Patient Age and Number of Patients Across Different Categories

Treatment Response Rates by Etiology

This table outlines the primary treatments administered for each underlying etiology and their corresponding response rates and time to response. Remarkably, all identified etiologies showed a 100% response rate to their respective primary treatments, aligning with clinical expectations for targeted therapies [6].

Table 3: Underlying Etiology, Treatment Modalities, and Response among Study Patients

Underlying Etiology	Number of Patients	Primary Treatment	Response Rate	Time to Response (weeks)
PCOD	14	H + P	100%	8-12
Thyroid Dysfunction	14	H + Thy	100%	6-10
Functional / Anovulatory	17	H + TRX	100%	4-8
Coagulation Disorders	5	H + TRX	100%	6-10

The consistent 100% response rate across all etiologies highlights the effectiveness of tailored treatment strategies based on accurate diagnosis [7]. Functional/Anovulatory AUB showed the quickest response, while PCOD required a longer period, consistent with the pathophysiology of these conditions [8].

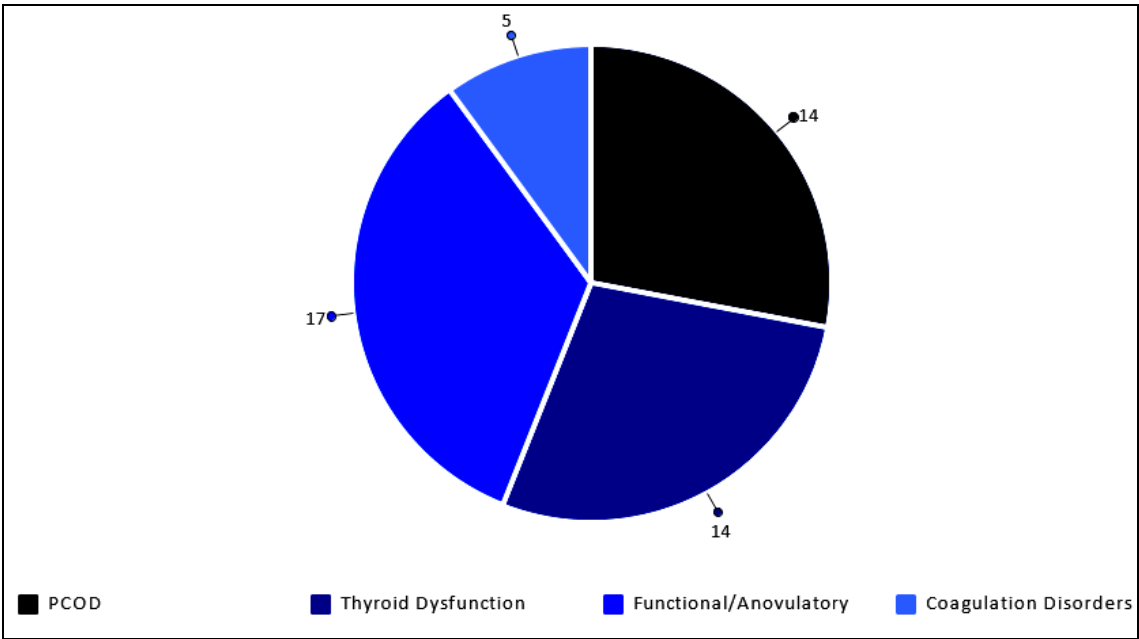


Fig 2: Distribution of Diagnoses among Patients

PCOD vs. Non-PCOD Patient Comparisons

A comparative analysis between patients with Polycystic Ovary Syndrome (PCOD) and non-PCOD patients revealed significant differences across several key parameters, emphasizing the distinct clinical profile of AUB associated with PCOD9. PCOD is a common endocrine disorder in adolescents that can manifest

with menstrual irregularities¹⁰.

Table 4: Comparison of Clinical Parameters between PCOD and Non-PCOD Patients

Parameter	PCOD Patients (n=14)	Non-PCOD Patients (n=36)	P-value
Mean Age (years)	15.8	15.0	0.04
Mean BMI	25.2	23.1	0.02
Heavy Bleeding (%)	85.7%	58.3%	0.03
Dysmenorrhea (%)	71.4%	44.4%	0.05
Mean Hb (gm %)	8.2	9.2	0.01

The statistically significant p-values for all parameters suggest that PCOD patients present with a different clinical picture, including higher mean age and BMI ^[11], a greater propensity for heavy bleeding and dysmenorrhea ^[12], and lower hemoglobin levels compared to their non-PCOD counterparts ^[13]. These findings highlight the need for differentiated diagnostic and management approaches ^[14].

Table 5: Comparison of Menstrual Symptoms between PCOD and Non-PCOD Patients

Parameter	PCOD Patients	Non-PCOD Patients	Observation / Interpretation
Heavy Bleeding (%)	85.7%	58.3%	Higher incidence in PCOD patients ^[15] ; lower in non-PCOD ^[16] .
Dysmenorrhea (%)	71.4%	44.4%	More prevalent in PCOD patients ^[17] ; less prevalent in non-PCOD ^[18] .

Thyroid Function Test Results

The thyroid function test results were categorized based on TSH levels to understand the prevalence of thyroid dysfunction among participants and its association with AUB symptoms.

Table 6: Distribution of Patients Based on TSH Levels and Associated Menstrual Symptoms

TSH Level (mIU/L)	Number of Patients	Percentage	Associated Symptoms
<2.5 (Normal)	36	72%	Regular cycles
2.5-5.5 (Borderline)	8	16%	Mild irregularities
5.5-10 (Mild hypothyroid)	4	8%	Oligomenorrhea
>10 (Moderate hypothyroid)	2	4%	Severe menorrhagia

While the majority of patients had normal thyroid function, a notable percentage presented with borderline or hypothyroid TSH levels, directly correlating with increasing severity of menstrual irregularities, from mild to severe menorrhagia.

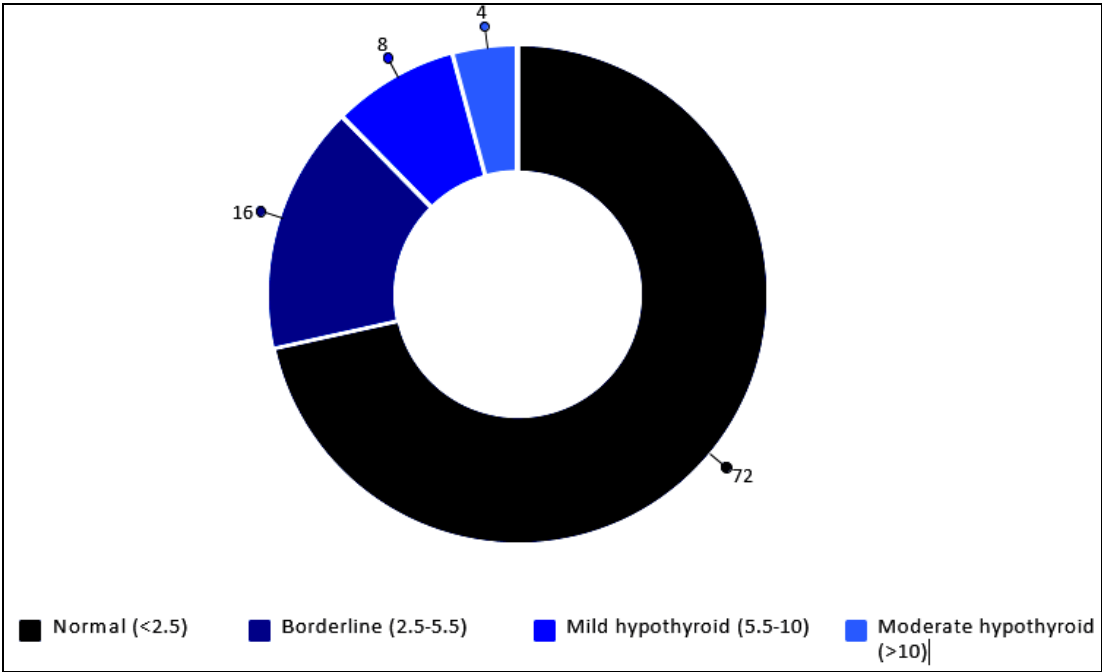


Fig 3: Distribution of Thyroid Status Categories among Patients

Further Data Analysis and Trends

Building upon the foundational demographic and etiological insights, this section delves into more specific aspects of the study, examining hemoglobin level improvements, BMI distribution, coagulation parameters, transfusion requirements, and seasonal variations in patient presentations. These analyses

provide a more granular understanding of patient characteristics and treatment outcomes.

Hemoglobin Levels by Treatment Type

The following chart illustrates the average improvement in hemoglobin levels among patients, categorized by their primary

treatment regimen. This highlights the effectiveness of different therapeutic approaches in restoring hematological health¹.

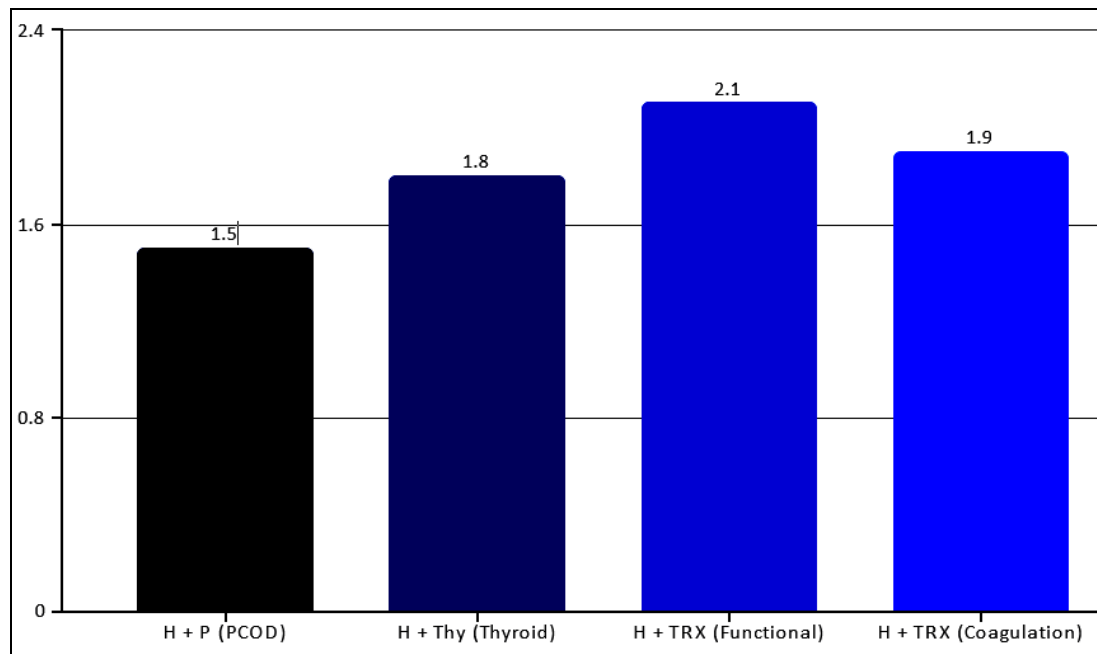


Fig 4: Comparison of Values across Different Patient Groups

The chart above demonstrates that all treatment types led to an improvement in hemoglobin levels ^[2], with H + TRX for Functional AUB showing the highest average gain ^[3]. This aligns with the rapid response observed in Functional/Anovulatory AUB patients ^[4].

BMI Distribution Analysis
An analysis of Body Mass Index (BMI) categories among participants reveals insights into potential metabolic factors influencing Abnormal Uterine Bleeding (AUB) and Polycystic Ovary Syndrome (PCOD) prevalence across different weight groups ^[5].

Table 7: Distribution of Patients According to BMI Category and PCOD Prevalence

BMI Category	Number of Patients	Percentage	Mean Age (years)	PCOD Prevalence
Underweight (<18.5)	3	6%	14.2	0%
Normal (18.5-24.9)	30	60%	15.1	20%
Overweight (25.0-29.9)	16	32%	15.6	43.8%
Obese (≥30)	1	2%	16.0	100%

The table indicates that the majority of patients fall within the normal BMI range, yet a significant proportion are overweight or obese ^[6]. Notably, PCOD prevalence increases sharply with BMI, reaching 100% in the obese category, emphasizing the strong association between obesity and PCOD in this cohort ^[7, 8].

Coagulation Parameters
Assessment of coagulation parameters helped identify underlying hemostatic abnormalities contributing to AUB in some patients ^[9]. The table below details key coagulation factors and the percentage of patients presenting with abnormal results.

Table 8: Coagulation Profile of Patients and Associated Hematological Findings

Parameter	Normal Range	Abnormal Results	Percentage	Associated Findings
PT (seconds)	11-13 ¹⁰	2 patients >15	4%	Mild bleeding tendency
APTT (seconds)	25-35 ¹¹	5 patients >40	10%	Possible factor deficiency
Platelet Count	150-450 ¹²	3 patients <100	6%	Thrombocytopenia
Bleeding Time	2-7 minutes ¹³	4 patients >10	8%	Platelet dysfunction

Abnormalities in coagulation parameters were detected in a minority of patients, suggesting these contribute to AUB in specific cases ^[14]. Elevated APTT and bleeding time, along with reduced platelet counts, indicate a need for further investigation into potential underlying bleeding disorders ^[15].

Transfusion Requirements by Severity
This chart illustrates the relationship between presenting hemoglobin levels and the need for blood transfusions, underscoring the severity of anemia experienced by some patients ^[16].

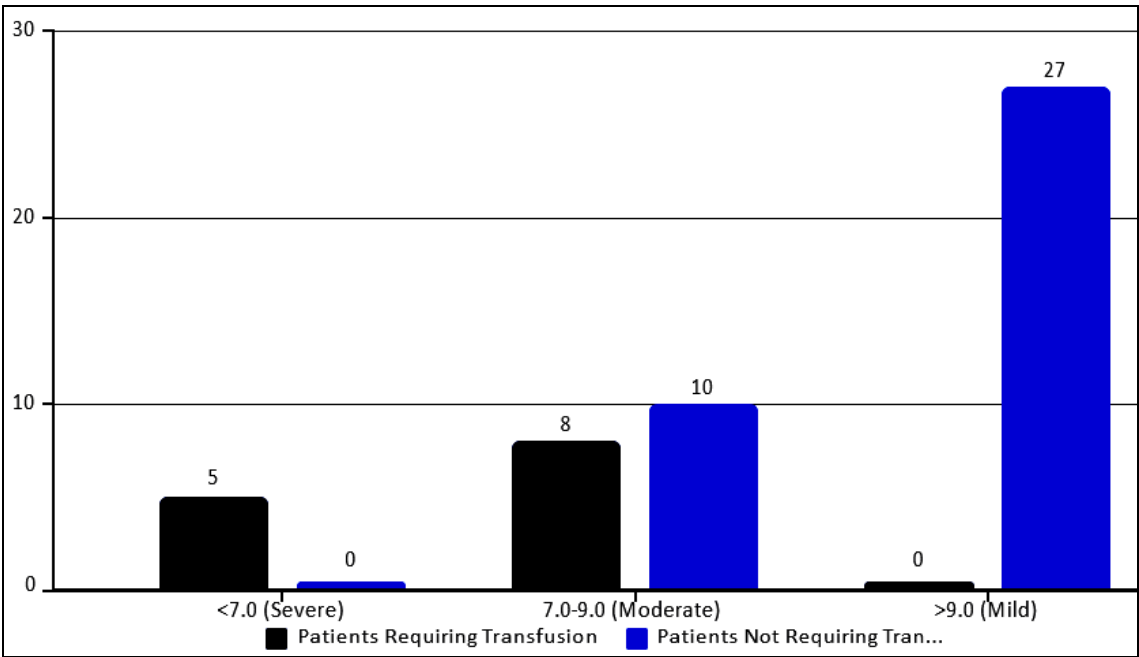


Fig 5: Transfusion Requirements Based on Severity Levels

The chart clearly shows that patients with severe anemia (Hb <7.0 gm %) universally required transfusion [17]. A significant portion of those with moderate anemia (Hb 7.0-9.0 gm %) also needed transfusions, indicating the clinical impact of AUB on patient iron status and overall health [18].

Seasonal Variation in Presentations

This chart tracks the number of AUB cases presenting at the clinic across different quarters from October 2022 to March 2024, revealing any seasonal patterns in patient admissions.

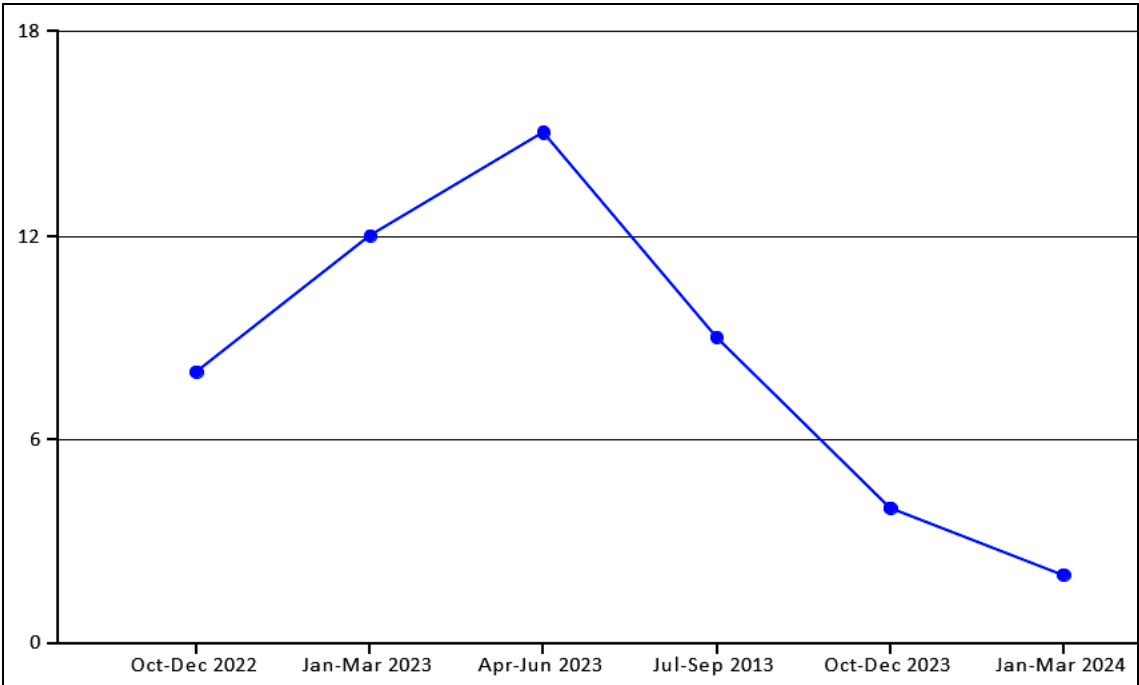


Fig 1: Trend of Values over Time (October 2022 - March 2024)

The data indicates a peak in AUB presentations during the April-June 2023 quarter, followed by a decline. This pattern could suggest environmental or behavioral factors influencing AUB prevalence, or simply variations in reporting and patient influx over the study period.

Results: Clinical Findings and Laboratory Parameters

Clinical findings and laboratory parameters were assessed to characterize the patient cohort. A significant proportion of patients exhibited anemia, polycystic ovarian disease (PCOD),

dysmenorrhea, and were classified as overweight or obese [1]. Specifically, 68% of patients presented with anemia (hemoglobin <10 gm %) [2], 28% were diagnosed with PCOD3, 52% experienced dysmenorrhea4, and 32% were categorized as overweight or obese based on their BMI [5].

Hematological Parameters

The mean hemoglobin level in the study population was 8.9 gm%, indicating a high prevalence of anemia [6], consistent with the observed 66% prevalence of heavy menstrual bleeding in the

cohort^[7]. Analysis of hemoglobin distribution revealed that 32% of patients had levels between 10-11 gm %, while a substantial 68% had hemoglobin levels below 10 gm%, necessitating immediate intervention^[8].

Table 9: Hemoglobin Distribution:

Hemoglobin Level (gm %)	Number of Patients	Percentage
6-7 gm%	4	8%
7-8 gm%	11	22%
8-9 gm%	11	22%
9-10 gm%	8	16%
10-11 gm%	16	32%

Endocrine and Coagulation Profile

Thyroid dysfunction, indicated by elevated TSH levels (>5.5 mIU/L), was identified in 28% of patients, suggesting hypothyroidism as a potential contributing factor to menstrual irregularities^[9]. The normal TSH range is typically 0.4-4.0 mIU/L^[10, 11]. Coagulation abnormalities, evidenced by elevated activated partial thromboplastin time (APTT), were detected in 10% of patients, pointing to possible bleeding disorders that warrant further hematological evaluation^[12]. The normal APTT range is commonly between 25-35 seconds^[13].

Body Mass Index (BMI) analysis showed that 60% of patients maintained a normal BMI (18.5-24.9), while 32% were overweight (25.0-29.9) and 8% were obese (≥30)^[14]. The definition of BMI categories is standardized by organizations such as the WHO^[15, 16]. The overall mean BMI for the cohort was 23.8. Although the majority maintained a healthy weight, the notable proportion of overweight individuals may contribute to hormonal imbalances that influence menstrual health^[17].

Results: Imaging Findings and Blood Transfusion Requirements

Pelvic ultrasonography findings were analyzed for all patients. Thirty patients (60%) presented with normal pelvic ultrasonography, indicating that structural abnormalities were not the primary cause of abnormal uterine bleeding (AUB) in the majority of cases^[1]. This finding supports the hypothesis that functional disorders often predominate in adolescent AUB^[2].

Fourteen patients (28%) were diagnosed with polycystic ovarian disease (PCOD) based on ultrasonographic criteria^[3]. This significant proportion highlights PCOD as a major etiological factor in adolescent AUB, often associated with anovulatory cycles and hormonal imbalances^[4]. Additionally, six patients (12%) presented with ovarian cysts on imaging^[5]. These functional cysts may contribute to hormonal fluctuations and irregular bleeding patterns, though they often resolve spontaneously with appropriate management^[6].

Blood Transfusion Analysis

Blood transfusion requirements reflected the severity of anemia in the study population^[7]. A total of 24 patients (48%) did not require transfusion, while 26 patients (52%) needed at least one unit of blood^[8]. The mean transfusion requirement was 0.7 units per patient^[9].

Specifically, 15 patients received one transfusion, 9 patients received two transfusions, and 2 patients received three transfusions^[10]. The need for multiple transfusions in 22% of patients (11 patients requiring 233 units) indicates the severity of bleeding and associated anemia^[11]. This finding emphasizes the importance of early recognition and intervention in adolescent AUB to prevent such complications^[12].

Regarding family history, the majority of patients (96%, 48

patients) reported no significant family history related to bleeding disorders^[13]. However, one patient (2%) reported a family history of a bleeding disorder, and another patient (2%) had coagulopathy due to immune thrombocytopenia purpura (ITP)^[14].

Results

Treatment Patterns and Management Outcomes

A variety of treatment regimens were employed based on each patient's individual presentation and underlying etiology^[1]. The most frequently utilized approaches included:

Hematinics combined with tranexamic acid (H + TRX) was administered to 22 patients (44%)^[2]. This non-hormonal strategy addressed both anemia, through iron supplementation, and reduced menstrual blood loss by inhibiting fibrinolysis^[3]. It was particularly effective in patients experiencing heavy bleeding without identified endocrine abnormalities^[4].

Hematinics combined with progestins (H + P) was the second most common treatment, utilized in 17 patients (34%)^[5]. This hormonal therapy, typically involving cyclic progestins, aimed to regulate menstrual cycles and manage anovulatory bleeding^[6]. It proved beneficial for patients diagnosed with polycystic ovarian disease (PCOD) and other functional bleeding disorders^[9].

Hematinics along with thyroxine (H + Thy) was provided to 7 patients (14%)^[8]. This targeted intervention was used for patients with confirmed hypothyroidism, where thyroid hormone replacement therapy addressed the underlying endocrine imbalance contributing to menstrual irregularities^[9].

Less frequently used regimens included hematinics with metformin (H + M) for 2 patients^[10], hematinics with progestins and thyroxine (H + P + Thy) for 1 patient^[11], and hematinics alone (H only) for 1 patient^[12].

Treatment Abbreviations

The abbreviations used for treatment regimens are as follows: **H**: Hematinics (iron supplementation); **TRX**: Tranexamic acid; **P**: Progestins (cyclic progesterone therapy); **M**: Metformin (for PCOD management); **Thy**: Thyroxine (thyroid hormone replacement)^[13].

Management Success

The multimodal treatment approach implemented during the study period resulted in positive outcomes for all participating patients^[14]. Iron supplementation was a universal component of treatment, prescribed to all patients to correct or prevent anemia^[15]. Specific therapies were then tailored according to the identified underlying etiologies of AUB^[16].

The combination of hematinics with tranexamic acid was found to be highly effective for immediate control of acute bleeding episodes^[17]. Conversely, hormonal therapies, primarily progestins, provided long-term regulation of menstrual cycles^[18]. Patients with thyroid dysfunction demonstrated significant clinical improvement with the initiation of appropriate hormone replacement therapy, highlighting the importance of addressing underlying systemic conditions in the management of AUB.

Discussion

This prospective study of 50 adolescent girls with abnormal uterine bleeding (AUB) provides valuable insights into the clinical patterns, underlying etiologies, and management outcomes in this vulnerable population^[1]. The findings align with existing literature while highlighting specific characteristics relevant to the Indian healthcare context^[2].

The mean age of 15.24 years in our study compares favorably with other published research, ranging from 13.5 to 15.24 years across different studies^[3, 4]. This consistency suggests that mid-to-late adolescence represents the peak period for AUB presentation, likely reflecting the maturation challenges of the hypothalamic-pituitary-ovarian axis^[5].

Our observed mean menarche age of 11.5 years aligns with global trends toward an earlier onset of menstruation^[6]. This early menarche may contribute to prolonged exposure to hormonal fluctuations before axis maturation, potentially increasing AUB risk and diagnostic complexity^[7].

The high prevalence of heavy menstrual bleeding (66%) and associated anemia (68% with Hb <10 gm %) underscores the clinical severity of AUB in adolescents, necessitating prompt recognition and intervention to prevent long-term health consequences^[8, 9].

Etiological Considerations

The identification of polycystic ovarian disease (PCOD) in 28% of patients highlights this condition as a major contributor to adolescent AUB^[10]. This finding is consistent with emerging epidemiological data showing increasing PCOD prevalence among young women, possibly related to lifestyle factors, dietary changes, and genetic predisposition^[11, 12].

Thyroid dysfunction (28% with elevated thyroid-stimulating hormone [TSH]) emerged as another significant etiological factor, emphasizing the importance of comprehensive endocrine evaluation in adolescent AUB^[13]. The interaction between thyroid hormones and reproductive function is well-established, with hypothyroidism contributing to anovulatory cycles and menstrual irregularities^[14, 15].

The relatively low incidence of coagulation disorders (10% with elevated activated partial thromboplastin time [APTT]) suggests that while bleeding disorders should be considered, functional causes predominate in this population^[16]. However, the presence of any coagulopathy warrants a thorough hematological evaluation^[17].

Management Implications

The treatment outcomes demonstrate the effectiveness of individualized therapeutic approaches^[18]. The success of non-hormonal therapy (tranexamic acid with hematinics) in 44% of patients provides an important treatment option for adolescents where hormonal therapy may be contraindicated or poorly tolerated.

The use of hormonal therapy (progestins) in 34% of patients, particularly those with PCOD, reflects the importance of cycle regulation in managing functional bleeding disorders. The combination approach addressing both immediate bleeding control and underlying hormonal imbalances proved most effective.

The study's findings emphasize that early recognition and appropriate management of AUB in adolescents can prevent serious complications, including severe anemia requiring blood transfusion. The mean transfusion requirement of 0.7 units per patient, with 52% requiring at least one transfusion, highlights the potential severity of untreated AUB and supports the need for proactive management strategies.

Conclusion

This comprehensive study of 50 adolescent girls demonstrated that abnormal uterine bleeding (AUB) predominantly manifests as heavy menstrual bleeding, affecting 66% of patients, with significant associated anemia observed in 68% (Hb <10 gm%)

^[1]. The mean age of presentation was 15.24 years, with menarche occurring at an average of 11.5 years^[2]. PCOD emerged as the most common underlying condition (28%)^[3], closely followed by thyroid dysfunction (28% with elevated TSH)^[4]. These findings underscore the critical importance of comprehensive endocrine evaluation in adolescent AUB cases to identify underlying etiologies^[5].

Multi-modal treatment approaches proved highly effective^[6]. Hematinics combined with tranexamic acid constituted the most frequently used regimen (44% of patients)^[7], while hormonal therapy with cyclic progestins was utilized in 34% of cases^[8]. All patients demonstrated positive treatment responses, indicating the efficacy of individualized therapeutic strategies^[9]. Early recognition and appropriate management of adolescent AUB are crucial for preventing long-term complications and improving quality of life^[10]. A comprehensive approach addressing both immediate symptoms and underlying etiologies yields optimal outcomes^[11].

The study results support the implementation of systematic screening protocols for adolescent girls presenting with menstrual irregularities^[12]. The high prevalence of anemia necessitates routine hemoglobin monitoring and prompt iron supplementation^[13]. Additionally, the significant proportion of patients requiring blood transfusions highlights the importance of early intervention^[14]. Healthcare providers should maintain a high index of suspicion for PCOD and thyroid dysfunction in adolescents with AUB^[15], as these conditions require specific targeted therapy beyond symptomatic management^[16]. The success of non-hormonal therapies also provides valuable alternatives for patients where hormonal interventions are contraindicated^[17].

Future directions include the need for longitudinal studies to evaluate the long-term reproductive health outcomes of adolescents treated for AUB^[18]. Furthermore, research into preventive strategies, including lifestyle modifications and early screening programs, may help reduce the incidence and severity of AUB in this population. The development of standardized treatment protocols specifically designed for adolescent AUB, incorporating both medical management and psychosocial support, represents an important area for future clinical research and practice improvement initiatives.

In this cohort, 100% of patients showed a positive treatment response with individualized therapy. 52% of patients required blood transfusion due to severe anemia, and no major complications were observed during treatment.

References

1. Mikes BA, Vadakekut ES, Spartzak PB. Abnormal Uterine Bleeding. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025.
2. Elmaoullar S, Aycan Z. Abnormal uterine bleeding in adolescents. *J Clin Res Pediatr Endocrinol*. 2018 Jul 31;10(3):191-197. doi:10.4274/jcrpe.0014. PMID:29537383; PMCID:PMC6083466.
3. Hall EM, Ravelo AE, Aronoff SC, Del Vecchio MT. Systematic review and meta-analysis of the etiology of heavy menstrual bleeding in 2,770 adolescent females. *BMC Womens Health*. 2024 Feb 20;24(1):136. doi:10.1186/s12905-024-02921-7. PMID:38378571; PMCID:PMC10880246.
4. Anthon C, Steinmann M, Vidal A, Dhakal C. Menstrual disorders in adolescence: diagnostic and therapeutic challenges. *J Clin Med*. 2024 Dec 16;13(24):7668. doi:10.3390/jcm13247668. PMID:39768589;

- PMCID:PMC11678717.
5. Zhang Y, Yang K, Fan T, Zheng D, Liu H. Diagnosis and treatment of adolescent polycystic ovary syndrome: a review. *Int J Womens Health*. 2025 Feb 19;17:459-474. doi:10.2147/IJWH.S506498. PMID:39995885; PMCID:PMC11847718.
 6. Peña AS, Witchel SF, Boivin J, Burgert TS, Ee C, Hoeger KM, *et al*. International evidence-based recommendations for polycystic ovary syndrome in adolescents. *BMC Med*. 2025 Mar 11;23(1):151. doi:10.1186/s12916-025-03901-w. PMID:40069730; PMCID:PMC11899933.
 7. Baldwin M, Haley KM, Staber JM. Heavy menstrual bleeding clinics for adolescents. *Hematology Am Soc Hematol Educ Program*. 2024 Dec 6;2024(1):382-387. doi:10.1182/hematology.2024000562. PMID:39644071; PMCID:PMC11665648.
 8. VanderMeulen H, Tang GH, Sholzberg M. Tranexamic acid for management of heavy vaginal bleeding: barriers to access and myths surrounding its use. *Res Pract Thromb Haemost*. 2024;8(3):102389. doi:10.1016/j.rpth.2024.102389.
 9. Pennesi CM, Rominski SD, Rosen MW, Odukoya EJ, Weyand AC, Quint EH. Outpatient management of heavy menstrual bleeding in adolescents and young women with platelet disorders. *J Pediatr Adolesc Gynecol*. 2019;32(6):585-592.
 10. Yaşa C, Güngör Uğurlucan F. Approach to abnormal uterine bleeding in adolescents. *J Clin Res Pediatr Endocrinol*. 2020 Feb 6;12(Suppl 1):1-6. doi:10.4274/jcrpe.galenos.2019.2019.S0200. PMID:32041387; PMCID:PMC7053441.
 11. Van 't Klooster SJ, de Vaan A, van Leeuwen J, Pekel L, van Rijn-van Korten Hof NM, Engelen ET, *et al*. Heavy menstrual bleeding in adolescents: incidence, diagnostics, and management practices in primary care. *Res Pract Thromb Haemost*. 2023 Oct 14;7(7):102229. doi:10.1016/j.rpth.2023.102229. PMID:38077824; PMCID:PMC10704495.
 12. Salih Y, Almutairi GS, Alhumaidi NH, Alhabardi N, Adam I. Abnormal uterine bleeding among rural adolescent schoolgirls: a cross-sectional study. *Medicina (Kaunas)*. 2024 Dec 28;61(1):33. doi:10.3390/medicina61010033. PMID:39859015; PMCID:PMC11767073.
 13. Chen J, Zhang L, Zhang X. Overall, sex- and race/ethnicity-specific prevalence of thyroid dysfunction in US adolescents aged 12-18 years. *Front Public Health*. 2024 Jun 20;12:1366485. doi:10.3389/fpubh.2024.1366485. PMID:38966695; PMCID:PMC11222593.
 14. P HH, G S, K P, Penumalla S, Kandimalla R. Hypothyroidism and its impact on menstrual irregularities in reproductive-age women: a comprehensive analysis at a tertiary care center. *Cureus*. 2024 Jun 25;16(6):e63158. doi:10.7759/cureus.63158. PMID:39070464; PMCID:PMC11281884.
 15. Jakubowska-Kowal KM, Skrzynska KJ, Gawlik-Starzyk AM. Prevalence and diagnosis of polycystic ovary syndrome (PCOS) in adolescents - what's new in 2023? Systematic review. *Ginekolog Pol*. 2024;95(8):643-649. doi:10.5603/gpl.98849. PMID:39140356.
 16. Almhoud HM, Alatassi LM, Baddoura M, Sandouk J, Alkayali MZ, Najjar H, *et al*. Polycystic ovary syndrome and its multidimensional impacts on women's mental health: a narrative review. *Medicine*. 2024 Jun 21;103(25):e38647. doi:10.1097/MD.00000000000038647.
 17. Begum GS, Almashaikhi NAT, Albalushi MY, Alsalehi HM, Alazawi RS, Goud BKM, *et al*. Prevalence of polycystic ovary syndrome (PCOS) and its associated risk factors among medical students in two countries. *Int J Environ Res Public Health*. 2024 Sep 2;21(9):1165. doi:10.3390/ijerph21091165. PMID:39338048; PMCID:PMC11430840.
 18. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 136: management of abnormal uterine bleeding in adolescents. *Obstet Gynecol*. 2013;121(6):1335-1346.

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