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RESEARCH ARTICLE

The Impact of Abnormal Uterine Bleeding on Adolescents' Quality of Life: Results of the Adolescent Menstrual Bleeding Questionnaire

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ABSTRACT

Objective: To determine the extent to which abnormal uterine bleeding affects the quality of life in adolescents.

Materials and Methods: The study included a total of 69 patients who presented to our clinic with menstrual bleeding lasting more than 7 days, occurring more frequently than every 21 days, and showing signs of increased blood loss within a cycle. Following the collection of detailed medical histories and physical examinations, initial diagnostic tests were performed, including a complete blood count, coagulation tests (prothrombin time, activated partial thromboplastin time, and fibrinogen), and iron parameters (serum iron, ferritin, and total iron-binding capacity). After obtaining informed consent, adolescents who presented to general pediatrics, pediatric endocrinology, and pediatric hematology clinics with complaints of abnormal uterine bleeding were asked to complete the Adolescent Menstrual Bleeding Questionnaire.

Results: The mean age of the 69 patients included in the study was 14.95 years (range: 11–18), and the mean age at menarche was 12.2 years (range: 9–16). Of the patients, 28.9% ($n = 20$) had been admitted to the hospital for the first time due to bleeding, and 71.1% ($n = 49$) had been admitted before and had used some treatments. During menstruation, 23.2% ($n = 16$) of the patients reported severe pain, 43.5% ($n = 30$) reported moderate pain, and 18.8% ($n = 13$) reported mild pain. School absenteeism was observed in 36.2% ($n = 25$) of the patients. Additionally, 63.8% ($n = 44$) of the patients reported avoiding at least 1 day of family-related activities (such as household chores or shopping). The mean questionnaire score for patients with heavy bleeding was 33.9 ± 1.6, while those with light to moderate bleeding had a mean score of 27 ± 1.8 ($p = 0.005$). As a result, 47.8% ($n = 33$) of the patients scored below 30, and 52.2% ($n = 36$) scored above 30. When patients scoring above and below 30 were compared, the need for adult diaper use, incidence of bleeding through outer clothing, school absenteeism, and level of activity avoidance were significantly higher in those scoring above 30. The highest score was observed in patients who had never received treatment [35.5 (±11.6) (11–61)] and the lowest score was observed in patients receiving iron and combined oral contraceptive pills (OCPs) treatment [28.6 (± 10.06) (10–44)] ($p = 0.058$) Anxiety levels were rated at 10 points by 36.2% ($n = 25$) of the patients. The mean anxiety score of patients with an aMBQ score > 30 was 8.64 ± 2, and that of those with an aMBQ score < 30 was 5.55 ± 3.36 ($p = 0.000$). The mean hemoglobin level of the patients was 12.4 g/dL (range: 5.7–16). Fibrinogen, PT, and aPTT levels were within normal ranges.

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Conclusion: Abnormal uterine bleeding is not merely a physical issue but a public health concern that profoundly impacts the social and emotional lives of adolescent girls. A comprehensive approach is key to improving adolescents' quality of life.

1 | Introduction

Adolescence encompasses the transitional period from childhood to adulthood, typically between the ages of 10 and 19 years, marked by rapid physical, psychological, and cognitive changes. On average, girls experience menarche at the age of 12 years [1]. A normal menstrual cycle occurs every 21 to 35 days and involves bleeding between 3 and 7 days. In addition, a blood loss volume between 20 and 80 mL is considered normal. In adolescence, initial menstrual cycles are often anovulatory, leading to common issues such as frequent and prolonged menstrual bleeding during the first 2 years after menarche. Bleeding that is abnormal in duration, volume, frequency, or regularity and originates from the uterine corpus is defined as abnormal uterine bleeding (AUB) [2].

AUB can occur in approximately 40% of healthy adolescents at some point in their lives [3]. These episodes may impact adolescents physically, psychologically, and socially, potentially leading to anemia, fatigue, school absenteeism, and reduced quality of life. Avoidance of sports and social activities, isolation, and depression may also occur [4]. Severe anemia due to abnormal bleeding can lead to increased emergency room visits and heightened anxiety among adolescents and their families. Defining AUB can be challenging for adolescents. Adolescents living in traditional societies may be reluctant to share such situations. Tools such as the Adolescent Menstrual Bleeding Questionnaire (aMBQ) have been developed to understand how this condition impacts adolescent life [5]. This study aimed to determine how much AUB affects the quality of life of adolescents using aMBQ.

2 | Materials and Methods

Patients who came to our clinic between June 2023 and January 2025 with menstrual bleeding lasting longer than 7 days, recurring more frequently than 21 days, and showing signs of increased blood loss within a cycle were included in the study. Ethical approval was obtained from the hospital ethics committee (approval number: 2021/21-268). After taking detailed medical histories and performing physical examinations, initial diagnostic tests were conducted, including a complete blood count, coagulation tests (prothrombin time [PT], activated partial thromboplastin time [aPTT], and fibrinogen), and iron parameters (serum iron, ferritin, and total iron-binding capacity).

After obtaining informed consent, adolescents presenting with complaints of AUB to general pediatrics, pediatric endocrinology, and pediatric hematology clinics were administered the aMBQ [5]. The aMBQ is an adaptation of the adult version developed by Pike et al. for use with adolescents. It consists of 25 items and yields a score ranging from 0 to 77. An increase in the score indicates a decrease in quality of life. A score of 77 represents the worst quality of life. The questionnaire covers four parts: bleeding severity, irregularity, pain, and quality of life. Clinical evaluation is recommended for patients scoring above 30. Since the original language of the survey was English, the expert team translated it into Turkish before administering it to the patients. Prior to the commencement of the study, the necessary permissions were obtained from Dr. Meghan Pike.

3 | Statistical Analysis

Statistical analysis was performed using SPSS version 28.0. Event frequency data were presented as percentages, and numerical data were expressed as mean ± standard deviation. The chi-square test was used to compare categorical variables, and the *t*-test was employed to compare numerical variables. A p value of < 0.05 was considered statistically significant.

4 | Results

The mean age of the 69 patients included in the study was 14.95 years (range: 11–18), and the mean age at menarche was 12.2 years (range: 9–16). Of the patients, 28.9% ($n = 20$) had been admitted to the hospital for the first time due to bleeding, and 71.1% ($n = 49$) had been admitted multiple times. Of the patients who had previously been admitted to the hospital, 49% ($n = 24$) had received iron, 36.8% ($n = 18$) had received iron and oral contraceptives, 8.1% ($n = 4$) had received oral contraceptives only, and 6.1% ($n = 3$) had received tranexamic acid only. When patients were asked about their bleeding episodes, 56.5% ($n = 39$) described them as heavy, while 43.5% ($n = 30$) characterized their bleeding as light or moderate.

When asked about the number of sanitary pads used during their most recent menstrual period, 17.3% ($n = 12$) of the patients reported using nine or more pads, while 36.2% ($n = 25$) reported using five to eight pads. A total of 79.7% of the 55 patients reported having needed to use an adult diaper at least once. Furthermore, when asked about the number of times blood had leaked through their outer clothes, 81.2% ($n = 56$) stated that they had experienced this at least once (Table 1).

During menstruation, 23.2% ($n = 16$) of the patients reported severe pain, 43.5% ($n = 30$) reported moderate pain, and 18.8% ($n = 13$) reported mild pain. Only 14.5% ($n = 10$) of the patients experienced no pain. Among patients with heavy bleeding, 20.2% ($n = 14$) reported experiencing severe pain during menstruation. This was statistically significantly different from the remaining patients ($p = 0.027$). Concerning the duration of menstruation, 26.1% ($n = 18$) reported bleeding for less than 1 week, 33.3% ($n = 23$) reported bleeding for more than 1 week, and 40.5% ($n = 28$) reported bleeding for more than 2 weeks.

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TABLE 1 | Distribution of responses to questions on bleeding severity.

	Never	1–3 times	4–6 times	> 6 times
Need to wear a diaper or multiple products	14 (20.3%)	36 (52.2%)	15 (21.7%)	4 (5.8%)
Number of times blood leaked through outer clothing (i.e., pants/skirt/dress)	13 (18.8%)	33 (47.8%)	15 (21.7%)	8 (11.6%)
Number of times woken at night to change pads	21 (30.4%)	44 (63.8%)	3 (4.3%)	1 (1.4%)
Bleeding in the form of clots	13 (18.8%)	33 (47.8%)	13 (18.8%)	10 (14.5%)
Number of times blood clots stained clothing	26 (37.7%)	27 (39.1%)	9 (13%)	7 (10.1%)

TABLE 2 | Distribution of responses to selected questions on quality of life.

	Never	1–3 days	4–8 days	≥ 9 days
Number of days academic performance was affected	40 (58%)	21(30.4%)	6 (8.7%)	2 (2.9%)
Number of school days missed	48 (69.6%)	13 (18.8%)	4 (5.8%)	4 (5.8%)
Number of days unable to participate in family activities (e.g., chores, shopping)	25 (36.2%)	30 (43.5%)	9 (13%)	5 (7.3%)
Avoidance of social activities with friends	37 (53.6%)	17 (24.6%)	8 (11.6%)	7 (10.2%)

Based on responses to the questionnaire, school absenteeism due to menstruation was observed in 36.2% ($n = 25$) of the patients. When asked about the duration for which they had to refrain from family-related activities (e.g., household chores and shopping), 63.8% ($n = 44$) reported having avoided such activities for at least 1 day (Table 2).

The mean score on the aMBQ was 33.9 ± 1.6 for patients with heavy bleeding and 27 ± 1.8 for those with light or moderate bleeding ($p = 0.005$). According to the results, 47.8% ($n = 33$) of the patients scored below 30, while 52.2% ($n = 36$) scored above 30. When comparing patients who scored above and below 30, the need to use adult diapers, the rate of blood leakage through outer clothes, school absenteeism, and avoidance of activities were significantly higher among those who scored above 30 (Table 3).

When the average score values of patients who had previously been admitted to the hospital and received treatment and those who had not received treatment were examined, the highest score was observed in patients who had never received treatment [35.5 (±11.6) (11–61)] and the lowest score was observed in patients receiving iron and combined oral contraceptive pills (OCPs) treatment [28.6 (±10.06) (10–44)] ($p = 0.058$) (Table 4).

When the patients were asked to rate their anxiety related to menstruation on a scale from 0 to 10, 36.2% ($n = 25$) rated their anxiety level as 10. The levels of patient anxiety are illustrated in Figure 1. The mean anxiety score of patients with an aMBQ score > 30 was 8.64 ± 2, and that of those with an aMBQ score < 30 was 5.55 ± 3.36 ($p = 0.000$).

The mean hemoglobin level among the patients was 12.4 g/dL (range: 5.7–16) (Table 5). A total of 16 patients (23%) had a hemoglobin level below 11 g/dL, while 53 patients (77%) had levels above 11 g/dL. Fibrinogen, PT, and aPTT values were within the normal range. No significant difference was found between the mean ferritin values of patients with scores below and above 30 (10.14 vs. 11.9) ($p = 0.906$).

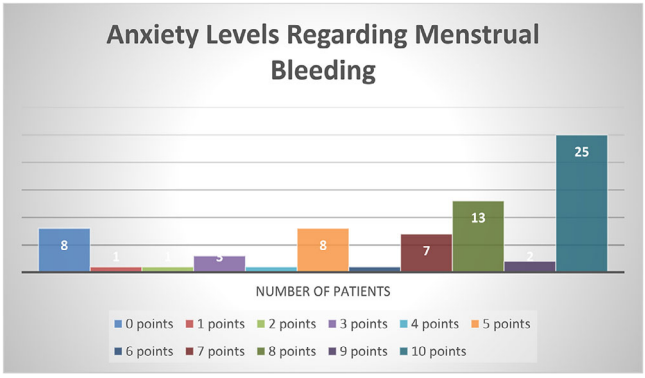


FIGURE 1 | Levels of patient anxiety regarding menstrual bleeding.

5 | Discussion

It is essential for adolescents to be aware of the potential issues they may encounter during menstruation and to feel comfortable discussing these matters with parents or healthcare professionals. In traditional societies such as Turkey, this period often becomes one in which adolescents attempt to manage independently. This can prolong the diagnostic process for certain coagulation disorders presenting during menstruation, which may lead to life-threatening complications such as severe anemia. In a study conducted by Demir et al. in Turkey, 62.2% reported experiencing irregular bleeding at least once; however, only 11.3% sought medical consultation [6]. The current study involved adolescents from the more traditional eastern region of the country who either presented to the hospital with AUB or were under follow-up treatment for a prior condition. The questionnaire administered

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TABLE 3 | Comparison of patients scoring ≤ 30 and > 30 on the aMBQ.

	≤ 30 points ($n = 33$)	> 30 points ($n = 36$)	p
Need to wear an adult diaper or use multiple products			0.007
Never	11	3	
1–3 times	19	17	
4–6 times	3	12	
7–10 times	0	2	
More than 11 times	0	2	
Number of times blood leaked through outer clothes (i.e., pants/skirt/dress)			0.000
Never	10	3	
1–3 times	22	11	
4–6 times	1	14	
More than 6 times	0	8	
School absenteeism			0.02
Never	28	19	
1–3 days	4	9	
4–8 days	1	3	
9–12 days	0	3	
More than 13 days	0	1	
Avoidance of family activities due to bleeding			0.011
Never	18	7	
1–3 days	13	17	
4–8 days	2	7	
9–12 days	0	3	
More than 13 days	0	2	
Avoidance of social activities with friends			0.013
Never	24	13	
1–3 days	7	10	
4–8 days	2	6	
9–12 days	0	2	
More than 13 days	0	5	

aimed to assess the extent to which the menstrual period affects adolescents.

Quality-of-life questionnaires contribute significantly to understanding the impact of diseases on individuals' lives. However, since menstruation is not classified as a disease, clinicians require guiding tools to distinguish between normal and abnormal bleeding. The Adolescent Bleeding Questionnaire is a short and easily applicable tool. It has been observed that adolescents with AUB tend to score higher on this questionnaire compared to others [7]. Therefore, using this tool in routine outpatient settings may be appropriate to differentiate adolescents with AUB. In our study, 56.5% of the participants described their bleeding episodes as heavy. The mean score of those with heavy bleeding was statistically significantly higher than that of the other group. Patients with mild or moderate bleeding had previously undergone diagnostic and therapeutic procedures in our institution [8]. When we examined the aMBQ scores of our patients according to the treatments they received, the highest scores were observed in patients who did not receive treatment, and the lowest in patients receiving OCPs and iron. Receiving iron treatment alone also improved their quality of life ($p = 0.046$).

It is considered normal to change sanitary pads 3 to 6 times per day during menstruation [9]. In our study, 82.6% of the participants used fewer than eight pads during their most recent menstrual period; however, the prevalence of adult diaper use was around 80%. The normal frequency of pad changes may suggest that some participants referred to diapers as pads. Additionally, rates of blood leakage through outer clothes, nocturnal pad changes, staining due to clots, and clot-like bleeding exceeded 70%. Excessive bleeding and visible stains on clothing cause adolescents to avoid peer-related activities and become socially isolated.

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TABLE 4 | Questionnaire scores of patients according to the treatment they used.

	Patient number ($n = 69$)	Mean score (range)	p
No treatment	20	35.5 (± 11.6) (11–61)	
Iron replacement	24	29 (± 9.3) (14–57)	$p = 0.046$
Iron and OCPs	18	28.6 (± 10.06) (10–44)	$p = 0.058$
Only OCPs	4	30.5 (± 10.6) (18–42)	
Only tranexamic acid	3	31 (± 10.6) (23–43)	

Abbreviation: OCPs, oral contraceptive pills.

TABLE 5 | Laboratory results of the patients.

Parameter	Mean (min–max) ± SD
Hemoglobin (gr/dL)	12.44 (5.7–16) ± 2.4
Iron (μg/dL) (16–128)	41.05 (5–99 ± 27.1
Ferritin (μg/dL) (13.7–78.8)	11.02 (0–45.4) ± 9.5
Total iron binding capacity (μg/dL) (235–455)	347.2 (199–480) ± 84.08

Abbreviation: SD, standard deviation.

School absenteeism during menstruation among adolescents appears to be common [10]. Contributing factors may include pain, heavy bleeding, and mood changes. According to responses related to school attendance and activities, 42% of our participants reported that their academic performance was affected, and 31.4% reported at least 1 day of school absenteeism. Avoidance of family and peer activities was even more prevalent (75% and 67%, respectively). School absenteeism also significantly impacts academic success. Another cause of absenteeism and activity avoidance during menstruation is dysmenorrhea [4]. A survey involving 1256 high school adolescents found that 88.2% reported school absenteeism due to pain [11]. Only 10 of our participants did not report dysmenorrhea. Absenteeism rates were lower among those with mild or moderate pain. The aMBQ does not fully distinguish whether school absenteeism is due to bleeding or pain. It may be beneficial to include a question addressing this in future studies.

Participation in activities during adolescence is crucial for social development and muscle growth. When girls avoid activities due to AUB, their healthy development can be adversely affected. Increasing awareness among adolescents and establishing centers focused exclusively on adolescent health may be beneficial. In societies like Turkey, where discussing the natural menstrual process is considered shameful, education should be enhanced to emphasize menstruation as a physiological process and to define when it should be regarded as abnormal. When asked to rate their level of concern regarding menstruation, 36.2% of the adolescents in the current study rated it at 10 out of 10. This indicates that a physiologically normal process may become an overwhelming experience. This may also contribute to higher rates of depression and anxiety among adolescent girls [12, 13]. Anxiety levels were significantly lower in patients who had < 30 score compared to those who had not. This may indicate the importance of close monitoring and treatment in improving the quality of life and anxiety levels in adolescents presenting with AUB.

According to the results of the questionnaire, as quality of life deteriorates, scores increase. It has been recommended that patients scoring above 30 undergo further evaluation for AUB [5]. However, more research is needed to evaluate the sensitivity of this questionnaire before it can be used as a screening tool. In this study, we compared patients who scored above and below 30. Adolescents scoring above 30 reported higher bleeding volumes, more school absenteeism, and greater avoidance of activities than those scoring below 30. Accordingly, their quality of life was more significantly affected.

Anemia is one of the most common complications in adolescents presenting with AUB [14]. Anemia can lead to fatigue, headaches, and difficulty concentrating, thereby increasing school absenteeism and avoidance of activities. Moreover, severe anemia requiring hospitalization can further exacerbate absenteeism. Studies have shown that women with hemoglobin concentrations of 12–13 g/dL report a lower quality of life compared to men with similar levels [15]. The mean hemoglobin value among our participants was 12.4 g/dL (range: 5.7–16), and the prevalence of anemia was 23%. Close monitoring of these patients and educating adolescents about normal menstrual bleeding parameters may help prevent complications arising from severe anemia. There was no statistically significant difference between the two groups in terms of mean ferritin levels. Iron deficiency anemia is prevalent at a rate as high as 30% in our study area [16]. Therefore, low ferritin levels may have been seen at a higher rate in both groups due to different causes.

The most common cause of AUB is anovulatory cycles, followed by coagulopathies [17]. Delayed diagnosis in such cases can exacerbate complications and further impair quality of life. None of the coagulation tests we used as first-line screening yielded abnormal results in our patient group, which may be due to the small sample size.

Due to societal taboos, adolescents may interpret AUB as usual. This study was conducted in the eastern region of Turkey, where a more insular and traditional lifestyle predominates. In addition, rural areas often experience limited access to healthcare services. Therefore, it may be appropriate to implement screening tools such as the Adolescent Bleeding Questionnaire in schools to identify adolescents needing medical attention.

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6 | Conclusion

The impact of AUB on quality of life necessitates a multidisciplinary approach. Efforts to raise awareness about menstrual health and hygiene, providing school-based counseling services on menstruation, and establishing peer support groups can help protect adolescents from potential psychological and physiological complications. It is essential to support adolescent girls in managing school absenteeism and to implement measures to prevent academic setbacks during such periods. AUB is not merely a physical issue but also a significant public health concern that deeply affects the social and emotional lives of young girls. A comprehensive approach will play a key role in improving the quality of life for adolescents.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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