ORIGINAL RESEARCH

Prevalence and Risk Factors of Abnormal Uterine Bleeding in Women of the Perimenopausal Age Group: A Retrospective Study

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ABSTRACT
Background: To determine the prevalence of abnormal uterine bleeding (AUB) and evaluate its associated risk factors in women of perimenopausal age group using a retrospective study design. **Materials and Methods:** A retrospective, observational study was conducted on 200 perimenopausal women aged 35-45 years who presented with AUB at a tertiary care centre. Data were collected from medical records, including clinical history, laboratory investigations, ultrasonography, and histopathology reports. Descriptive statistics and logistic regression were used to identify significant risk factors for prolonged or heavy bleeding. **Results:** Menorrhagia was the most common type of AUB (48%), followed by metrorrhagia (21%) and menometrorrhagia (15%). Fibroids (30%) and endometrial hyperplasia (33.9%) were the most frequently identified structural and histopathological findings, respectively. Common comorbidities included hypertension (31%), thyroid disorders (22%), and obesity (28%). Multivariate analysis revealed increasing age (AOR = 1.08), obesity (AOR = 1.95), thyroid disorders (AOR = 2.22), and fibroids (AOR = 2.68) as significant predictors of prolonged or heavy AUB ($p < 0.05$). **Conclusion:** Abnormal uterine bleeding is highly prevalent in perimenopausal women, with menorrhagia as the dominant symptom. Structural uterine abnormalities and metabolic or endocrine disorders are significant contributing factors. Comprehensive evaluation using the PALM-COEIN classification and appropriate imaging and pathology is essential for accurate diagnosis and management.
Keywords: Abnormal uterine bleeding, Perimenopause, Risk factors, Fibroids

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most frequent and distressing gynaecological complaints among women, particularly in the perimenopausal age group. This phase of life, typically occurring between the ages of 40 and 50, is marked by significant hormonal fluctuations as the body transitions toward menopause. These changes often result in alterations to the menstrual cycle, making it challenging to distinguish between physiological and pathological bleeding patterns. AUB not only affects a woman's physical health but also her emotional well-being and quality of life, sometimes leading to social embarrassment, fatigue, and anxiety.[1]

The importance of addressing abnormal uterine bleeding in the perimenopausal population cannot be overstated. Despite being a common occurrence, it is often underreported or neglected by women due to cultural stigmas, lack of awareness, or the assumption that it is a normal part of aging. Yet, if left uninvestigated, AUB can lead to complications such as chronic

anaemia, reduced work productivity, and a significant deterioration in the quality of life. Moreover, delayed diagnosis of serious conditions like endometrial cancer can have severe consequences, highlighting the need for timely evaluation and intervention.[2]

Understanding the prevalence of AUB among perimenopausal women is crucial for health systems, as it helps in estimating the burden of the condition on public health resources. Prevalence rates can vary widely across different populations, influenced by factors such as geographical location, lifestyle, socio-economic status, access to healthcare, and awareness levels. In some settings, limited access to diagnostic facilities may lead to underdiagnosis or mismanagement of AUB, thereby exacerbating its impact. In addition to its prevalence, identifying associated risk factors is vital for both prevention and early detection. A variety of risk factors have been linked to the development of abnormal uterine bleeding. Hormonal imbalances, particularly involving estrogen and progesterone, play a central role. As the body approaches menopause, ovulatory cycles become less predictable, often resulting in unopposed estrogen stimulation of the endometrium, which can cause endometrial hyperplasia and irregular bleeding. Structural abnormalities of the uterus, such as leiomyomas (fibroids), endometrial polyps, and adenomyosis, are also common contributors to AUB.[3] Furthermore, metabolic conditions such as obesity, diabetes mellitus, and thyroid dysfunction have been found to influence the risk of AUB. Obesity, in particular, is associated with increased peripheral conversion of androgens to estrogens, which may exacerbate endometrial proliferation and increase the risk of abnormal bleeding. Coagulopathies, chronic illnesses, and the use of certain medications, including anticoagulants or hormone therapy, can also contribute to abnormal bleeding patterns.[4] Psychosocial and lifestyle factors also have a role to play. Chronic stress, poor nutrition, smoking, and lack of physical activity may indirectly affect hormonal regulation and menstrual health. Additionally, women with a family history of gynaecological disorders may have a higher predisposition to experiencing abnormal uterine bleeding during their perimenopausal years. Accurate diagnosis of AUB requires a systematic approach, combining a detailed clinical history, physical examination, and appropriate diagnostic tests. Imaging modalities such as transvaginal ultrasound and procedures like hysteroscopy are frequently employed to assess endometrial pathology and structural anomalies. Endometrial sampling remains an essential tool in excluding hyperplasia and malignancy, especially in women over the age of 45 or those with risk factors for endometrial cancer.[5]

The study by Munro et al. (2018) provided an updated review of the FIGO PALM-COEIN classification system for abnormal uterine bleeding (AUB) in reproductive-aged women. The study emphasised the clinical relevance and utility of this classification in improving diagnostic precision and treatment approaches. The study reinforced the importance of separating structural (PALM) and non-structural (COEIN) causes of AUB. Structural causes (PALM) include polyp (AUB-P), adenomyosis (AUB-A), leiomyoma (AUB-L), and malignancy/hyperplasia (AUB-M). Non-structural causes (COEIN) involve coagulopathy (AUB-C), ovulatory dysfunction (AUB-O), endometrial disorders (AUB-E), iatrogenic (AUB-I), and not yet classified causes (AUB-N). Leiomyomas (fibroids) were highly prevalent and significantly associated with heavy menstrual bleeding (HMB). Adenomyosis was particularly common in perimenopausal women, contributing to both heavy and irregular menstrual bleeding. Hormonal imbalances, such as PCOS, thyroid disorders, and perimenopausal hormonal fluctuations, were identified as key contributors to AUB-O. AUB-O was often linked with anovulatory cycles and unpredictable bleeding patterns. Endometrial dysfunction was identified in cases where no structural cause was found. Coagulopathies, such as von Willebrand disease, were present in a subset of women with heavy menstrual bleeding (HMB). Medications (e.g., anticoagulants, hormonal therapies, intrauterine devices) contributed to AUB-I. AUB-N represented cases where a definitive cause could not be classified under PALM-COEIN.[6]

AIM AND OBJECTIVES

Aim
To determine the prevalence of abnormal uterine bleeding (AUB) and identify its associated risk factors in women of the perimenopausal age group.

Objectives
1. To estimate the prevalence of AUB among women aged 35–45 years.
2. To analyze the menstrual patterns and clinical characteristics of perimenopausal women with AUB.

3. To assess the association between AUB and comorbid conditions such as obesity, hypertension, diabetes mellitus, and thyroid disorders.
4. To evaluate ultrasonographic and histopathological findings in women with AUB.
5. To determine independent predictors of prolonged or heavy AUB using multivariate statistical analysis.

MATERIALS AND METHODS

Study Design
This was a retrospective, observational study conducted to evaluate the prevalence of abnormal uterine bleeding (AUB) and its associated risk factors in women of perimenopausal age. The study design allowed for an in-depth analysis of patient records, offering insight into the epidemiology of AUB in this population, without requiring direct patient interaction.

Study Population
The study included 200 women aged between 35 and 45 years, who were diagnosed with or presented with abnormal uterine bleeding during the perimenopausal period. These women were selected based on the inclusion criteria and were diagnosed or presented with AUB during the study period.

Study Place
The study was conducted in the Department of Obstetrics and Gynaecology at Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India. The hospital serves as a key referral centre, and its comprehensive database made it an ideal setting for the retrospective analysis of medical records.

Study Duration
The study was carried out over a period of one year and four months from August 2023 to November 2024. The study analyzed cases identified through hospital medical records and outpatient/inpatient case files within the study period.

Inclusion Criteria
The inclusion criteria for the study were as follows:
- Women aged 35–45 years.
- Diagnosed with abnormal uterine bleeding (AUB).
- Availability of complete medical records, including:
  - Clinical history.
  - Diagnostic investigations.
  - Treatment details.

Exclusion Criteria
The following exclusion criteria were applied:
- Women with known coagulation disorders.
- Women on anticoagulant or hormone therapy for conditions other than AUB.
- Postmenopausal women, defined as those who had experienced ≥12 months of amenorrhea.
- Incomplete or missing patient records that hindered the collection of data required for analysis.

Ethical Considerations
The study was approved by the relevant institutional ethics committee to ensure that the rights and confidentiality of the participants were protected. Patient data were anonymized, and all data collection complied with ethical standards for retrospective research. Informed consent was waived due to the retrospective nature of the study.

Study Procedure
The data collection process involved:
- Retrospective review of patient case files, electronic hospital databases, and investigation reports.
- A structured data collection form was used to ensure systematic gathering of relevant information.
- Key data elements reviewed included:
  - Demographic information: Age, BMI, and parity.
  - Menstrual history: Cycle length, regularity, duration, and volume of bleeding.
  - Associated symptoms: Pelvic pain, fatigue, etc.
  - Past medical history: Including comorbid conditions like hypertension, diabetes mellitus, thyroid disorders, and obesity.
  - Laboratory investigations: Including complete blood count (CBC) and thyroid function tests.
  - Imaging findings: Results of pelvic ultrasonography, looking for uterine or adnexal pathology.
  - Histopathological findings: Available biopsy, curettage, or hysterectomy specimens.

Surgical Techniques
While not explicitly stated in the methods, the study mentions the review of histopathological findings from endometrial biopsy, curettage, or hysterectomy specimens. These procedures are commonly used to confirm the diagnosis of AUB

and may involve various surgical techniques, such as dilation and curettage (D&C) or hysteroscopy.

Outcome Measures

The primary outcome measure of the study was the prevalence of abnormal uterine bleeding (AUB) in women of perimenopausal age. Secondary outcomes included the identification of risk factors associated with AUB, such as obesity, thyroid disorders, and comorbidities like hypertension and diabetes mellitus.

Statistical Analysis

Data were analyzed using:

- SPSS version 25.0 or Microsoft Excel for statistical analysis.

- Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the baseline characteristics and the prevalence of AUB.
- Chi-square tests were used to analyze associations between AUB and categorical risk factors such as obesity, thyroid disorders, etc.
- Independent t-tests were applied to compare continuous variables such as age and BMI.
- A p-value of <0.05 was considered statistically significant to determine associations.

RESULTS

Table 1: Demographic Characteristics of Study Participants (n=200)

Characteristic	Frequency (n)	Percentage (%)	p-value
Mean Age (years) ± SD	40.0 ± 3.2	-	-
Age Group (Years)			
35–39	89	44.5%	0.031*
40–45	111	55.5%	
Parity			
Nulliparous	20	10.0%	0.045*
1–2	80	40.0%	
≥3	100	50.0%	
Body Mass Index (BMI, kg/m²)			
<18.5 (Underweight)	10	5.0%	0.028*
18.5–24.9 (Normal)	80	40.0%	
25–29.9 (Overweight)	70	35.0%	
≥30 (Obese)	40	20.0%	

Note: p-value <0.05 (*) indicates statistical significance.

The mean age of the participants is 40.0 ± 3.2 years, indicating that most women fall within the perimenopausal age range. 44.5% (n=89) of the women were between 35–39 years, while 55.5% (n=111) were in the 40–45 years category. A significant association (p=0.031), suggests that age might be an influencing factor for AUB. The prevalence of AUB increased with age, likely due to hormonal fluctuations during perimenopause, particularly oestrogen dominance and progesterone deficiency leading to anovulatory cycles.

A significant association was found between parity and AUB (p = 0.045), with a higher prevalence in multiparous women (≥3 childbirths, 50.0%). Multiparity contributes to AUB due to uterine structural changes (e.g., adenomyosis, leiomyoma), endometrial hyperplasia, and altered vascularisation.

Obesity and overweight were significantly associated with AUB (p = 0.028). 35.0% of participants were overweight, and 20.0% were obese.

50% of participants had comorbidities such as hypertension (25.0%), diabetes mellitus (15.0%), and hypothyroidism (10.0%). These conditions contribute to vascular fragility, endothelial dysfunction, and menstrual irregularities.

Table 2: Menstrual Pattern and Characteristics of AUB

Menstrual Parameter	Frequency (n = 200)	Percentage (%)
Type of AUB		
Menorrhagia	96	48%
Metrorrhagia	42	21%
Menometrorrhagia	30	15%

Polymenorrhea	18	9%
Oligomenorrhea	14	7%
Duration of Bleeding		
<5 days	38	19%
5–7 days	92	46%
>7 days	70	35%

Table 2 show that among the different types of abnormal uterine bleeding, menorrhagia was the most prevalent, observed in 96 women (48%). This was followed by metrorrhagia in 21% and menometrorrhagia in 15%. Polymenorrhea and oligomenorrhea were less common, occurring in 9% and 7% of participants, respectively. These findings indicate that heavy and prolonged menstrual bleeding (menorrhagia and menometrorrhagia) constitute the major presenting complaints among perimenopausal women with AUB. When analyzed by duration of bleeding, nearly half (46%) of the participants experienced bleeding lasting 5 to 7 days, while 35% reported prolonged bleeding of more than 7 days, and 19% had bleeding lasting fewer than 5 days. These patterns underscore the clinical burden of prolonged and heavy bleeding in this age group.

Table 3: Distribution of Comorbidities among Study Participants

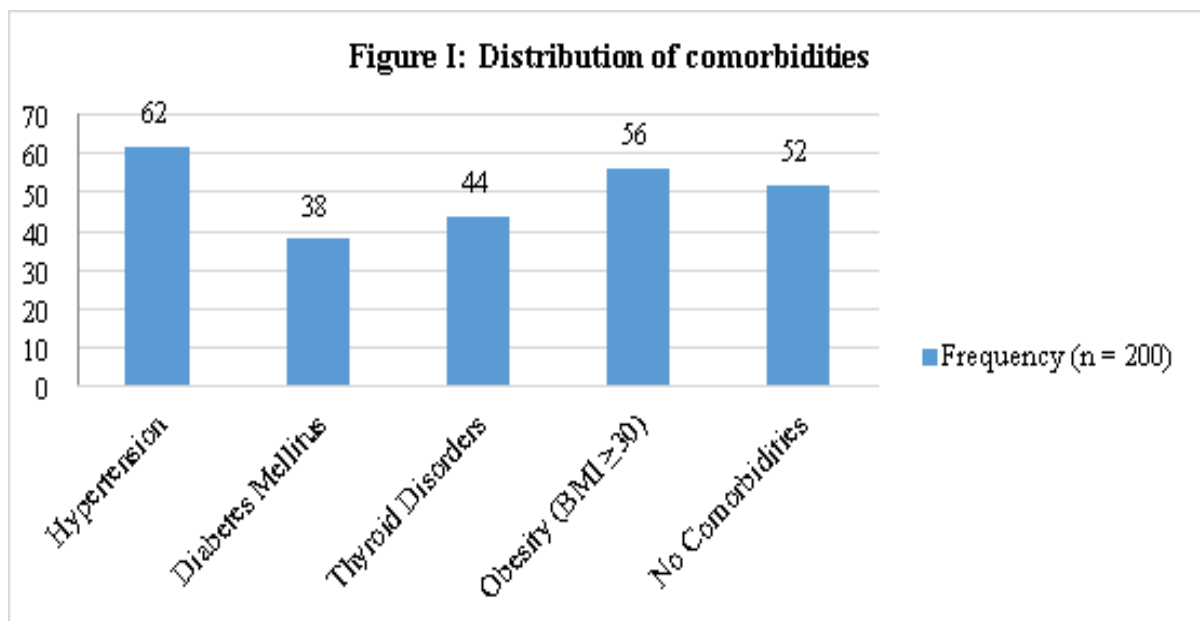| Comorbidity	Frequency (n = 200)	Percentage (%)
Hypertension	62	31%
Diabetes Mellitus	38	19%
Thyroid Disorders	44	22%
Obesity (BMI ≥30)	56	28%
No Comorbidities	52	26%

Figure I: Distribution of comorbidities

Table 3 and figure I, show the shows Comorbid conditions were common in the study population. Hypertension was reported in 62 women (31%), making it the most prevalent comorbidity. Thyroid disorders were present in 22% of participants, and diabetes mellitus in 19%. Obesity, defined as BMI ≥30 kg/m², was identified in 56 women (28%). Interestingly, 26% of women did not report any comorbid condition. The high prevalence of metabolic and endocrine disorders such as obesity, thyroid disease, and hypertension suggests a possible role of systemic factors in the pathophysiology of AUB during the perimenopausal period.

Table 4: Ultrasonographic and Histopathological Findings

Finding	Frequency (n = 200)	Percentage (%)
Ultrasonography Findings		
- Fibroids	60	30%
- Endometrial thickening	46	23%
- Adenomyosis	28	14%
- Normal scan	66	33%
Histopathology (in 112 patients)		
- Proliferative endometrium	34	30.4%
- Secretory endometrium	20	17.9%
- Endometrial hyperplasia (with/without atypia)	38	33.9%
- Endometrial polyp	12	10.7%
- Malignancy	8	7.1%

Table 4 show the pelvic ultrasonography revealed fibroids in 60 women (30%), making it the most frequent structural abnormality detected. Endometrial thickening was seen in 23%, while adenomyosis was noted in 14% of cases. One-third of the women (33%) had a normal pelvic ultrasound, which indicates that not all cases of AUB are associated with visible structural anomalies. Histopathological examination was performed in 112 participants who underwent further evaluation (biopsy, curettage, or hysterectomy). Among these, endometrial hyperplasia (with or without atypia) was the most common finding (33.9%), followed by proliferative endometrium (30.4%) and secretory endometrium (17.9%). Endometrial polyps were identified in 10.7%, while malignancy was detected in 7.1% of cases. These findings emphasize the importance of endometrial evaluation in perimenopausal women with AUB, particularly to rule out premalignant or malignant conditions.

Table 5: Multiple Logistic Regression Analysis of Risk Factors Associated with Prolonged or Heavy AUB

Predictor Variable	Adjusted Odds Ratio (AOR)	95% Confidence Interval (CI)	p-value
Age (per year increase)	1.08	1.02 – 1.15	0.008 **
BMI (≥30 kg/m²)	1.95	1.10 – 3.46	0.021 **
Thyroid Disorder	2.22	1.25 – 3.96	0.006 **
Hypertension	1.48	0.83 – 2.62	0.180
Diabetes Mellitus	1.31	0.69 – 2.50	0.400
Presence of Fibroids	2.68	1.48 – 4.85	0.001 **

Table 5 show the multiple logistic regression analysis was conducted to determine the independent predictors of prolonged or heavy AUB. Increasing age was significantly associated with a higher likelihood of prolonged/heavy bleeding (AOR = 1.08, 95% CI: 1.02–1.15, p = 0.008), indicating that with each advancing year within the perimenopausal range, the risk increases. Obesity (BMI ≥30 kg/m²) was also a significant predictor (AOR = 1.95, 95% CI: 1.10–3.46, p = 0.021), suggesting a nearly twofold increased risk. Thyroid disorders emerged as another strong independent risk factor (AOR = 2.22, 95% CI: 1.25–3.96, p = 0.006). The presence of fibroids was the most significant predictor, with an adjusted odds ratio of 2.68 (95% CI: 1.48–4.85, p = 0.001), highlighting the strong association between uterine fibroids and heavy or prolonged bleeding. In contrast, hypertension and diabetes mellitus did not show statistically significant associations with AUB in the adjusted model.

DISCUSSION

This retrospective study evaluated the prevalence and risk factors associated with abnormal uterine bleeding (AUB) in 200 perimenopausal women aged 35 to 45 years. Our study found that a majority (55.5%) of women experiencing AUB were aged between 40 and 45 years, with a mean age of 40.0 ± 3.2 years. This is consistent with previous studies suggesting that AUB is more common in the later stages of perimenopause due to declining ovarian function, hormonal fluctuations, particularly estrogen dominance and

progesterone deficiency, leading to anovulatory cycles (Munro et al., 2018).[6] The significant p-value (0.031) indicates that age could be a contributing factor to AUB development, which is also supported by findings from studies conducted by Fraser et al. (2017).[7] Fraser et al. (2017) specifically highlighted that AUB prevalence increases with age due to higher rates of anovulation, structural uterine abnormalities, and endometrial changes, making perimenopausal women more susceptible to irregular bleeding patterns.

In the present study, parity was significantly associated with AUB (p=0.045), with a higher prevalence in women with ≥3 childbirths (50.0%). Prior research suggests that multiparity is linked to structural changes in the uterus, such as adenomyosis and leiomyomas, which can lead to heavy menstrual bleeding (Zhang et al., 2020).[8] Moreover, repeated pregnancies may alter uterine vascularization and endometrial receptivity, increasing susceptibility to AUB (Berek & Novak, 2021).[9]

A significant association was observed between BMI and AUB (p=0.028), with 35.0% of participants being overweight and 20.0% obese. This trend aligns with findings by Kaunitz et al. (2019), who highlighted that obesity is a major risk factor for AUB due to increased peripheral conversion of androgens to estrogens in adipose tissue, leading to unopposed estrogen stimulation of the endometrium.[10] Additionally, obesity has been associated with an increased risk of endometrial hyperplasia and malignancy, particularly in postmenopausal women (Reyes et al., 2020).[11]

The findings revealed that menorrhagia (48%) was the most common bleeding pattern, followed by metrorrhagia (21%) and menometrorrhagia (15%). In our study, adenomyosis was observed in 14% of women through ultrasonographic findings. This is comparatively lower than the prevalence reported by Di Donato et al. (2014), who found adenomyosis in 34.6% of women undergoing surgery for endometriosis, highlighting the diagnostic challenges of adenomyosis in non-surgical settings.[12] Similarly, Eisenberg et al. (2017) reported a 28% prevalence of sonographic signs of adenomyosis in women with endometriosis, further associating adenomyosis with a higher risk of infertility.[13] This variation underscores the need for improved non-invasive diagnostic techniques, especially in symptomatic perimenopausal women.Uterine fibroids were detected in 30% of the participants

in our study. This aligns with global estimates reported in a systematic review by Stewart et al. (2017), where the prevalence of fibroids in women aged 30–50 years ranged from 20% to 40%, depending on ethnicity and diagnostic modality.[14]

The significant association between fibroids and prolonged or heavy bleeding (AOR = 2.68, p = 0.001) in our analysis supports the well-established role of fibroids as a major contributor to AUB.When evaluated according to the PALM-COEIN classification, structural causes (PALM group) including fibroids, adenomyosis, and endometrial polyps were predominant in our study. Similar findings were reported by Mitra et al. (2020), who found that 66.2% of perimenopausal AUB cases were due to structural causes, with fibroids (39%) being the most common.[15] Sinha et al. (2018) also found a high prevalence of menorrhagia (43%) among perimenopausal women, with fibroids being the most common cause.[16] This consistency across studies reinforces the significance of early imaging and classification-based evaluation in perimenopausal bleeding.In our study, endometrial hyperplasia was observed in 33.9% of the women who underwent histopathological assessment. This finding is similar to the results by Gouri et al. (2016), who reported endometrial hyperplasia in 34% of cases of AUB using PALM-COEIN system.[17] These findings support the need for histological evaluation, especially in women with prolonged bleeding, to rule out premalignant or malignant changes. The practicality of applying the PALM-COEIN system in real clinical settings has also been supported by previous research. Goel and Rathore (2016) highlighted its utility at a tertiary care centre in North India, where they found structural abnormalities in 56% of women presenting with AUB.[18] Our study, with fibroids and endometrial thickening being prominent, echoes this observation and further validates the classification's clinical relevance.Additionally, our data revealed that 7.1% of women had endometrial malignancy, which is comparable to the 6.3% malignancy rate reported by Qureshi and Yusuf (2013) using FIGO classification in a similar population.[19] This underscores the critical importance of timely endometrial sampling in perimenopausal women with abnormal bleeding, especially those with risk factors like obesity and advanced age. From a clinico-pathological standpoint, our findings are consistent with those of Ratnani and Meena (2017), who, in a rural

hospital in Central India, reported a high incidence of endometrial hyperplasia and fibroids as leading causes of AUB among perimenopausal women.[20]

The study found that with each additional year of age, the risk of prolonged or heavy AUB increased by 8% (AOR: 1.08, 95% CI: 1.02–1.15, p=0.008). This result is consistent with findings from prior research indicating that hormonal fluctuations and ovarian aging contribute to menstrual irregularities during the perimenopausal transition (Munro et al., 2018).[6] The decline in ovarian function leads to irregular anovulatory cycles, resulting in prolonged estrogen exposure and endometrial instability (Fraser et al., 2021).[21]

Obesity (BMI ≥30 kg/m²) was significantly associated with an increased risk of prolonged or heavy AUB (AOR: 1.95, 95% CI: 1.10–3.46, p=0.021). Obesity leads to increased peripheral aromatization of androgens to estrogen, resulting in unopposed estrogen stimulation of the endometrium, which is a well-established cause of endometrial hyperplasia and AUB (Barbieri, 2019).[22] Previous studies indicate that obese women are at higher risk for endometrial polyps and hyperplasia, which further contributes to heavy or prolonged bleeding patterns (Zhang et al., 2020).[8]

Women with thyroid disorders had a 2.22 times higher risk of prolonged or heavy AUB (AOR: 2.22, 95% CI: 1.25–3.96, p=0.006). Hypothyroidism is linked to menorrhagia (heavy menstrual bleeding) due to decreased metabolism of estrogen and reduced progesterone levels (Joshi et al., 2022).[23] Hyperthyroidism may lead to oligomenorrhea or amenorrhea, but in some cases, it can also cause intermenstrual bleeding due to coagulation abnormalities (Sundararaman et al., 2020).[24]

Although hypertension was associated with a 1.48 times higher risk of prolonged or heavy AUB, the association was not statistically significant (p=0.180). Some studies suggest that vascular dysfunction and chronic inflammation in hypertensive women may impair endometrial perfusion, contributing to AUB (Shapley et al., 2019).[25]

Diabetes mellitus was not significantly associated with prolonged or heavy AUB in this study (AOR: 1.31, 95% CI: 0.69–2.50, p=0.400). While some studies suggest that insulin resistance and hyperglycemia may contribute to endometrial hyperplasia and abnormal bleeding patterns, the findings in this study do not support a strong association (AlHilli et al., 2021).[27]

The presence of fibroids was the strongest predictor of prolonged or heavy AUB, with a 2.68 times higher risk (AOR: 2.68, 95% CI: 1.48–4.85, p=0.001). Submucosal and intramural fibroids disrupt the endometrial surface and vascular supply, leading to excessive menstrual bleeding (Stewart et al., 2022).[26] Studies have shown that fibroids are one of the leading causes of AUB-L (leiomyoma) under the PALM-COEIN classification system (Munro et al., 2018).[6]

LIMITATIONS OF THE STUDY

Several limitations of the study were acknowledged:

- Retrospective nature: The study relied on pre-existing medical records, which may have led to incomplete or missing data.
- Selection bias: Only women who presented with AUB or had complete records were included, potentially excluding a broader spectrum of women with milder or undiagnosed AUB.
- Data quality: The study depended on the accuracy and completeness of hospital records, which may vary.
- Unmeasured confounders: Certain factors that could influence the outcome, such as genetic predispositions or lifestyle factors, were not measured in this study.

CONCLUSION

This retrospective study highlights the significant burden of abnormal uterine bleeding in perimenopausal women, with menorrhagia being the most common presentation. The study identified key risk factors associated with AUB, including increasing age, obesity, thyroid disorders, and the presence of fibroids. Ultrasonographic findings revealed a high prevalence of fibroids and endometrial thickening, while histopathological evaluation emphasized the need for endometrial assessment to rule out hyperplasia and malignancy. These findings underscore the importance of early identification and management of risk factors in perimenopausal women to improve clinical outcomes and quality of life. Further prospective studies are recommended to validate these associations and guide effective treatment strategies. Understanding these associations is crucial for early diagnosis, individualized treatment, and improved patient outcomes.

ACKNOWLEDGEMENT

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