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Abnormal uterine bleeding in reproductive age: a comparative analysis between the five Brazilian geographic regions

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SUMMARY

OBJECTIVE: This study aimed to comparatively evaluate the presence of abnormal uterine bleeding and associated factors among women from the five official Brazilian geographic regions.

METHODS: This is a cross-sectional, population-based, multicenter study of reproductive-age women from the five regions of Brazil. All participants answered questionnaires containing personal and socioeconomic data and information on uterine bleeding (self-perception and objective data).

RESULTS: A total of 1,761 Brazilian women were included, 724 from the Southeast, 408 from the Northeast, 221 from the South, 213 from the North, and 195 from the Central-West. Considering women's self-perception, the prevalence of abnormal uterine bleeding was 37.56% in the North region, 39.46% in the Northeast, 21.54% in the Central-West, 29.56% in the Southeast, and 25.34% in the South ($p<0.001$). Abnormal uterine bleeding was more prevalent in the North and Northeast, where women had lower purchasing power, became pregnant more often, and were the only ones financially responsible for supporting the family more often ($p<0.001$). The menstrual cycle lasted <24 days in less than 20% of the women in all regions (p=NS). Among these, approximately 8 out of 10 women had never undergone treatment in four out of the five regions evaluated. More than half of the evaluated women reported a worsening of their quality of life during bleeding.

CONCLUSION: The prevalence of abnormal uterine bleeding in Brazilian women was higher in the North and Northeast, followed by the Southeast, South, and Central-West regions. There was a worsening of quality of life during menstruation regardless of the woman's self-perception of abnormal uterine bleeding. Such results can direct the actions of health managers toward a better approach to abnormal bleeding.

KEYWORDS: Menorrhagia. Anemia. Menstruation disturbances. Public health. Metrorrhagia. Menstruation.

INTRODUCTION

The presence of abnormal uterine bleeding (AUB) is the first cause of gynecological care in the world[1]. AUB indicates the presence of menstrual changes in regularity, volume, frequency, or duration in the absence of pregnancy. It brings individual and collective impacts with worsening of quality of life, work absences, a drop in productivity, and increased costs to healthcare systems. Data from the United States show that more than 1 billion dollars are allocated to treatments for menstrual disorders every year, in addition to other expenses indirectly related[2]. However, in Brazil, these numbers are unknown so far.

Indicators from the Brazilian Institute of Geography and Statistics (IBGE)[3] demonstrate that more than half of the Brazilian population is female, which represents about 100 million women, of whom more than 73 million are of reproductive age. Brazil is divided into five geographic regions, considering particularities in relation to the territory covered and the criterion of grouping states with physical, human, cultural, and economic similarities[4]. According to IBGE, this division aims to contribute to and assist the federal government, states, and municipalities in the implementation and management of public policies and investments. The impact of this scenario of differences is recognized in the access to healthcare services, diagnosis, and treatment according to the region of operation. By taking this regionalization into consideration, understanding the prevalence of AUB and the health factors associated with it can indicate ways to improve the care offered.

Despite the scarcity of data in Brazil, a publication from the South region shows menstrual disorders in 46.4% of women[5], and another from the North region shows a prevalence of 22.1%[6]. Considering that both are regional studies, hence unable to reflect the reality of a country with continental dimensions, and that there are other references indicating the precarious access to healthcare services of 18.1% of the Brazilian population[7], the aim of this study was to comparatively evaluate the presence of AUB and some associated factors among Brazilian women of reproductive age in the five geographic regions of the country in order to understand how different realities can impact the care offered to this population.

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METHODS

This is a population-based, descriptive, multicenter, cross-sectional study of women of reproductive age from five official geographic regions of Brazil (Southeast, South, Central-West, Northeast, and North) randomly recruited in outpatient medical appointments. Pregnant women, lactating women, those with a history of hysterectomy, or those with cognitive difficulties that prevented understanding the questions asked were excluded.

All participants answered questionnaires containing data on the following: personal and socioeconomic status (following the criteria of the Brazilian Association of Research Companies [ABEP])[8], related to uterine bleeding, such as self-perception of increased bleeding (present or absent) and menstrual pattern (regularity, volume, frequency, or duration, with normal values defined by the International Federation of Gynecology and Obstetrics [FIGO])[9]; knowledge of AUB etiology; previous diagnosis of anemia and blood transfusion due to AUB; impact on quality of life; and difficulties of access to treatment (for the last two variables, the visual analog scale [VAS] was used, with 0 being no impact/no difficulty and 10 being the worst impact/extreme difficulty)[10].

Studies in the literature were used to calculate the sample size[11,12], considering the alpha significance level or type I error at 5% (alpha=0.05) (or 95% confidence interval) and the sample error at 3.0, 4.0, and 5.0%, obtaining a minimum sample of 1,761 participants.

The SAS System for Windows (Statistical Analysis System), version 9.4 (SAS Institute Inc., 2002–2012, Cary, NC, USA), was used in statistical analysis. Continuous variables were described as mean and standard deviation and evaluated using the Intercooled Stata 13.0 program. The chi-square or Fisher's exact test was used to compare categorical variables, and the nonparametric Mann-Whitney and Kruskal-Wallis tests were used to compare the values between the five groups representing the five regions.

All women signed the informed consent form. Approval was obtained from the Research Ethics Committee of the coordinating institution (CAAE 40654720.0.1001.5404) and from the ethics committee of each participating center in the five official regions. The study was developed with the support and funding of the Brazilian Federation of Gynecology and Obstetrics Associations (FEBRASGO).

RESULTS

A total of 1,761 Brazilian women of reproductive age were included: 724 (41.1%) from the Southeast region, 408 (23.2%) from the Northeast, 221 (12.5%) from the South, 213 (12.1%) from the North, and 195 (11.1%) from the Central-West region. The mean age in the North region was 34.83±12.78 years, in the Northeast region 36.98±12.64, in the Central-West region 35.16±12.66, in the Southeast region 35.03±12.16, and in the South region 35.48±12.65, with no statistical difference across regions. Except for the South region, the mean body mass index (BMI) showed values above normal, that is, above 25 kg/m^2. Although there was no difference between regions in terms of women with normal BMI or overweight, in the North region there was a higher prevalence of grades 1 and 2 obesity (p<0.001). According to women's self-reports, in the North region, mixed-race ethnicity predominated (80.4% of participants). In the Northeast region, most women also declared themselves to be non-white. In the other regions, the white ethnicity predominated (Central-West: 75.4%; Southeast: 79.1%; and South: 93.2%). Among interviewees, women from the highest social stratum (classes A, B1, and B2) were from the Central-West and South regions, while in the North and Northeast regions, those from social classes with lower purchasing power predominated (C1, C2, and D-E), representing more than half of the participants. At the same time, in these regions of lower economic status, women became pregnant more often and declared themselves more frequently as the sole financial supporters of the family (p<0.001). In addition, women in the North and Northeast regions also had higher parity, with a greater number of natural deliveries and a lower history of cesarean sections compared to the other regions (p<0.001). Interestingly, although the mean age at menarche in all regions was around 12–13 years, in the North region, menarche occurred a little later than in the other regions (Table 1).

Considering women's self-perception of increased bleeding, the prevalence of AUB was significantly higher in the North and Northeast regions, distributed as follows: 37.56 and 39.46% in the North and Northeast regions, respectively; 21.54% in the Central-West region; 29.56% in the Southeast region; and 25.34% in the South region (p<0.001). Quantitatively, using the criteria defined by FIGO, the mean cycle duration and menstrual flow duration by region were significantly lower in the South region (Table 2) (p<0.001). The menstrual cycle lasted less than 24 days in less than 20% of women from all regions, with no statistical difference. Furthermore, less than 1 in every 10 women in each region had menstrual flow longer than 8 days, with no difference between regions. Women from the Northeast region had episodes of intermenstrual bleeding less frequently than those from other regions (p=0.017). No difference was observed between regions in relation to the prevalence of postcoital bleeding, which affected less than 10% of women in each region (Figure 1).

Table 1. Sociodemographic characteristics of the total sample of women of reproductive age divided by geographic region of Brazil (n=1,761).

Variable	North region (n=213)	Northeast region (n=408)	Central-West region (n=195)	Southeast region (n=724)	South region (n=221)	p-value
	Mean±SD or n (%)					
Age (years)	34.83±12.78	36.98±12.64	35.16±12.66	35.03±12.16	35.48±12.65	0.144
Ethnicity						
White	35 (16.44%)	169 (41.43%)	147 (75.38%)	572 (79.00%)	206 (93.21%)	N/A
Non-white	178 (83.56%)	239 (58.57%)	48 (24.62%)	152 (21.00%)	15 (6.79%)	
BMI (kg/m^2)	26.31±4.66	25.93±4.99	25.54±4.79	25.17±5.33	24.00±4.24	<0.001 1≠ (4,5); (2,3) ≠ 5
Complete years of study	10.44±4.98	13.99±4.79	16.75±4.31	14.60±5.56	15.64±5.49	<0.001 1≠(2,3,4,5); 3≠(2,4,5); 2≠5
Social Stratification-ABEP 2019						
Class A	10 (4.69%)	50 (12.25%)	81 (41.53%)	160 (22.10%)	101 (45.70%)	N/A
Class B1	14 (6.57%)	40 (9.80%)	52 (26.67%)	132 (18.23%)	54 (24.43%)	
Class B2	23 (10.82%)	57 (13.98%)	50 (25.64%)	213 (29.42%)	50 (22.62%)	
Class C1	42 (19.71%)	80 (19.62%)	6 (3.09%)	132 (18.24%)	012 (5.44%)	
Class C2	46 (21.60%)	85 (20.83%)	4 (2.05%)	64 (8.84%)	4 (1.81%)	
Class D/E	78 (36.61%)	96 (23.52%)	2 (1.02%)	23 (3.17%)	0	
Financial responsibility for family support						
Exclusively female	75 (35.21%)	133 (32.59%)	34 (17.43%)	136 (18.78%)	53 (23.98%)	N/A
Shared with partner	65 (30.51%)	128 (31.39%)	105 (53.85%)	373 (51.52%)	114 (51.58%)	
Others	73 (34.28%)	147 (36.02%)	56 (28.72%)	215 (29.70%)	54 (24.44%)	
Age at menarche (years)	13.04±1.78	12.69±1.66	12.42±1.50	12.11±1.35	12.41±1.40	<0.001 1≠(2,3,4,5); 2≠4
Pregnancies (number)	2.39±2.27	1.64±1.59	1.06±1.24	1.01±1.41	0.83±1.04	<0.001 1≠(2,3,4,5); 2≠(3,4,5)
Natural births (number)	1.64±2.20	0.70±1.23	0.22±0.63	0.34±0.86	0.20±0.57	<0.001 1≠(2,3,4,5); 2≠(3,4,5)
Cesarean sections (number)	0.52±0.82	0.67±0.91	0.69±0.92	0.45±0.82	0.49±0.78	<0.001 3≠(4,5); 2≠4
Forceps (number)	0.01±0.11	0.02±0.14	0.02±0.15	0.02±0.13	0.03±0.18	0.520
Miscarriage (number)	0.27±0.91	0.28±0.65	0.18±0.48	0.19±0.54	0.18±0.49	0.051

When analyzing women with quantitative alterations associated with AUB, among those with menstrual cycles lasting less than 24 days, about 8 out of 10 women in the North, Northeast, Central-West, and South regions had never undergone treatment (p<0.001). However, the complaint of bleeding duration of more than 8 days made women seek care more frequently. Most participants from the North, Southeast, and South regions with this complaint had sought treatment, but in the Northeast and Central-West regions, about 60% had not undergone any type of therapeutic intervention. The prevalence of anemia secondary to AUB and the need for hospitalization were significantly higher in the North region, and, among those who had anemia, the use of oral iron was the main treatment used (Table 2). More than 70% of participants who reported self-perception of AUB in the North, Northeast, and Central-West regions did not undergo any AUB treatment. In the Southeast and South regions, approximately half had performed some therapeutic approach (p<0.001).

Considering the socioeconomic characteristics of the participants, it is interesting to note that women who reported

Table 2. Comparative evaluation of uterine bleeding among women of reproductive age of the five geographic regions of Brazil (n=1,761).

Bleeding parameters	North region (n=213)	Northeast region (n=408)	Central-West region (n=195)	Southeast region (n=724)	South region (n=221)	p-value*
Interval between periods (days)	27.82±16.92	29.73±17.75	28.89±19.12	29.58±23.57	21.40±6.54	<0.001 5≠(1,2,3,4)
Duration of menstrual flow (days)	4.93±2.72	5.60±5.00	6.23±4.39	5.77±3.48	2.50±0.80	<0.001 5≠(1,2,3,4); 1≠3
Cycles <24 days (n %)	37 (17.37%)	78 (19.11%)	37 (18.97%)	139 (19.19%)	32 (14.47%)	0.099
Menstrual flow >8 days	15 (7.04%)	41 (10.12%)	15 (7.69%)	53 (7.32%)	17 (7.69%)	0.072
Selfperception of AUB (n %)						
Absent	133 (62.44%)	247 (60.54%)	153 (78.46%)	510 (70.44%)	165 (74.66%)	<0.001
Present	80 (37.56%)	161 (39.46%)	42 (21.54%)	214 (29.56%)	56 (25.34%)	
Intermenstrual bleeding (n %)	38 (17.84%)	45 (11.02%)	33 (16.92%)	136 (18.78%)	39 (17.64%)	0.017
Postcoital bleeding (n %)	20 (9.38%)	26 (6.37%)	16 (8.20%)	47 (6.49%)	15 (6.78%)	0.596
Need to use more than one type of absorbent (n %)	16 (7.51%)	47 (11.51%)	16 (8.20%)	223 (30.80%)	65 (29.41%)	<0.001
History of anemia (n %)	94 (44.13%)	120 (29.41%)	43 (28.28%)	338 (46.68%)	62 (28.05%)	<0.001
Hospital admission due to AUB (n %)	12 (5.63%)	13 (3.20%)	7 (3.58%)	11 (1.51%)	6 (2.71%)	0.023
Worsening quality of life (n %)						
Yes	133 (62.44%)	228 (59.29%)	134 (68.71%)	425 (58.70%)	124 (56.10%)	0.028
Worsening quality of life (VAS 0–10**, mean±SD)	4.49±3.66	5.28±3.11	5.64±2.65	5.33±3.15	5.14±2.78	0.013 1≠3
Difficulty in care service (VAS 0–10**, mean±SD)	6.24±2.08	6.36±3.41	4.07±3.40	2.81±2.56	2.74±3.38	<0.001 (1,2)≠(3,4,5); 3≠(4,5)

*Chi-square or Fisher's exact tests; non-parametric Mann-Whitney test; **VAS: visual analogue scale.

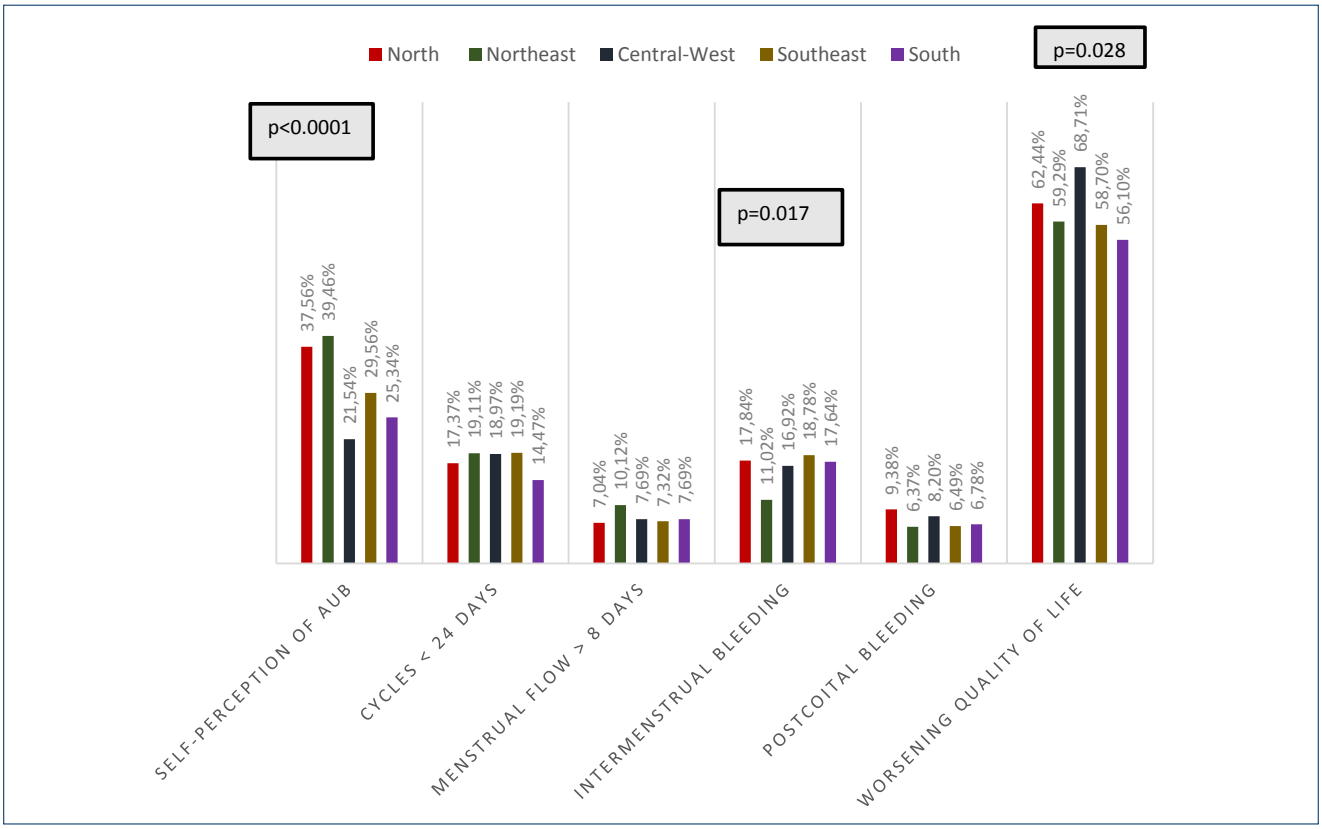

Figure 1. Comparative evaluation among women from the five geographic regions of Brazil for objective characteristics and self-perception of abnormal uterine bleeding, in addition to the relationship between menstrual bleeding and quality of life.

associating two types of absorbents during the menstrual period, less difficulty in medical care, and less impact of bleeding on the quality of life were from regions with greater economic power, the South and Southeast regions. Participants from the North and Northeast regions, considered to have less economic power, reported greater difficulty in accessing healthcare services (Table 2).

When asked whether the period of menstrual bleeding changed their lives, more than half of women in all regions reported a worsening of their quality of life, regardless of their self-perception of AUB, with significantly higher numbers in the North and Central-West regions (Figure 1). Considering the 0–10 scale, the highest, hence worst, score was obtained in the Central-West region (5.64±2.65) (Table 2).

DISCUSSION

Considering women's self-perception of having increased bleeding, this study demonstrated that the prevalence of AUB, anemia, and hospitalization due to bleeding is significantly higher in the North and Northeast regions, precisely where women have social stratification indicative of lower purchasing power. In addition, women from these regions had less frequent therapeutic interventions for AUB compared to regions with higher purchasing power (Southeast and South regions). Among the characteristics of bleeding, the main reason for seeking medical care was prolonged menstrual flow (more than 8 days), which occurred more frequently than cycles lasting less than 24 days. Even among women who did not report self-perception of AUB, there is a reported worsening of quality of life during the period of menstrual bleeding. Among all regions, the Central-West region concentrated the highest number of women reporting that menstruation worsened their quality of life (almost 7 out of 10), therefore with the highest and worst score. The North region had the second-highest number of women associating worsening quality of life and menstruation (62.4%), although it had the lowest score among all regions.

The literature shows AUB as the first cause of demand for gynecological care, and access to healthcare services is influenced by several factors, such as socioeconomic level, cultural aspects, and geographic characteristics that exert a direct impact on healthcare services[7]. In regions of lower socioeconomic power, that is, the North and Northeast regions, are concentrated the women who get pregnant the most, are most responsible for family support alone, and have a higher prevalence of AUB. However, they performed therapeutic interventions less frequently, probably given the greater difficulty in accessing care in these locations. In line with our results, data from the literature show that these regions of Brazil have the highest rates of inequity in access to medical consultations[13]. Furthermore, the North and Northeast regions still have more women on a "double shift" regime, i.e., adding formal work and household chores, followed by the Southeast, South, and Central-West regions. However, in these last three regions, the average monthly income is higher[3].

Similar aspects are found in studies on the prevalence of AUB in other underdeveloped and developing countries, with relevant disparities given the wide range of factors influencing access to healthcare services and the institution of adequate treatment and follow-up. Studies in South America, Africa, and India indicate prevalence of AUB ranging from 4 to 27%, intermenstrual bleeding between 1 and 17%, and menstrual irregularity in 8–83% of women, with the highest numbers in India and Turkey, countries where, like the North and Northeast regions of Brazil, are the lowest rates of treatment for AUB[14-16].

On the contrary, participants from regions with a higher socioeconomic stratum (Southeast and South) performed therapeutic interventions more frequently, reporting less difficulty in accessing healthcare. These regions have the largest centers with access to the best technologies in treatment for AUB, funding for research, and devices for surgical techniques with minimally invasive approaches. According to the literature, these represent the Brazilian locations with less inequality in access to consultations because of income[13].

Considering the current view of international medical societies, which recommend the characterization of AUB through objective parameters[9] in addition to increased volume according to the woman's self-perception, we observed that the duration of bleeding seems to be more uncomfortable than short intervals or increased volume, reinforcing the importance of detailing all characteristics of the menstrual cycle. There is evidence of the AUB approach by health professionals demonstrating failures in care, with anamnesis and clinical investigation that do not always include parameters considered important by women experiencing this condition[11].

The level of negative impact caused by menstruation on quality of life is also relevant, even among women who did not report self-perception of AUB. The National Institute for Health and Care in the United Kingdom (NICE-UK) has made recommendations that any intervention in abnormal bleeding should focus on improving quality of life and not just controlling blood loss. Studies that seek to understand the scenario in which women with AUB are inserted show that the main points of concern are related to blood leaking on clothes, the need for frequent changes of menstrual absorbents, cycle unpredictability, and how the bleeding period changes plans of work and leisure activities[11,12]. The days of menstrual bleeding are sometimes also related to a drop in productivity and absenteeism, which are important aspects for public health.

We highlight as strong points that this study evaluated multiple aspects related to AUB among the different regions of Brazil in a comparative and probably unprecedented way, analyzing objective and subjective parameters, as well as access to healthcare. A weak point was the fact that this study was performed in hospitals and university centers; therefore, a portion of the female population in worse economic conditions, with even more difficulty in accessing medical care, may not have been included. Considering AUB as a very frequent cause of demand for gynecological care, the discrepancies in a continental country are evident, alerting health professionals and managers regarding the implementation of policies aimed at facilitating access to healthcare services, with specialized actions in abnormal bleeding.

CONCLUSION

The prevalence of AUB in women of reproductive age was significantly higher in the North and Northeast regions, followed by the Southeast, South, and Central-West regions. There was a worsening of the quality of life during menstruation. Considering the inequity in access to healthcare services between the geographic regions of Brazil, with greater difficulty in the North and Northeast regions, such results can be a warning of the attitudes of health professionals and the direct actions of public health managers for better control and treatment of AUB.

AUTHORS' CONTRIBUTIONS

GPR: Conceptualization, Data curation, Formal Analysis, Investigation, Resources, Sofware, Visualization, Writing – original draft. **CLBP:** Conceptualization, Data curation, Formal Analysis, Funding acquisition, Methodology, Project administration, Resources, Sofware, Supervision, Validation, Visualization, Writing – review & editing. **DAYG:** Data curation, Formal Analysis, Resources, Validation, Visualization, Writing – review & editing.

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