

ABNORMAL UTERINE BLEEDING, IT'S CLINICAL PATTERN AND ASSOCIATED FACTORS AMONG REPRODUCTIVE-AGE WOMEN VISITING GYNECOLOGY OUTPATIENT DEPARTEMENT AT THE JIMMAA MEDICAL CENTER, SOUTH WEST ETHIOPIA

GEDA ABERA (MD, OBSTETRIC AND GYNECOLOGY RESIDENT)



A RESEARCH THESIS TO BE SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF HEALTH, DEPARTMENT OF GYNECOLOGY AND OBSTETRICS, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR SPECIALITY IN GYNECOLOGY AND OBSTETRICS

November, 2021

Jimma University

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GEDA ABERA (MD, OBSTETRICS AND GYNECOLOGY RESIDENT)

Advisors: -

- 1. Dr. Fanta Assefa (MD, Assistant Professor of Obstetrics and Gynecology)**
- 2. Mr. Mamo Nigatu (BSc., Assistant Professor of Epidemiology)**

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Abstract

Background: - Abnormal uterine bleeding (AUB) is the most common clinical presentation among reproductive-age group women visiting gynecologic clinic. It accounts for one-third of the cases. Its cause varies with women's age and ranging spectrum from physiologic process to malignant lesions. Its clinical presentation is classified based on menstrual flow by amount, duration of flow, regularity and frequency. As to the investigator's knowledge, limited research is available in our setting about its prevalence, clinical pattern and associated factors.

Objective: - To determine the prevalence of AUB, its clinical pattern and associated factors at Jimma medical center gynecologic outpatient

Method: - Institutional based cross-sectional study was conducted at Jimma medical center gynecologic out-patient department from April 1, 2021 to September 30, 2021. The totals of 552 of samples were collected by convenience sampling technique from women visiting gynecologic outpatient department. A structured questionnaire were used to collect data, and the data were entered in to computer using Epi-data version 3.1 and exported to statistical package for social science (SPSS) version 26 statistical software packages for analysis. Descriptive statistics were used to summarize descriptive data; bivariate and multivariable logistic regression analyses were carried out to measure statistical associations. Adjusted odd ratio and 95% CI were used to measure strength of association and its statistical significance respectively.

Result: - In this study 552 reproductive-age group women included making response rate of 92.3%. The prevalence of abnormal uterine bleeding in this study was 40.9%. Distribution pattern of AUB in this study is HMB 22.8%, prolonged menstrual bleeding 20.8%, frequent bleeding 19.2%, irregular menstrual bleeding 17.8%, amenorrhea 5.6% and intermenstrual bleeding 4.3%. The result of multivariable logistic regression analysis shows that age being between 31-40 years, being government employee, being para one woman and history of previous abnormal uterine bleeding on expectant management were independently associated with abnormal uterine bleeding.

Conclusion: - According international federation of Obstetrics and Gynecology classification prevalence of abnormal uterine bleeding is higher in this study. Most common pattern seen on this study is heavy menstrual bleeding (22.8%). In this study age, occupation, parity and previous treatment of abnormal uterine bleeding are main factors associated with AUB.

Key words: - abnormal uterine bleeding, pattern of abnormal uterine bleeding, factors associated, Jimma medical center

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ACKNOWLEDGMENT

First of all, I would like to thank the Almighty GOD.

My deepest gratitude goes for my Advisors Dr. Fanta Assefa and Mr. Mamo Nigatu who helped me through selection of topic, proposal development and finalizing my research project. I would like to thank Obstetrics and Gynecologic department and Postgraduate research program office of Jimma University for giving me chance to conduct this study. My deepest gratitude goes to data collectors and supervisors. I would also like to extend my gratitude to hospital administration and staff who were working at gynecologic OPD for their support throughout data collection. My gratitude also goes for Jimma university ethical committee to evaluating my research proposal and giving ethical clearance. Finally, for our clients for those who gave us time and information.

Abbreviation and acronyms

AUB- Abnormal uterine bleeding

FIGO- international federations of Obstetrics and Gynecology

PALM-COEIN- Polyp, Adenomyosis, Leiomyoma, malignancy/hyperplasia, Coagulopathy, ovulatory dysfunction, primary endometrial disorders, iatrogenic cause and not otherwise classified.

TSH- thyroid stimulating hormone

FSH- follicular stimulating hormone

HMB- heavy menstrual bleeding

IMB- intermenstrual bleeding

COC- Combined oral contraceptive

CBC- Complete blood count

BMI- Body mass index

OPD- outpatient department

HMIS- Health management information system

JMC- Jimma medical center

Chapter 1: Introduction

1.1 Background information

Abnormal uterine bleeding (AUB) - Describe any variation from normal menstrual bleeding patterns in non-pregnant, reproductive aged women. It is the most common clinical presentation in gynecology outpatient clinics throughout the world accounting for one-third of the visits(1–3). Its prevalence varies according to set up of study in tertiary hospital 3-30%(2). AUB affects any women during their reproductive-age starting from menarche to menopause, causes are different based on age and had various forms and presentations(2). In adolescent girls from age of menarche up-to age of 18years abnormal uterine bleeding will be due to immature hypothalamic-pituitary-ovarian axis affects menstrual cycle (2,4). In reproductive age group (18-50years) AUB caused by spectrum of conditions ranging from physiological process to malignant lesions involving organic, systemic, and hormonal responses(2,4–6).

Traditionally clinical pattern classified as menorrhagia, metrorrhagia, polymenorrhea, oligomenorrhea, amenorrhea and menometrorrhagia(2,4,5,7). International federations of Obstetrics and Gynecology (FIGO) revised classifications of AUB in 2011 with aim of informing and aiding clinicians and investigators in the design and interpretation of investigations in reproductive years, as well as provision of evidence-based clinical trial and also endorsed by ACOG 2012 (1,2,8,9). FIGO-AUB system terminology and definition of AUB clinical pattern classify based by variation menstrual flow by amount, frequency, regularity and duration, also further divided based chronicity, and timing of related to reproductive status(1,3,9). Those leveling AUB is based on values exceeding the accepted 5-95th percentiles indicated(2). Terminology includes heavy menstrual bleeding, prolonged menstrual bleeding, intermenstrual bleeding, frequent bleeding, infrequent bleeding and absence of menses(2,9). For clinical purpose they defined as heavy menstrual bleeding is excessive menstrual blood loss which interferes with a woman's physical, social, emotional, and/or quality of life, prolonged menstrual bleeding is menstrual flow more than 8 days(7,9). Regularity of menses based on variation in days over past 12 month regular if difference between shortest and longest is less than 7-9 days and irregular if variation is more than 8-10 day(10). Inter-menstrual bleeding (IMB) is bleeding between cyclically regular onsets of menses. Unscheduled or breakthrough bleeding occur on women using hormonal contraceptives(9). Chronic AUB considered based

duration compliant if presents for majority of time over preceding 6 months(2,9). Acute AUB defined as with episode of heavy menstrual bleeding which sufficient in amount to require immediate interventions to minimize or prevent further blood loss by clinician opinion(2,9,11). Another common concern of pattern of AUB is amenorrhea which absence of menses more than 6month according FIGO 2018 classification and it does not include lady who did not see their menses so far, post menopause, pregnant and postpartum breast feeding women because mostly they are physiologic(12). Although FIGO-AUB classifications accepted in most clinical settings and it is important to know the prevalence and clinical pattern in different setting to develop management guideline in their own set-up(2).

Causes of AUB according FIGO classification were structural causes (PALM) which diagnosed based on imaging and histopathologic finding include polyp, adenomyosis, leiomyoma and malignancy/hyperplasia. Non-structural (COEIN) causes are not diagnosed by imaging rather based on clinical assessment and laboratory finding includes coagulopathies, ovulatory disorders, primary endometrial disorders, iatrogenic and not otherwise classified(1,2,5,9). This classification solely applied to non-gestational AUB and not applied to other genital tract bleeding emanating from cervix, vagina, vulva, perineum or perianal area(2,5,9).

Clinical evaluation based on menstrual, reproductive, sexual, nutritional history, endocrine disorders, socio-economic status and current medication history plays major role in determining cause and management of AUB. In majority cases diagnosis confirmed based on imaging finding such ultrasound, hysteroscopy, and saline infusion sonography; and endometrial biopsy(5,9,13). Pelvic Ultrasound had 95% sensitivity to diagnose endometrial pathology, but low specificity around 13%(9,10). Hysteroscopy and saline infusion sonography both had similar sensitivity and specificity to diagnose intra-cavitary which did not able diagnosed by sonography(9). Hysteroscopy which help us to take endometrial biopsy has sensitivity and specificity of 94.4% and 99.6% respectively for endometrial pathology(9,13). Endometrial biopsy done based age of women that is for all age above 40years and presence of risk factors for age below than 40years(4,13). It is done to identify causes of AUB such as hormonal in balance leading to endometrial change and endometrial hyperplasia or cancer. Absence of lesion on biopsy may not excluded presence of abnormality and presence of lesion is more accurate(8,14). Investigations done based on history and risk factors for AUB identified includes CBC, pregnancy test, bleeding, prothrombin, partial thromboplastin time and hormonal analysis such as FSH, TSH and

progesterone(2,4,9,15). Treatment of AUB depends on specific causes, severity, complications, risk and benefit of therapy, cost and patient own desire; these can be identified based on history, physical examinations, and investigations. Those investigation modalities are not readily available in developing country in most setup(1,2,9,15).

1.2 Statement of problem

The prevalence of AUB varies worldwide, within countries and set up of study and worldwide it ranges 3-30%(1,15). Variations in prevalence of AUB are due to difference in reproductive profile, racial, socioeconomic and cultural status; also due to set up of study conducted and classifications system used(5). Most developing countries still using traditional way of classification, the prevalence and clinical pattern is not well known(2,10). The pattern of AUB varies with set up of study heavy menstrual bleeding (32%) common presentations followed by oligomenorrhea (20%), polymenorrhea (14%), metrorrhagia (9%) and menometrorrhagia (4%) in reproductive age group. Prevalence of amenorrhea is similar in different part of world ranging from 5-9%(16,17). Most of the time symptoms of AUB are relatively minor and related to self-limited physiologic alterations. It affects patients social, physical, emotional and quality of life especially in developing country where sanitary protection not easily available(7,14). Any pattern of AUB are concerning to women because it may have serious medical consequences. Heavy menstrual bleeding or prolonged bleeding may cause disruptions of women's daily activities, particularly if sanitary protections not easily available (10). These may also may provoke or exacerbate anemia eventually life threatening if left untreated and those complicated by underlying iron deficiency anemia especially in developing country. Lack of awareness about potential importance of reducing blood loss women with anemia and lack of knowledge among women and providers about treatment alternative is major concern in those countries(6,7,14). Most concern of AUB is on heavy bleeding and prolonged bleeding other patterns are worry to women. Amenorrhea and irregular bleeding patterns associated with infertility which is major concern in developing country. Irregular bleeding may be sign of cancer especially in older age(7,14).

Around three fourth of woman's have associated pain during menstruations, about 5-20% of them reports severe dysmenorrhea or pain preventing participating in their usual activities. Dysmenorrhea may be associated with reproductive morbidities such as infection which needs

further evaluation(10). AUB associated with poor quality of life which refrain them participating in routine activities and they require continuous access to pads or tampons, poor fecundity, loss of social and family interactions, reductions in sexual functioning and increased healthcare expenses because they perceive heavy period(7,16). Most studies show that there are strong association between maternal age and BMI with AUB by controlling other confounders. With increasing age of women AUB increase common in fourth decade. Around two third of overweight and one third of obese women suffer from AUB and it is due to disturbance of hypothalamic-pituitary-gonadal axis(18).There are also other factors that affects management of AUB includes co-morbidities, medication use, previous surgeries and fertility issues(19).

Abnormal uterine bleeding constitute an important unmet area of reproductive health services for women in developing countries and more attention should be given to inclusion of diagnosis and treatment of menstrual complaints within reproductive health care programs. Although study shows prevalence of abnormal uterine bleeding and clinical pattern in developing country similar to developed country, more specific country specific information is needed to provide as it lead to cost effectiveness and feasibility of medical interventions. Relatively simple and inexpensive therapies are currently available to address a range of menstrual abnormality(20).

Only certain study is done to see prevalence and clinical pattern of AUB in developing country especially in Africa(15). There is no enough study done in our country showing pattern and associated factors in reproductive-age women presenting in institutions with compliant AUB(20). Even if AUB is major compliant in reproductive-age women presenting to gynecologic OPD at Jimma medical center, but its prevalence and factors associated with is not well known. Mostly patient is not fully investigated to know causes of AUB and get only symptomatic treatment.

1.3. Significance of study

The finding of this study show prevalence of AUB with its clinical pattern and factors associated with it in Jimma medical center. It will help the department of gynecologic and obstetric and institution to know burden of AUB and used as input to develop guideline for future aiding in investigating protocol and expanding management option. It may also show extent of problem in particular community and used as means to increase to health educations and promotion. It also can be used as additional source of information's for further study done in those area related to AUB for future at national or international level.

Chapter 2: Literature review

2.1. Prevalence and clinical pattern of AUB

Prevalence of AUB differs based on study setup that is institution based or community study(2). Around one third of women at gynecologic out-patient present with compliant abnormal uterine bleeding(21). Prevalence of AUB in tertiary hospitals was 3-30% in different study(2). Study done tertiary hospital in India on 7471 reproductive-age women around 18.3% (1362) suffer from AUB and menorrhagia (33%) most presenting pattern, followed by oligomenorrhea (19.97%), polymenorrhea (18.53%) and hypomenorrhea (11.89%)(22). Similar study in India majority of patients with abnormal uterine bleeding presents as heavy menstrual bleeding (menorrhagia) (32%), polymenorrhea (14%), metrorrhagia (9%) and menometrorrhagia (4%) in reproductive age group(21). One study done in west Kenya on clinical pattern bleeding of AUB result shows prolonged bleeding (41.7%) followed by heavy menstrual bleeding (35.2%), frequent (20.4%), intermenstrual (18.5%) and infrequent (8.3%) bleeding(15). One prospective observational study done on AUB in India tertiary hospital shows 61% of women suffer from menorrhagia, 20% from polymenorrhea, 8% had metrorrhagia, 7% had menometrorrhagia and 4% oligomenorrhea(7). The population based study done at Tehran in 2017, showed that 35.8% of reproductive-age group women suffer from one of abnormal uterine bleeding in their life span. This study shows prevalence of patterns of AUB heavy menstrual bleeding (15.2%), metrorrhagia (18.2%), polymenorrhea (10.6%), intermenstrual bleeding (4.3%) and amenorrhea(2.2%) (14). The other most study did not include amenorrhea as pattern of AUB, but on it included prevalence of AUB increased. Its frequency vary 5-20% in most study, worldwide its prevalence does not show significant difference(12,18).

2.2. Causes of abnormal uterine bleeding

Etiology of AUB identified according to FIGO classification PALM-COIEN varies based on study setting, because of investigation available and expert needed. One study done in India tertiary hospital to identify causes of AUB on 100 women shows leiomyoma (41%) is leading cause followed by endometrial etiology (25%), polyp (11%), ovulatory disorders (10%), adenomyosis (7%), not yet classified (2%), malignant and iatrogenic etiology seen in 1%; pelvic inflammatory disease found (21%) (4,23). One cross-sectional Chinese study shows cause of AUB according FIGO classifications structural (PALM) cause account for 35.4% and non-structural (COIEN) cause is 64.6%: ovulatory dysfunctions (57%) are the frequent cause(24). As

per study done in Kenya only 16.7% of women with AUB diagnosed as per PALM-COEIN criteria; structural (PALM) cause account for 60% and non-structural (COEIN) cause for 40%. Women presenting with leiomyoma during study cause abnormal uterine bleeding in about 44.4%(15).

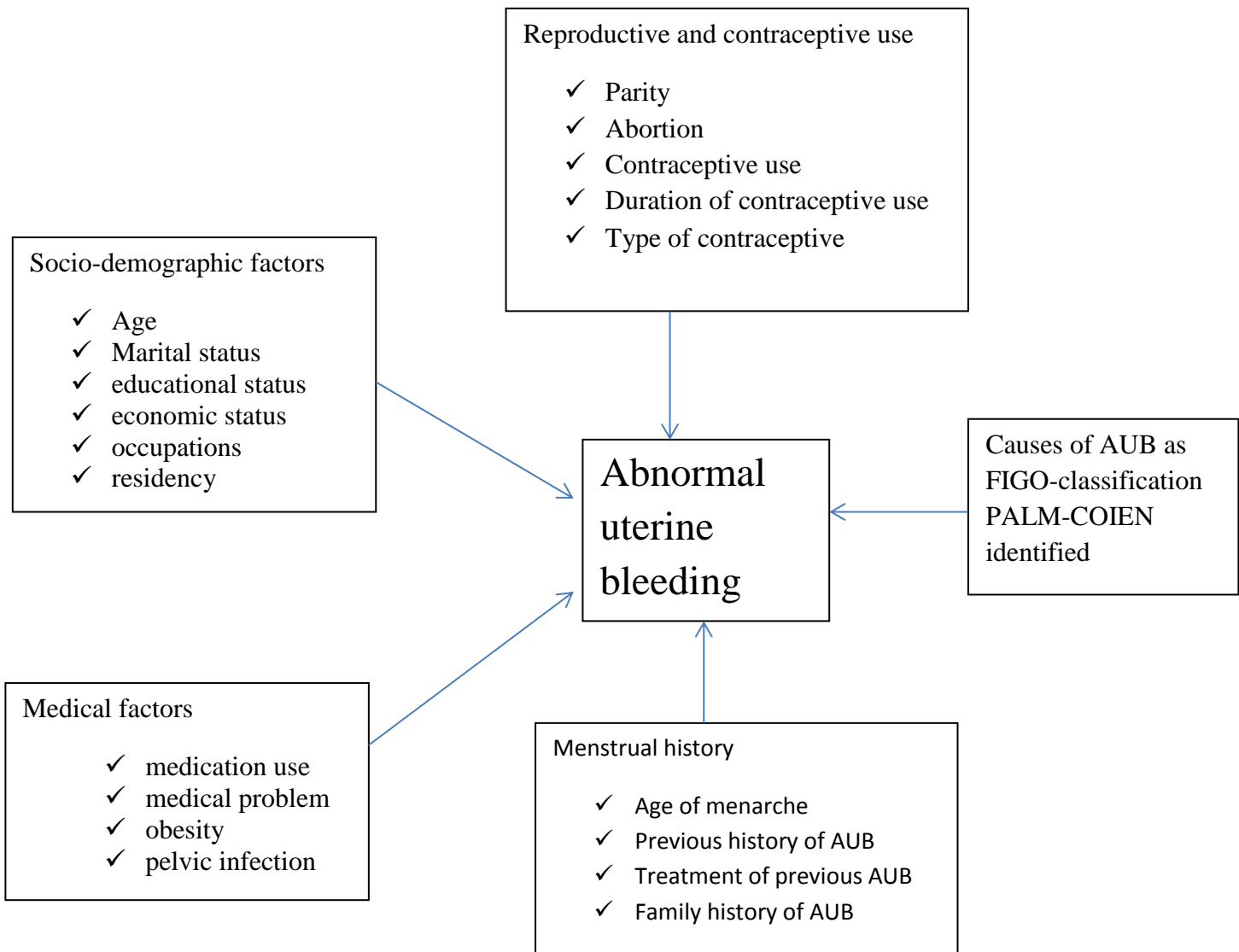
2.3. Factors associated with abnormal uterine bleeding

One of factor that affects prevalence of abnormal uterine bleeding is age of women showed in most study and highest at age of 40-50years (45.9%), followed by age greater than 50years (21.31%), 30-40 years (18.03%), and 20-30 years (14.75%) group of women suffer it(16). The study done in Nepal show that the highest incidence of AUB was noted in 41-50 years age group (43%) followed by 31-40 years age group (30%) and the mean age was 45yrs(25). In reproductive-age AUB prevalence is high during adolescent and later age perimenopause. Another study by Nishi Natra et al on Patient with AUB during perimenopause age parous (2-4) women 45% had AUB. In perimenopause age different mechanism of AUB is proposed but fully understood(3). Parity also affects prevalence AUB; multiparous women around 63.3% and grand multiparous 29.5% suffer from AUB according study done in India. Women from low socioeconomic status (70%) more affected than higher socioeconomic(26,27). Different risk factors associated with abnormal uterine bleeding which include obesity, history of polycystic ovarian disease (85%), history diabetes (75%), endometrial pathology (60%), ovulatory dysfunction (50%), coagulopathy (45%), polyp (40%), adenomyosis (39%), leiomyoma (32%) and suspected malignancy (30%). Women with higher BMI ($>30\text{kg/m}^2$) around 90% patient associated with AUB due disturbance of hypothalamic-pituitary-gonadal axis(23). There is relation AUB and chronic medical illness such as diabetes, hypertension and thyroid dysfunctions which worsened during perimenopause period. As study by Dr Nishi Mitra et al in India shows 18% women with hypertension, 12% of diabetes and 6% of hypothyroidism associated with AUB(27). Family history of AUB or other bleeding disorder associated with 20% AUB at any age of women life(6). There is apparent relationship between chronic endometritis and AUB(2).

Abnormal uterine bleeding rarely associated with life threatening condition, heavy menstrual bleeding frequently presented symptom of anemia especially in low income nations with high prevalence iron deficiency anemia is 30%. Mostly heavy menstrual bleeding caused by fibroids which common in black women associated with iron deficiency anemia, symptoms of mass

effect and pregnancy complications. The most common symptoms associated with AUB are abdominal pain (90%), dysmenorrhea and dyspareunia(4,23). One study done reproductive age (15-40year) women presenting with menstrual complaint had dysmenorrhea. Around three fourth of woman's have associated pain during menstruations, about 5-20% of them reports severe dysmenorrhea or pain preventing participating in their usual activities. Dysmenorrhea may be associated with reproductive morbidities such as infection which needs further evaluation especially chlamydial infection(10).

Conceptual frame-work



Chapter 3: Objective

3.1: General objective

- To assess magnitude of abnormal uterine bleeding, its clinical pattern and associated factors among reproductive-age women visiting Gynecologic out-patient department at Jimma medical center (JMC), Jimma, South West, Ethiopia, 2021.

3.2 Specific objective

- To determine the prevalence of AUB among reproductive-age women visiting gynecologic out-patient department at JMC, Jimma, South West, Ethiopia, 2021.
- To assess clinical pattern of AUB among reproductive-age women visiting gynecologic out-patient department at JMC, Jimma, South West Ethiopia, 2021.
- To identify the associated factors among reproductive-age women visiting gynecologic out-patient department at JMC, Jimma, South West Ethiopia, 2021.

Chapter 4: Methods

4.1: Study area and period

The study was conducted in Jimma Medical Center (JMC) gynecologic out-patient department, Jimma, Oromia regional state, South West Ethiopia from April 1, 2021 to September 30, 2021. Jimma town located 352Kms from Addis Ababa from capital city of Ethiopia in Southwest direction. Jimma medical center is a tertiary university hospital used as referral center in south west Ethiopia serving around 15 million populations. JMC provide service in different specialty one these Obstetrics and Gynecology department. Obstetric and Gynecologic department provide both teaching activity and clinical service. Teaching activity provided undergraduate medical students, Obstetric and Gynecologic residents and fellow-ship on Gynecologic oncology, Uro-gyncecolgy and Feto-Maternal medicine. Clinical service being provided at Obstetric and Gynecologic department include Emergency Service, outpatient service including Antenatal care, Gynecologic OPD and referral clinic, inpatient having 120beds, minor and major surgery, labor and delivery service.

4.2: Study design

A cross-sectional study was conducted in Jimma medical center at gynecologic out-patient department.

4.3: Population

4.3.1. Source population

All Reproductive-age women who visited Gynecologic OPD at Jimma medical center

4.3.2. Study population

Selected reproductive-age group women who visited Jimma medical center gynecologic outpatient department during study period

4.4: Eligibility Criteria

4.4.1: Inclusion criteria

All reproductive age (18-50years) group women presented to gynecologic OPD during study period included in the study

4.4.2: Exclusion criteria

Reproductive-age women presented vaginal bleeding cause other than uterine cause such as cervical, vaginal, perineal or urinary cause were excluded from AUB diagnosis but were included in as source population of study if not pregnant

Women presented with pregnancy and pregnancy complication were excluded from study

Adolescent girls younger than 18years were not included in the study because menstrual cycle mostly not regular due immature hypothalamic-pituitary-gonadal axis and evaluation and management different at this age(6,28).

Post-menopause women

4.5: Sample size determination and sampling technique

4.5.1. Sample size determination

For first specific objective to determine prevalence of AUB sample size determined by taking the following assumption with prevalence of abnormal uterine bleeding in many centers is 15%(10,16,22) , confidence interval of 95%, margin of error 3% ,taking non-response rate as 10% sample size was calculated to be 598. These sample size taken with consideration previous Gynecology outpatient visit according to 2020 HMIS report.

$$\begin{aligned} \text{Sample size (n)} &= P*(1-P)*Z^2 /W^2 \\ &= 0.15*(1-0.15)*(1.96)^2/ (0.03)^2 \\ &= 544 \end{aligned}$$

$$\begin{aligned} \text{Total sample Size} &= n + n*10\% \text{ non-response rate} \\ &= 544+ 54 \\ &= 598 \end{aligned}$$

For third specific objective factors associated with AUB the sample size was calculated with following assumption with 95% two sided confidence interval, 80% power, 1:1 ratio of control to cases, percent of control exposed, adjusted odds ratio and percent of cases exposed shown on the following table.

S. No	Variable	CI	Ratio of control to cases	Percent of controls exposed	Adjusted OR	Percent of cases exposed	Total sample size	References
1.	Age (41-50)	95%	1:1	57%	-	43%	402	(25)
2	Multiparous (2-4)	95%	1:1	36.7%	-	63.3%	112	(26)
3	Low socio-economic	95%	1:1	30%	-	70%	108	(26)

As seen above largest sample size calculated from prevalence of abnormal uterine bleeding, so for this research we took total sample size of 598 which was the largest.

4.5.2. Sampling technique

Consecutive sampling technique was used.

4.6: Data collection procedure and instruments

Structured interviewer administered instrument which developed after reviewing different literature was used to collect the data (7,15,16,18,26). The instrument consists of sociodemographic, medical history and Obstetrics and Gynecologic problems related to variables. The tool was prepared in English language and translated to Afaan Oromo and Amharic languages by language experts. Data was collected by trained midwives and nurses working in Gynecologic OPD. Patient chart was reviewed in addition to interview for some variables.

Data collection was started while the client arrived to gynecologic OPD; after getting the consent from client. The principal investigator and two supervisors were following the data collection process daily basis to check consistence and completeness of filled questionnaires to trace missing at early stage of data collection.

4.7: Study variables

4.7.1: Dependent variables

Abnormal uterine bleeding

4.7.2: Independent variables

Socio-demographic variables: Age of women, marital status, religion, monthly income, educational status, occupational status, residence,

Medical factors: medication use, medical problem, obesity, pelvic infection

Menstrual history: family history of AUB, previous history of AUB and treatment, age at menarche

Reproductive and contraceptive use: parity, abortion, contraceptive use, duration of contraceptive use, type of contraceptive

4.8: Operational definitions

Abnormal uterine bleeding - any menstrual bleeding occur outside normal menstrual cycle which differs by duration of flow, volume, regularity or frequency, verified by asking patient as

per individual pattern(2,3). They may have any pattern of AUB according to FIGO classification and may had two or more abnormal pattern of AUB(2).

Income - It is periodical monthly earning from one's business, lands, work, investment etc. classified according to demographic and health survey wealth index for developing country.

Parity – number of birth despite outcome after 28week or 7 month.

Medications use – use any type of medication for same time with compliant AUB or before that may effect on menstrual compliant such as anticoagulants, antipsychotics, corticosteroids and herbal medications(6).

Contraceptive use – women taking hormonal medications or device such as oral contraceptive pill, intramuscular, intrauterine device or subdermal implant for delay or prevent pregnancy (2,9,29).

Medical problem – those systemic conditions affecting bleeding such as thrombocytopenia any cause, coagulopathies, hepatic, renal, hypertension, diabetes and thyroid disease; either chronic or acute

Obesity- for patient whose body mass index (BMI) greater than 30Kg/M^2

Previous AUB compliant – any type previous menstrual compliant that different compliant by pattern or same which resolved currently either by spontaneously or treated.

Previous AUB treatment – any medical or surgical management provided for compliant abnormal uterine bleeding.

Previous surgery- surgery done for compliant AUB or pelvic surgery that affects menstrual outflow, cavity of uterus or affects ovulation

Pelvic infection- women diagnosed either by syndromic approach or by culture recently, but not during 6-12week postpartum

4.9: Data processing and Analysis

Data were checked for completeness, coded and entered to Epidata version 3.1 then exported SPSS version 26 for cleaning and analysis. Before analysis started data cleaning, redefined and recoded for simplicity of analysis and report writing. Descriptive analyses were conducted and result was displayed using texts, tables, charts and figures. Binary and multivariable logistics regression analysis was conducted to identify the associated factors for abnormal uterine bleeding. A P-value of <0.25 used to identify a candidate variable for multivariable logistics

regression analysis on binary regression. The independent variables at P-value <0.05 in multivariable logistic regression analysis was declared statistically significant.

4:10: Data quality management

The questionnaire was tested with 5% of the sample size for its comprehensiveness and understandability at Jimma medical center before starting data collection and reassessed questionnaire. The data was collected by health care providers (midwives and nurses) who were assigned and working at gynecologic outpatient department; they are familiar with subject matter. A one-day orientation was provided for the data collectors focusing on the purpose and the overall research process, the anticipated benefit of the research findings, how to collect, communicate principal investigator during difficulty and check completeness. Two supervisors were assigned to help data collectors and to recheck filled data. On the daily basis data was checked for completeness and consistency. Statistical software's were used to clean process, enter and analyze the data. Each questionnaire was given code with numerical order for confidentiality and retrieval if any information missed. Their medical record number was used to identify each woman and entered to epidata as unique number to avoid repetition.

4.11: Ethical Consideration

I took ethical clearance was from Jimma University ethical clearance board before starting data collection. I took support letter from hospital administrative after explained objective of the study. Informed consent taken from each study participants and confidentiality was kept strongly. For each participant we explain what type study going to be done, no harm be occur for participation, no management will added or avoided due their refusal or participation on this study. Participant has right not to participate on study or withdraw from study any time. Each questionnaire was given code with numerical order for confidentiality and retrieval if any information missed. Name of women was not written on questionnaire. Every woman with abnormal uterine bleeding compliant interviewed at gynecologic OPD after finishing their evaluation and management.

Chapter 5: Result

5.1 Sociodemographic characteristics

In this study 552 women in reproductive age group (18-50years) interviewed making response rate 92.3%. The mean age of study participate were 31.53years (± 7.546 SD) and most of study participant age were 18-30yr -269(48.7%). Most study participant were from rural 324 (58.4%) and 223(41.7%) were from urban area. Majority was Oromo by ethnicity which is 433(78.4%), the rest were Amhara 50(9.1%), Kefa 38(6.9%) and others 31(5.6%). Majority (452, 81.9%) of women were married from study participant. Majority study participant were work as Housewife and farmer which accounts for 248(44.9%) and 148(26.9%) respectively. Most of women were Muslim 368(66.7%) religion followers. The study reveals mean income of study participants were 3324.4birr (SD=1690.6) and majority of the study participant 299 (54.2%) their monthly income lies between 2001 and 4000 Ethiopian birr. Among reproductive age women participated in this study 199(36.1%) had no formal education 65(11.8%) and 207(37.5%) attend up-to primary school. The average BMI in study is 22.29 Kg/m², most of them had normal BMI 421(76.3%). As shown on table 1 age, marital status, religion, occupation, educational status and income are candidate variables for multiple binary logistic regressions analysis.

Table 1: - Sociodemographic characteristics of reproductive age group women visiting Gynecologic OPD at Jimma medical center south west Ethiopia during April 1, up to September 30, 2021

Variables	Categories	Total (N/%)	AUB		COR(95% CI)	P value
			Yes (N/%)	No (N/%)		
Age in years	18-30	269(48.7)	116(43.1)	153(56.9)		1
	31-40	232(42)	85(36.6)	147(63.4)	0.76(0.53, 1.09)	0.14
	41-50	51(9.2)	25(49)	26(51)	1.26(0.696,2.31)	0.47
Residency	Urban	228(41.3)	98(43)	130(57)		
	Rural	324(58.7)	128(39.5)	196(60.5)	0.87(0.61, 1.22)	0.41
Ethnicity	Oromo	433(78.4)	183(42.3)	250(57.7)		1
	Amhara	50(9.1)	19(38)	31(62)	0.84(0.46, 1.56)	0.56
	Kefa	38(6.9)	14(36.8)	24(63.2)	0.8(0.4, 1.58)	0.52
	Other	31(5.6)	10(32.3)	21(67.7)	0.65(0.3, 1.42)	0.65
Marital status	Single	57(10.9)	29(50.9)	28(49.1)		1
	Married	452(81.9)	188(41.6)	264(58.4)	0.69(0.4, 1.2)	0.183
	Divorced	31(5.6)	6(19.4)	25(80.6)	0.23(0.08, 0.65)	0.05
	Widowed	12(2.2)	3(25)	9(75)	0.32(0.079,1.31)	0.114
Religion	Muslim	368(66.7)	158(42.9)	210(57.1)		1
	Orthodox	125(22.7)	43(34.4)	82(65.6)	0.7(0.46, 1.06)	0.09
	Protestant	59(10.7)	25(42.4)	34(57.6)	0.96(0.56, 1.7)	0.94
Occupation	House wife	248(44.9)	112(45.2)	136(54.8)		
	Farmer	148(26.9)	54(36.5)	94(63.5)	0.7(0.46, 1.06)	0.09
	Governmental employee	71(12.9)	24(33.8)	47(66.2)	0.62(0.36, 1.08)	0.09
	Self-employee	38(6.9)	15(39.5)	23(60.5)	0.8(0.4, 1.6)	0.51
	Others	47(8.5)	21(44.7)	26(55.3)	0.98(0.52, 1.84)	0.95
Educational Status	Cannot read and write	199(36.1)	76(38.2)	123(61.8)		1
	Learn up to primary	207(37.5)	82(39.6)	12(60.4)	1.062(0.71, 1.58)	0.77
	Secondary and above	146 (26.4)	68(46.6)	78(53.4)	1.411(0.915, 2.176)	0.12
Income per month	Less than 2000 birr	144(26.1)	59(41)	85(59)		1
	2001-4000birr	299(54.2)	113(37.8)	186(62.2)	0.88(0.583-1.31)	0.52
	Greater than 4000birr	109(19.7)	54(49.5)	55(50.5)	1.41(0.857-2.34)	0.18
BMI	Less 18.5	24(4.3)	12(50)	12(50)		
	18.5-24.9	421(76.3)	170(40.4)	251(59.6)	0.68(0.3, 1.54)	0.35
	Greater 25	107(19.4)	44(41.1)	63(58.9)	0.7(0.287, 1.69)	0.43

5.2 Magnitude and pattern of abnormal uterine bleeding among reproductive-age women

Among reproductive age women who visited gynecologic outpatient department during prevalence of abnormal uterine bleeding were 226 (40.9%). Most of women with AUB had heavy menstrual bleeding 126(22.8%), followed by prolonged menstrual flow 115 (20.8%), frequent menstrual bleeding 106 (19.2%) and irregular menstrual flow 98 (17.8%). Women with AUB may have more than one pattern of AUB during evaluation. Those result shown on table 2 by comparing prevalence among total study population and women with complaint of AUB. Duration complaint range from one month to 96 month, most of them had complaint for more than 6 month 143(72.1%). There are different complaint associated with abnormal uterine bleeding that may add another burden on those or due to complication. In our study abdominal pain 54(23.9%), abdomino-pelvic swelling 34(15%) and pain during menstruation 12(5.3%) are the most common associated complaint with AUB (see table 3).

Table 2: - Pattern of AUB according to FIGO 2018 among reproductive age women visiting Gynecologic OPD in Jimma medical center southwest Ethiopia April 1, to September 30, 2021

Pattern of menstrual blood flow	Number	% from total study population (552)	% among women with AUB (226)
Abnormality in frequency	161	29.1	71.2
<i>Absence of menses</i>	31	5.6	13.1
<i>Infrequent menstrual bleeding</i>	24	4.3	6.1
<i>Frequent menstrual bleeding</i>	106	19.2	46.9
Prolonged menstrual flow	115	20.8	60.9
Heavy menstrual bleeding	126	22.8	55.8
Irregular menstrual flow	98	17.8	43.4
Intermenstrual bleeding	47	8.5	20.8
Unscheduled menstrual bleeding on progestin or estrogen present	7	1.3	3.1

Table 3: - compliant associated with AUB in women having abnormal uterine bleeding visiting Gynecologic OPD in Jimma medical center southwest Ethiopia April 1, to September 30, 2021

Variable	Compliant of AUB	
	Yes (N/%)	NO (N/%)
Abdominal pain	54 (23.9)	52(16)
Abdomino-pelvic swelling	34 (15)	30 (9.2)
Pain during menstruation	12(5.3)	7(2.1)
Pain during sexual contact	7 (2.7)	10(3.1)
Symptoms of anemia	23(10.2%)	2 (0.6)
Foul smelling discharge	5(2.2)	68 (21.2)
Failure to conceive	7(2.2)	40(12.1)
Others	2(0.8)	8(2.5)

Abnormal uterine bleeding versus age of women

The distribution of AUB among the participants indicate that majority of the women in the age range of 18-30 years were dominantly affected by AUB compared to the other age group.

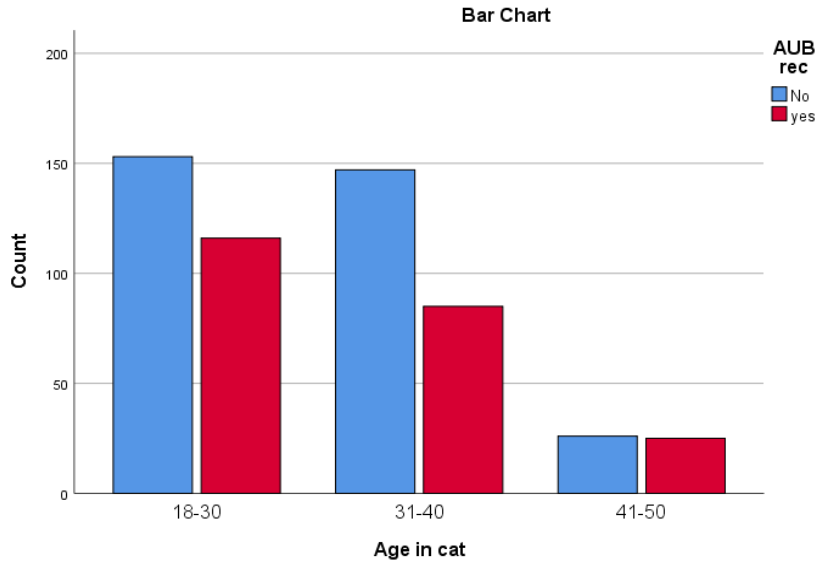


Figure 1: - Distribution of AUB Vs age in categorized among reproductive age women group gynecologic OPD at Jimma medical center south west Ethiopia during April 1up to September 30, 2021

5.3 Reproductive and contraceptive use characteristic among reproductive-age group women

In this study more than half 413(74.8%) of study participant were not using any type of contraceptive method. Most of study participant were using implants 49(8.9%), followed by injectable 39(7.1%) and COC 36 (6.5%). Majority of women experienced at least one episode of pregnancy previously 416 (75.4%) and 136 (24.6%) are null-gravid. Majority of study participant had previous history of delivery 385 (69.7%) and parous (2-4) mothers accounts for 170 (44.2%). From study population 63(11.4%) had one episode of abortion and 35(6.3%) had 2 or more history of abortion. Table 4 also shows parity is candidate variable for multiple binary regression.

Table 4 : - Reproductive and contraceptive characteristics of reproductive age group women visiting gynecologic OPD at Jimma medical center south west Ethiopia during April 1, up to September 30, 2021

Variables	Categories	N (%)	AUB		COR (95% CI)	P-value
			Yes (N/%)	No (N/%)		
Contraceptive use	Yes	139(25.2)	70(50.4)	69(49.6)		
	No	413(74.8)	156(37.8)	257(62.2)	0.6 (0.41-0.89)	0.09
Type of Contraceptive	COC	36(6.5)	18(50)	18(50)		
	Implants	49(8.9)	20(40.8)	29(59.2)	0.69(0.29, 1.64)	0.4
	Injectable contraceptive	39(7.1)	24(61.5)	15(38.5)	1.6(0.64, 4)	0.32
	Others	15(2.7)	8(53.3)	7(46.7)	0.14(0.34, 3.82)	0.83
Has reproductive history	Had at least one pregnancy	416(75.4)	166(39.9)	250(60.1)		1
	Null gravid	136(24.6)	60(44.1)	76(55.9)	1.19(0.8, 1.76)	0.39
Parity	Nulliparous	167(30.3)	72(43.1)	95(56.9)		1
	Para one	75(13.6)	27(36)	48(64)	0.742(0.423-1.3)	0.249
	Para 2-4	170(30.8)	74(43.5)	96(56.5)	1.02(0.661-1.57)	0.94
	para >=5	140(25.4)	53(37.9)	87(62.1)	0.8(0.508-1.272)	0.35
History of Abortion	No history of Abortion	454(82.2)	186(41)	268(59)		1
	Had one history abortion	63(11.4)	26(41.3)	37(58.7)	1.04(0.52, 2.1)	0.96
	Had two or more abortion	35(6.3)	14(40)	21(60)	1.05(0.454, 2.45)	0.91

Parity versus abnormal uterine bleeding

Distribution of abnormal uterine bleeding is higher in nulliparous and multiparous compared para one and grand multiparous women.

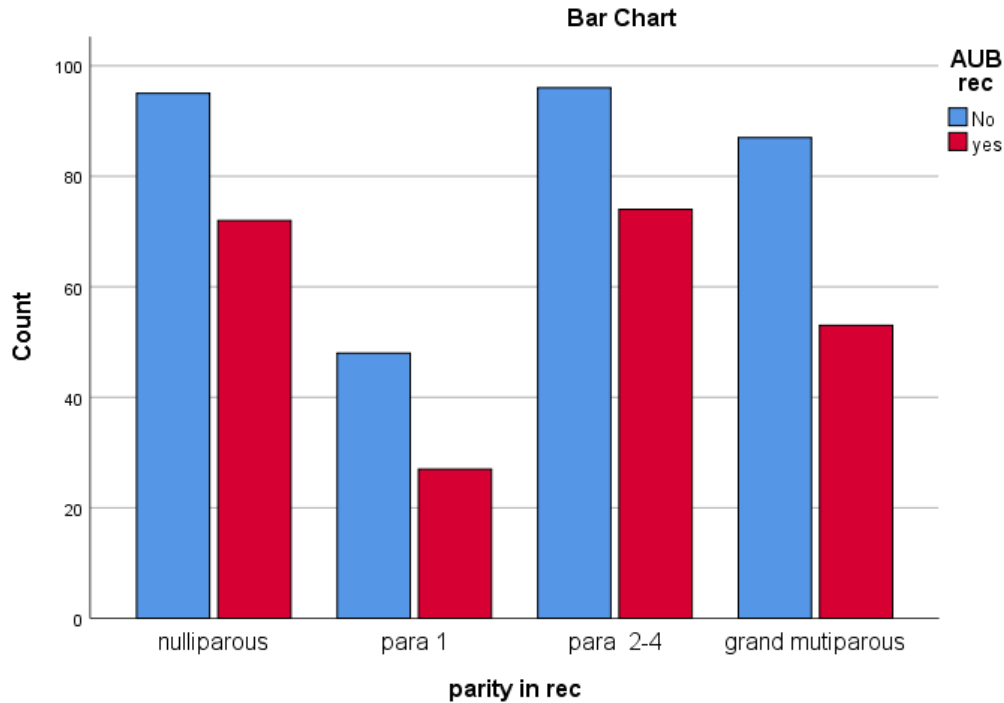


Figure 2: - shows distribution of parity Vs AUB among reproductive age group women visiting gynecologic OPD at Jimma medical center south west Ethiopia during April 1, up to September 30, 2021

5.4 Menstrual and medical history of among reproductive-age women

According to this study mean age at menarche were 14.11years (± 1.09 SD), and most women 435(78.8%) saw their menses between 13-15 years of age. 28 (5.1%) of study participant do not remember their age at menarche. From all study participants, 116 (21%) women had previous history of abnormal uterine bleeding and only 43 (37.1%) took treatment. Only small part of women had family history of AUB 11(2%), 102(18.5%) women did not know whether any of family has of AUB and 439(79.5%) women did not have family AUB compliant. Among study participant 72(13%) had medical illness, mostly had HTN 31(5.6%), RVI 19(3.4%), diabetes mellitus 11(2%) and thyroid disease 8 (1.4%). Only 51(9.1%) using any type medication during their visit, most of them are taking ART medication 19 (3.4%) and others 33(6%) using other medication such as antihypertensive and for diabetes. Table 5 also shows previous history of AUB, treatment of previous AUB, family history of AUB and type of medical illness are candidate variables

Table 5: Menstrual and medical history of among reproductive-age women visiting gynecologic OPD at Jimma medical center south west Ethiopia during April 1, up to September 30, 2021

Variable	Categories	N (%)	AUB		COR (95 % CI)	p-value
			Yes (N/%)	No (N/%)		
Age at menarche	Less 12 years	40(7.2)	13(32.5)	27(67.5)		1
	13-15	435(78.8)	183(42.1)	252(57.9)	1.51(0.76, 3)	0.25
	Greater than 16	49(8.9)	21(42.9)	28(57.1)	1.54(0.65, 3.7)	0.32
Previous abnormal uterine bleeding	Yes	116(21)	74(63.8)	42(36.2)		
	No	436(79)	152(34.9)	284(65.1)	0.304(0.2, 0.47)	0.00
Treatment for previous abnormal uterine bleeding	Yes	43(37.1)	36(83.7)	7(16.3)		
	No	73(62.9)	36(51.4)	34(48.9)	0.21(0.08-0.53)	0.001
Family history of AUB	Yes	11(2)	10(90.9)	1(9.1)		1
	No	439(79.5)	178(40.5)	261(59.5)	0.068(0.009, 0.54)	0.11
	I did not know	102(18.5)	38(37.3)	64(62.7)	0.059(0.007, 0.48)	0.008
Any medical illness	Yes	72(13)	30(41.7)	42(58.3)		
	No	480(87)	196(40.8)	284(59.2)	0.97(0.58, 1.6)	0.89
Type of medical illness	DM	11(2)	4(36.4)	7(63.7)		1
	HTN	31(5.6)	14(45.2)	17(54.8)	1.44(0.35, 2.95)	0.61
	Thyroid disease	8(1.4)	6(75)	2(25)	5.25(0.7, 39.5)	0.11
	RVI	18(3.4)	4(22.2)	14(77.8)	0.5(0.95, 2.62)	0.41
Are using any type medication	Yes	51(9.1)	20(39.2)	31(60.8)		
	No	501(90.8)	206(41.1)	295(58.9)	0.97(0.58, 1.6)	0.89
Type of medication	Not taking any medication		206(41.2)	294(58.8)		1
	ART	19(3.4)	6(31.6)	13(68.4)	0.66(0.25, 1.76)	0.4
	Others	33(5.97)	14(42.4)	19(57.6)	1.05(0.52, 2.15)	0.89

5.5 Evaluation and management provided for women with compliant of AUB

5.5.1 Investigation done for women with compliant of AUB

Among women presented with compliant of abnormal uterine bleeding 23(10.5%) had severe anemia, 17 (7.8%) moderate anemia, 14(6.4%) mild anemia and 164(75.2%) had normal hematocrit compared with women without AUB compliant, and only 2(0.7%) presented with severe anemia. Only 8 (3.5%) of women with abnormal uterine bleeding had platelet less than 150×10^3 and 17(7.5%) platelet not done. Nearly 215(95.1 %) of women with compliant of AUB urine pregnancy test was done compared 79.8% for women without AUB during study period. Endometrial biopsy done for 38 reproductive age women group during study period, 27 women had AUB compliant. Other laboratory investigations commonly done for women with AUB were TSH for 57(25.7%), FSH done for 25(11.1%). Hormonal profile is mostly done for evaluation for other cases such as infertility evaluation. Most imaging done in study set up was abdomino-pelvic ultrasound for 201(88.9%) women with compliant of AUB compared 273(83.7%) women without compliant of AUB. Mostly women with AUB ultrasound finding are normal 164(72.6%) and uterine leiomyoma found in 33(14.6%). For those without AUB ultrasound finding are normal in 236(72.39%), adnexal mass 23(7.1%) and uterine leiomyoma found only in 12(3.68%). Coagulation profile done only for 5 women with compliant of abnormal uterine bleeding no abnormality been detected.

Table 6:- Summary of investigation and management provided for reproductive age women visiting gynecologic OPD in Jimma medical center southwest Ethiopia April 1, to September 30, 2021.

Variables	Value level	Abnormal uterine bleeding	
		Yes (N/%)	No (N/%)
Hct	Less 21%	23(10.5)	2 (0.7)
	21-29.9	17 (7.8)	4 (1.3)
	30-32.9	14 (6.4)	11 (3.6)
	Greater than 33	164 (75.2)	290 (94.5)
	Not done	8	19
	Platelet	Less than 150×10^3	8 (3.5)
	Greater than 150×10^3	201(88.9)	285 (87.4)
	Not done	17(7.5)	35(10.7)
Urine pregnancy test	Negative	215(95.1)	260(79.8)
	Not done	11(4.9)	66 (20.2)
Endometrial biopsy	Done	27(11.9)	11(3.4)
	Not Done	199(88.1)	315(96.6)
TSH	Done	57(25.2)	57(17.2)
	Not done	169(74.8)	269(82.5)
FSH	Done	25 (11.1)	57 (17.5)
	Not Done	201 (88.9)	269 (82.8)
Ultrasound	Normal	164(72.6)	236(72.39)
	leiomyoma	33(14.6)	12(3.68)
	Adnexal mass	2	23(7.06)
	Others	2	2
	Not done	25(10.2)	53(16.3)

5.5.2 Management provided for women with compliant of AUB

Even if cause of AUB diagnosed individually not being evaluated in detail and documented according FIGO 2011 guideline as P₀A₀L₀M₀ -C₀O₀E₀I₀N₀. Cause of AUB diagnosed only in small cases leiomyoma 36(14.6%) and other causes are endometrial polyp, endometritis and

endometrial cancer. In this study underlying causes of AUB mostly not identified mostly. Most of women with compliant of AUB being managed medically 128(57.4 %), others surgically 25(11.2%), both management provided for 13 (5.8%) and expectant or watchful for 60(26.5%). Those managed medically given COC 109 (48.2%) and Ibuprofen 45 (11.6%). Among patient AUB 54(23.9%) had anemia and 31(13.7%) required transfusion. There are 31(13.7%) women with AUB had either hysterectomy or myomectomy done through open surgery, no women had laparoscopic or hysteroscopy surgery.

Table 7:- Management provided for reproductive age women visiting gynecologic OPD in Jimma medical center southwest Ethiopia April 1, to September 30, 2021

	Management provided	N (%)
Management provided	Medical	128(57.4)
	Surgical	25(11.2)
	Both management	13(5.8)
	Expectant management	60(26.5)
Type medical management provided	Anti-pain (ibuprofen)	45 (11.6)
	COC	109(48.2)
	Blood transfusion	32(14.16)
Surgical management provided	Hysterectomy/myomectomy	31(13.71)
	Others	8(3.5)

5.6 Factors associated with abnormal uterine bleeding

Binary multivariable logistic regression was fitted to identify independently associated with AUB among reproductive-age women. According; age between 31-40year, government employee, para one and previous treatments of AUB were independently associated with AUB among reproductive-age women.

A reproductive-age woman whose age is between 31-40year was 92.4% less likely to develop AUB (AOR=0.076, 95% CI: 0.01, 0.6). Para one women was 90.2% less likely to present with AUB (AOR=0.098, 95% CI: 0.016, 0.624). The government employee was 88.8% less likely to present with AUB (AOR=0.112, 95% CI: 0.016, 0.766). Those women who did not treated for AUB or put on expectant management previously was 92.7% less likely to develop AUB (AOR=0.073, 95% CI:0.015, 0.345).

Table 8: -Factors independently associated with Abnormal uterine among reproductive-age women visiting gynecologic OPD at Jimma medical center south west Ethiopia during April 1, up to September 30, 2021

Variables	Categories	AUB	95% CI	P value
		AOR		
Age in years	18-30			
	31-40	0.076	0.01-0.6	0.015
	41-50	0.088	0.003-2.36	0.148
Occupation	House Wife			
	Farmer	0.223	0.047-1.054	0.058
	Gov't employee	0.112	0.016-0.766	0.026
	Self-employee	1.795	0.062-52.37	0.734
	Others	0.525	0.053-5.2	0.582
Parity	Nulliparous			
	Para one	0.098	0.016-0.624	0.014
	Multiparous	0.557	0.109-2.857	0.483
	Grand multiparous	0.557	0.066-5.026	0.618
Previous treatment of AUB	Yes			
	No	0.073	0.015-0.345	0.001

Chapter 6 Discussion

Prevalence of AUB is different based on study set up and pattern of AUB included(2). In this study prevalence of AUB is 40.9% which is higher than most studies in different country. Exaggerated prevalence of AUB is due inclusion all pattern of AUB in study as defined by FIGO 2018 especially amenorrhea and irregular menstrual bleeding which not included in most study(2). Most study mention prevalence of AUB as acute one which mostly include heavy menstrual bleeding because it is most common and concerning to women, society and physician(2,18). The other difference in prevalence of AUB is due difference reproductive profile, culture and socio-economic status of study population(2,5,15,30). Most of study mentions prevalence AUB including only heavy menstrual bleeding which shows decreased prevalence. Also in Iran population based study on prevalence of AUB and its related factors shows prevalence of AUB 35% and higher(18,24).

Prevalence of pattern of AUB is difficult to compare with most study because there is recent change in definition of terminology AUB pattern(1). It is also difficult to get published local study for comparison. In this study abnormality in frequency of menstrual cycle is higher 161(29.1%) of frequent menstrual bleeding is commonest 106(19.2%) comparable with study done western Kenya where frequent menstrual bleeding is 20.4% and higher than other similar study(15). Indian study shows comparable prevalence of frequent menstrual bleeding (polymenorrhea) 18.35%(22). Amenorrhea another abnormality in frequency menstrual flow is not included as AUB in most study, but generally prevalence of secondary amenorrhea ranges 5-20%(10,12,17,25). Its frequency in population based study in Iran shows 2.2%, in this study higher it may not represent whole society(18).

Other most common and concerning pattern of AUB is heavy menstrual bleeding which 22.8% among total study population which slightly higher than similar other study done in western Kenya and Chinese and comparable with study in India menorrhagia (HMB) is highest around 48.6% (5,15,22,24). Also prevalence of HMB in our study is in same range with WHO multicenter study which ranges from 16-27% in different developing country(10). Difference in population expressing heavy menstrual bleeding is more subjective different from society to society(20). Other patterns of AUB prevalence of irregular menstrual bleeding, prolonged menstrual flow and intermenstrual bleeding is 17.8%, 19.2% and 8.5% respectively which

slightly higher than other studies (22). In population based study prevalence of disturbance in regularity, prolonged flow and intermenstrual bleeding are 18.9%, 10% and 10.4% respectively(18). Korean study assessing prevalence irregular menstrual bleeding in reproductive age women shows 14.2% and other similar study shows prevalence range 5-36.6%(22,30).

Among factors affecting prevalence of AUB is age of the women, in this study age 31-40years 92.4% less likely to develop AUB (AOR=0.076, 95% CI: 0.01, 0.6). Among same group prevalence of AUB is 18-30, 31-40 and 41-50years are 43.1, 37.6 and 49% respectively. This research finding are comparable to other similar research done in reproductive to women age(5,16,25). Study done India tertiary hospital shows prevalence of AUB was highest in age above 40year, similar to this study(32). Majority AUB compliant occur in extreme age group especially late in their 40years, which can be pathological or physiological. In this study government employee is 83.4% less likely to present with AUB (AOR= 0.166, 95% CI: 0.041, 0.68). Also difference in socio-demographic characteristics of women affects the health seeking behavior. Other difference is also duration compliant, contraceptive use and their parity may be main reason for this difference(20).

The other factors affecting prevalence of AUB is reproductive history of women, mainly being null parity and multiparous women are more likely to develop AUB. Similarly in this study para one woman are 90.2% less likely to present with AUB (AOR= 0.098, 95% CI: 0.016, 0.624). Different structural cause of AUB are common in nulliparous and infertile women; and those delivery history had decreased chance to be affected by AUB(23). Similarly as number of deliver increase risk of AUB increase because advancement of maternal age. Those multiparous women will be more likely to develop AUB due their advanced age most of those population. The other factors which affects prevalence of AUB is women with previous history of AUB which did not require treatment of AUB or put on expectant management has 92.7% less likely to affected by AUB on their future (AOR=0.073, 95% CI: 0.015, 0.345). Most of women complain AUB treated by contraceptive, which by itself cause other pattern of AUB(29).

Strength and Limitation of study

Strength

All data collected during hospital visit of women avoid loss information related to investigation and decrease recall bias because most women came to have management.

Limitation

This study does not show the association of underlying causes and abnormal uterine bleeding.

Consecutive type sampling used may affect generalization of study.

Chapter 7 Conclusion and Recommendation

7.1 Conclusion

AUB is one of the commonest reasons women visit health institutions in many study set ups, the prevalence of AUB in this set up is 40.9%. Prevalence of pattern of AUB in this study is HMB 22.8%, prolonged menstrual bleeding 20.8%, frequent bleeding 19.2%, irregular menstrual bleeding, intermenstrual bleeding 4.3% and amenorrhea 5.6%. Prevalence of anemia is high (24.8%) in patients with complaints of AUB and 10.3% had severe anemia that need transfusion. Main causes of AUB identified is leiomyoma 14.3%, otherwise most of them treated empirically. Main factors associated with AUB in multivariable regression are age of women, occupation, parity and previous AUB patient on expectant management or not treated.

7.2 Recommendation

- Department of Obstetrics and gynecology use this research as additional input to update guidelines, clear communication among staff and management of cases of abnormal uterine bleeding especially heavy menstrual bleeding
- Federal minister of health, regional and zonal health bureau, health institution uses this research as input to create awareness for the community on early health institution visit for women with symptoms of AUB and symptoms of anemia.
- Other researchers - to have further study on the high burden of AUB and real impact of AUB in society.

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Annex 1

Questionnaires' for the study on abnormal uterine bleeding, its clinical pattern and associated factors among reproductive-age women visiting gynecology outpatient department at the Jimmaa medical center, south west Ethiopia

Consent form

Good morning/afternoon, I am_____ team of collecting data on abnormal uterine bleeding, it's clinical pattern and associated factors among reproductive-age women visiting Gynecology out-patient department at Jimma medical center. Participant should be volunteer to participate in study that does not cause any harm. I would like assure confidentiality of your information. Information will be used only for research purpose and has right to participate or reject study any time during interview. Information you will give us has very important for successful completion of this study.

Are you willing to participate in this study?

Agree_____ continue

Do not agree_____ stop?

Thank you

Investigator: - **Dr Geda Abera** (final year Obstetric and Gynecologic resident)

Data collector Name _____ Date_____ Sign_____

Supervisor_____ Date_____ Sign_____

Part 1: Sociodemographic characteristics

101. Age _____ years MRN_____
102. Residency a) Urban b) Rural
103. Ethnicity a) Oromo b) Amhara c) Kefa d) Others, specify _____
104. Religion a) Muslim b) Orthodox c) Protestant d) Waqefeta
e) Other, specify_____
105. Marital status a) Single b) Married c) Divorced d) Widowed
106. Occupation a) House wife b) Farmer c) Government employee
d) self-employee e) Student f. Private employee
g. Other, specify_____
107. Monthly family income (in birr) _____
108. Educational status a) No formal education b) Able to read and write c) Primary school
d) secondary school e) College and above
109. A) Weight (in Kg) _____ B) Height (in meter) _____

Part 2: Reproductive and medical history

201. Are you using any contraceptive currently? 1) Yes 2) No
202. Type of contraceptive currently using
a) Combined oral contraceptive (COC) b) Progesterone only pills c) Implants
d) Progestin intra-uterine device (IUD) e) others, specify_____
203. How long did use this contraceptive (month) _____
204. Reproductive history a) Parity_____ b) abortion_____ c) Gestational trophoblastic disease (GTD) _____
d) ectopic Pregnancy_____
205. Did you have any medical illness? a) Yes b) No
206. If Yes to Q205, what illness?
a) Diabetes mellitus b) Hypertension c) Hypothyroidism d) bleeding disorder
e) Others, mention_____
207. Are you using any medication currently? a) Yes b) No
208. If Yes to Q207, what is medication currently using?
a) Anticoagulants (Warfarin, heparin) b) antipsychotic c) corticosteroids
d) herbal remedy e) Others, Mention_____

Part 3: Menstrual history of women

301. What was your age during first menses? _____ Year

302. Do you have previous history of menstruation problem different from current complaint?

- a) Yes b) No

303. If yes to Q302, what was your menstrual complaint?

- a) Heavy menstrual bleeding b) Prolonged menstrual bleeding c) Frequent bleeding
 d) Infrequent menstrual bleeding e) Amenorrhea f) Irregular menses
 g) Inter-menstrual bleeding i) Break-through bleeding

304. Did you treated for menstrual complaint previously? a) Yes b) No

305. If yes Q304, what was given? Mention _____

306. Do you have family (mother/sister) history of AUB complaint? a) Yes b) No c) I did not know

307. If yes to Q307, what was their complaint if remember? Mention _____

308. Do you have menstrual complaint currently? a) Yes b) No

309. If Yes to Q-308, duration of complaint _____ months

310. If Yes to Q-308, fill on the following table Pattern of menstrual bleeding? More than one answer possible

Parameter	Pattern	Answer (mark)
Frequency	Absent menses for 6 month (ammennorrhea)	
	Infrequent (>38days)	
	Normal (24-38days)	
	Frequent (<24days)	
Duration menstrual flow	Normal (less 8days)	
	Prolonged (>8days)	
Regularity (by shortest to longest cycle variation over 6month)	Regular (<8days)	
	Irregular (>8-10days)	
Menstrual flow volume (patient determined)	Normal	
	Heavy	
Intermenstrual bleeding (IMB) bleeding between cyclically regular onset of menses	None	
	Random	
	Cyclical (predictable)	
Unscheduled bleeding on progestin +/- estrogen gonadal steroids	Not applicable (not on gonadal steroids medications)	
	None (on gonadal steroids	

	medications)	
	Present	

311. Did you have other associated complaint? a) Yes b) No

312. If yes for Q-311, what is complaint did you have?

- a) Abdominal pain
- b) Abdomino-pelvic swelling
- c) Pain during menstruation
- d) Pain during sexual activity
- e) Symptoms of anemia (dizziness, vertigo, tinnitus)
- f) Others, mention_____

Part 4: Investigations done, causes identified and management provided (from chart)

401. Laboratory investigations

- a) CBC- Hct_____ Plt_____ b) Urine pregnancy test_____
- c) Coagulation profile_____

402. Hormonal profile a) TSH_____ b) FSH_____

c) Others, mention _____

403. Endometrial biopsy done a) Yes b) No

404. Imaging done a) ultrasound i) Abdominopelvic_____

ii) Trans-vaginal_____

b) Hysteroscopy_____

c) Others, mention_____

405. What cause of AUB provided as PALM-COEIN classification? If mentioned on the chart_____

406. What management provided on current visit (mention) a) medical management

b) surgical

407. What medical management provide? Mention each

- a) Anti-pain _____ b) Contraceptive (hormonal)_____
- c) Blood transfusion d) Others, mention _____

408. If surgical management given

- a) Endometrial ablation
- b) Curettage/MVA
- c) hysterectomy
- d) Others, mention_____