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MENSTRUAL HYGIENE AND PSYCHOSOCIAL AND STRESS RELATED RISK FACTORS AFFECTING MENSTRUAL BLEEDING PATTERN IN ADOLESCENT AGE GROUP

Obstetrics & Gynaecology

Dr Roshni Mitra 3rd Year PGT, Department Of Obstetrics And Gynaecology, Burdwan Medical College And Hospital

Dr Malay Sarkar Associate Professor, Burdwan Medical College And Hospital

ABSTRACT

Aim And Background:- Abnormal uterine bleeding in adolescent age group is very common . We aimed to show the association between menstrual hygiene and psychosocial and stress related factors that is affecting the menstrual bleeding pattern in various ways . Also the association of AUB will be shown with other causes that is coagulopathy, leiomyoma, polyp as well. There may be some iatrogenic causes as well and sometimes there may not be any cause at all (this section of girls will come under the causes which are not yet identified).There may be ovarian and endocrine causes as well. Ovarian causes are widely distributed among immature H-P-O axis, PCOS, Estrogen producing tumor. Endocrine cause are mainly hypothyroidism and hyperprolactinaemia. Menstrual hygiene management if avoided can lead to vaginitis, sarcoma botryoides ,pelvic inflammatory disease that is responsible for abnormal uterine bleeding. The outcome will be based on patients in Burdwan medical college and hospital. **Materials And Methods:-** This study is a prospective cohort study conducted in BURDWAN MEDICAL COLLEGE AND HOSPITAL OBSTETRICS AND GYNAECOLOGY from AUGUST 2021 TO AUGUST 2022. All girls attending OPD and IPD were selected as study cases where adolescents with non menstrual complaints ,primary amenorrhea and dysmenorrhea were excluded. The girls with complaints of heavy menstrual bleeding ,irregular cycles , oligomenorrhea and puberty menorrhagia formed the study. Complete blood count ,PT/APTT,LFT,RBS and Thyroid function tests were done in these girls . Transabdominal sonography was done. In suspected cases like PCOS additional tests like serum prolactin is done. History and information regarding sociodemographics , menstrual hygiene management practices and lifestyle approach was taken in a questionnaire form. **Result:-** The sample size is taken to be 100.The mean age of patient was 15 years with majority (47%) having age between 13-15yrs followed by (40%) in age group 16-19years and (12.5%) in age group 10-12 years. Here 90% patients were in AUB-O class that is ovarian function i.e. anovulation which is mainly due to stress related factors followed by 5% in not yet identified ,2% in AUB -C , 2% IN AUB - I,0.5% IN AUB-L and AUB-P class. Amongst these girls 30% were found to be not following menstrual hygiene like using same tampon or sanitary napkin for long hours , not bathing during menstruation ,etc. The stress related factors affecting menstrual bleeding pattern has been shown in form of various tables that includes lifestyle approach ,sleep behaviour etc. **Conclusion:-** The study concluded that menorrhagia in adolescents can be caused by a number of conditions ,the most common being anovulation which is a result of immature hypothalamic-pitutary-ovarian axis.Assesment of cases has been done through careful history in questionnaire form , physical examination and laboratory investigation. Abnormalities like fibroid and polyp has to be ruled out.Once the diagnosis is made , appropriate medical or surgical management is to be done.Interventions to ensure that these adolescent girls have access to private sanitation facilities with water , soap and regular change of sanitary napkins that could reduce reproductive tract infections .As well as more stress ,improper sleep levels and low education status of mothers amongst school going adolescent girls were strongly associated with abnormal menstrual patterns with more symptoms during menstruation.

KEYWORDS

Adolescent age group, AUB, Anovulation, Heavy menstrual bleeding, Reproductive tract infections.

INTRODUCTION:-

World health organization (WHO) defines adolescence as the age between 10 and 19 years and is a transitional stage between child and adulthood. AUB is defined as bleeding from uterine origin that is abnormal in duration, volume, frequency and regularity. It accounts for half of the gynaecological problems among adolescents. Excessive bleeding in amount (>80ml) or in duration (>8 days) between menarche and 19 years of age and is a form of AUB. The transition from anovulatory to ovulatory cycle during adolescence takes place during the first several years after menarche [1] . Cycles that are longer than 42 days, bleeding that occurs more frequently than 21 days, and bleeding that last more than 8 days should be considered abnormal, particularly after the first 2 years from the onset of menarche. Bleeding occurring less frequently than an interval of 90 days is abnormal, even in the first gynaecologic year after menarche. An improved classification system for abnormal uterine bleeding has been named by International Federation of Gynaecology and Obstetrics (FIGO) in 2011, which is called PALM-COEIN. PALM holds for the pathologies related to the uterine structural anomalies (polyp, adenomyosis, leiomyoma, malignancy and endometrial hyperplasia). COEIN holds for the pathologies unrelated with uterine structural anomalies (ovulatory dysfunction, coagulopathy, endometrial, iatrogenic, and unclassified) . PALM side of the classification refers to structural causes that may be evaluated by imaging techniques and/or histopathology and the COEIN side by investigating the underlying medical disturbances. The most common cause of AUB in the adolescent is anovulation. Anovulation can result from abnormalities at any levels of the hypothalamic-pituitary-ovarian (HPO) axis resulting in the interruption of ovulation.

The second most common cause of AUB in adolescents is coagulopathy. Platelet dysfunction has been noted to be the most common haemostatic defect found in adolescents with AUB. The first-line approach to acute bleeding in the adolescent is medical management; surgery should be reserved for those who do not respond to medical therapy. Primary goals are prevention of complications, such as anemia and reestablishment of regular cyclical bleeding [5] . AUB is very rarely due to structural problems (1.3-1.7%) in adolescents. Anovulatory cycles, discussed separately below, which may manifest as amenorrhea, oligomenorrhea or HMB owing to immature hypothalamic-pituitary-ovarian axis are the most common cause of AUB among adolescents. As another leading etiology, coagulopathy prevalence is reported to vary between 5% and 28% among hospitalized adolescents with HMB in different studies. In a systematic review gathering data of 100 women (15-55 years) with HMB, the incidence of von Willebrand disease (vWD) was found to be 13%. Coagulopathy may also be due to other coagulation factor deficiencies, immune thrombocytopenia, platelet dysfunction, thrombocytopenia secondary to malignancy or due to treatments for malignancy. Coagulopathy may be an isolated or accompanying disorder [6] . Thyroid dysfuction may be a cause. Etc The choice of treatment for acute management is dependent on clinical stability, overall acuity, suspected etiology of the bleeding, and underlying medical problems. AUB is very rarely due to structural problems (1.3-1.7%) in adolescents Menstrual hygiene management (MHM) is now a key public health priority for women and adolescent girls globally . Poor menstrual hygiene practices among adolescent girls in impoverished communities in low- and middle-income countries (LMICs) is common [2].

The key barriers are inadequate knowledge of MHM and lack of access to appropriate menstrual absorbents due to poverty or cultural practices . In addition, there are often challenges with accessing adequate and appropriate water, sanitation and hygiene (WASH) in schools due to the poor infrastructural planning of schools and limited resources. Inadequate MHM among adolescent girls is associated with adverse health and social outcomes . The use of reusable absorbent material among non-pregnant women (>18y) attending outpatient clinics, was associated with a two-fold increase in urine and reproductive tract infections (including bacterial vaginosis and

candida), while increased wealth and more space for personal hygiene were protective. Also, adolescent age is an "age cohort" which provides an opportunity to identify risk factors for upcoming adolescent cohorts and design appropriate promotive and preventive strategies. Adolescent girls experience many stressors, which may be attributed to studies, peer pressures, bad habits, causing the deleterious effect on their physical as well as mental health. Adolescent girls, while going through puberty and meet changing expectations of others and cope with feelings that may be new to them. There are various sexual and reproductive problems faced by girls in this age.[5] Majority of these problems remain unaddressed and unnoticed because of various factors such as inadequate knowledge, familial conditions, hesitancy of revealing problems to family members, and many other environmental and social factors.[5-7] Female reproductive system is characterized by regular cyclic changes known as menstrual cycle. First menstruation (menarche) commonly occurs at a mean age of 13 years (range 11–15 years).[8] Menstruation is cyclical bleeding from uterus due to shredding of its endometrial wall, which lasts for an average of about 4–7 days and among two-third of women, average cycle observed is of 21–35 days. Duration and regularity of menstrual cycle are influenced by several factors, including sociodemographic profile, psychosocial stress, disturbed sleep level, strenuous physical exercise, diet, etc.[13-18] Various studies have documented increased stress level during menstrual pain and also identified stress as one of key factors responsible for menstrual irregularities.[13-15,19] Unhealthy lifestyle is also a major risk factor for menstrual abnormality. There are limited data available on prevalence of menstrual problems and their association with factors mainly psychological stress and disturbed sleep level.The study results will be helpful in deriving relation between these three factors i.e. abnormal uterine bleeding,menstrual hygiene management and psychosocial and stress related risk factors and creating strategies to improve the outcome.

MATERIALS AND METHODS:-

This study is a **prospective cohort study** conducted in **Burdwan Medical College And Hospital ,obstetrics And Gynaecology** From **August 2021 To August 2022.** All girls attending OPD and IPD were selected as study cases .

Exclusion Criteria:- Adolescents with non menstrual complaints, primary amenorrhea and dysmenorrhea were excluded.

Inclusion Criteria:-The girls with complaints of heavy menstrual bleeding, irregular cycles, oligomenorrhea and puberty menorrhagia formed the study.

Complete blood count ,PT/APTT,LFT,RBS and Thyroid function tests were done in these girls . Transabdominal sonography was done. In suspected cases like PCOS additional tests like serum prolactin is done. History and information regarding sociodemographics, menstrual hygiene management practices and lifestyle approach was taken in a questionnaire form. Self-administered questionnaires related to sociodemographic information and menstrual histories were distributed.

Procedure of Study:

History (history was taken from parents/guardian (whenever required in addition to patients) History should be taken from both with and without the parents. History included; menstrual history (age of menarche, regularity, duration, number of pads\tampons per day), sexual history, past medical history (systemic illness, current\recent medication), systemic review (symptoms associated with systemic causes of HMB such as obesity, PCOS, hypothyroidism, hyperprolactinemia, hypothalamic or adrenal disorder) and family history (coagulopathy, hormone sensitive cancers). History of heavy menses since menarche, surgery related bleeding, bleeding associated with dental work, bruising or epistaxis one to two times per month, frequent gum bleeding and bleeding symptoms in family point an underlying bleeding disorder. Then a thorough clinical examination was performed which included; general survey, systemic and gynaecological examination. (whenever applicable). Detailed general physical and systemic examination was done after informed verbal consent from the patient and her accompanying guardian. Finally girls with complaints of heavy period, irregular cycles and oligomenorrhoea (AUB) formed the study group. Complete blood count, PT/aPTT, kidney function test, liver function test and random blood sugar and Thyroid Function Test (TFT) were done in all girls. If PT/aPTT was deranged then further coagulation profile was done. Trans abdominal ultrasonography (USG) was done . In suspected PCOS cases and girls with obesity, oligomenorrhoea and hirsutism additional tests like Serum Prolactin level and insulin Prevalence of menstrual disorder in adolescent was calculated management and of cases according to FIGO guideline was done. Treatment of AUB would be based on underlying etiologic and severity of bleeding.A standard pretested questionnaire to collect sociodemographic data and quantify knowledge and practices of menstruation (including age of menarche; knowledge and attitudes about menstruation; menstrual hygiene practices such as type of menstrual absorbent used, change frequency, washing and drying practices of reusable material; access to water, sanitation and hygiene at home; frequency of symptoms suggestive of urinary or reproductive tract infections). In addition, Sleep level grading and stress level grading alongwith the lifestyle approach of these adolescent girls has been recorded to draw out a conclusion regarding its association to menstrual irregularities.

RESULT:-

The sample size is taken to be 100.The mean age of patient was 15 years with majority (47%) having age between 13-15yrs followed by (40%) in age group 16-19years and (12.5%) in age group 10-12 years. Here 90% patients were in AUB-O class that is ovarian function i.e. anovulation which is mainly due to stress related factors followed by 5% in not yet identified ,2% in AUB -C , 1% IN AUB -I,1% IN AUB-L and AUB-P class.

With that it has also been shown in percentages the type of absorbent material being used by these adolescent girls . We came to know that 70% of the girls are using reusable clothes/towels which is highly unhygienic. Also that 40% of these girls change the pads (if used) only once a day and the frequency of not taking baths during menstruation is very high among this group especially this section of population .

Now for the psychosocial stress we have measured the sleep level grading and stress level grading along with the way of lifestyle approach of these girls.

Lastly we will show the association of all these factors that is how many of these girls practising unhygienic menstrual practices and having psychosocial stress are suffering from abnormal menstrual bleeding. As we can see that psychosocial stress has been graded as "No to mild stress" and "Mild to moderate stress" . Under these topics the menstrual bleeding pattern abnormality has been shown where we can see that the infrequent bleeding(one or two episode in a 90 day period) is the commonest with a good amount of 39% in maximum adolescent girls in mild stress category. Along with that it has also been stressed that menstrual hygiene management affects the menstrual bleeding pattern as we can see that the girls who are changing the absorbent material on a regular basis are less affected by the abnormalities in menstrual bleeding pattern that is 25% rather than the girls who only change absorbent material only once a day in one of the heavy bleeding days that is 40%.

DISCUSSION :-

AUB is a common disorder in adolescent which leads to significant complication. It is one of the common causes of hospitalization in adolescent females. Menarche is a hallmark event in the life of adolescent girls it marks the transition from childhood to puberty. Most common presentation of abnormal uterine bleeding in adolescents is puberty menorrhagia. It is defined as excessive bleeding occurring between menarche and 19 years of age. Our study found that reusable cloths/towels were the commonest absorbent materials used by the girls. Less than half of girls used disposable pads. UTI and RTI symptoms were common and associated with sub-optimal access to water, sanitation and hygiene facilities at school. UTI symptoms were also associated with extreme menstrual pain and accessing disposable sanitary pads in school while RTI symptoms were also associated with heavy menstrual bleeding and duration.Indeed, girls who attended schools where the access to water and privacy of toilets were optimal had reduced prevalence ratios for UTI symptoms, while availability of soap to wash hands in school toilets was associated with reduced prevalence ratios for RTI symptoms, suggesting a protective effect.Girls would have been hindered from accessing the toilets during their menstrual period due to overcrowding that would have had a negative impact on their MHM practices . Many cross-sectional studies or surveys have been conducted in past documenting prevalence of menstrual problems among adolescent girls. However,

limited studies had explained its relationship with psychosocial and stress-related risk factors. Therefore, we conducted study to document best evidence for risk factors of abnormal menstrual pattern. In present study, the majority of adolescent girls belonged to preadolescent age group. Present study showed that among cases, one-fifth of mothers education was up to primary or middle school level including one tenth as illiterate. In our study, fathers of about half of the adolescent girls had completed their education till graduation level, and very few were illiterate. In the present study, more than half of study participants reported "no" to "mild" stress level and about one-third of study participants reported about "moderate" to "high stress" levels. Although the high-stress level during the menstrual cycle was reported by various studies among young women and showed significant association with menstrual irregularities. Menstruation is an important indicator of reproductive health and development.

This study revealed that abnormal menstrual pattern leads to more problems and complications during menstruation, which reflects on girls physical, emotional, and social well-being. Familial education levels, level of stress, and disturbed sleep among adolescent girls also have effects on menstruation leading to abnormal menstrual patterns. A modifiable factor, like lifestyle modification, can prevent abnormal menstrual patterns or help prevents its complications among adolescent girls. A comprehensive health education program on lifestyle modifications such as good sleep, stress management, and healthy eating habits can be initiated. Psychosocial and gynaecological counselling, as well as routine screening for menstrual problems by health-care providers, would help in early diagnosis and management of menstrual abnormalities. We have used a self-administered questionnaire, and data were recorded based on memory, which may introduce recall bias. There may be an underestimation of menstrual health problems because of shy nature, stigma, or under self-reporting by adolescent girls. However, factors such as stress and sleep may be affected by other physical and social variables.

CONCLUSION:-

Abnormal menstrual bleeding in adolescents can be caused by a number of conditions. Once a proper diagnosis is made counselling, reassurance and follow up are required. The study concluded that Menorrhagia in adolescents can be caused by a number of condition, the most common being the immature hypothalamic-pituitary-ovarian axis. Assessment of each case with thorough history, physical examination, and laboratory investigation is crucial in reaching the diagnosis. We see that we can successfully apply **palm coein** approach to adolescent AUB. Anatomical abnormalities like fibroid or polyp are also to be ruled out. Once the diagnosis is made medical or surgical treatment as appropriate is to be administered. Early intervention as soon as students are admitted into higher school of learning would be beneficial in helping them to manage this unavoidable experience without any effect on their health and academic work. Our study found that heavy menstrual bleeding, menstrual pain and having an inappropriate WASH environment are important factors that affect the health of adolescent girls. Interventions aiming to support schools to design appropriate WASH facilities for appropriate management of menstruation even in the context of limited resources will be a key step in addressing girls´ health. More attention to strategies for pain management and improvement of schools' programmes aiming to distribute sufficient and appropriate menstrual absorbents, particularly among those with heavy menstrual bleeding, will be also required.

Table 1: Distribution according to complaints

CHIEF COMPLAINT	NO. OF PATIENT	%
Absent Menstrual Bleeding	12	12
Heavy Menstrual Bleeding	45	45
Painful Menstruation	4	4
Irregular Menstrual Bleeding	20	20
Pain Abdomen	12	12
Vaginal Discharge	7	7
TOTAL	100	100

Table 2: Distribution of patients according Pattern of bleeding (according to FIGO guideline)

Pattern of bleeding		No. of patients	%
Infrequent (one or two Episode in a 90 days period)	heavy	27	27
	mild	12	12
Frequent (more than 4 episodes in a 90 days period)	heavy	8	8
	light	19	19
Irregular (variation>20 days over a period of one year)	mild	5	5
	moderate	12	12
	severe	5	5
Intermenstrual bleeding		12	12
Total		100	100

Table 3: Distribution according to PALM COEIN classification

Palm Coein	No. of patients	%
AUB-P	1	1
AUB-A	0	0
AUB-L	1	1
AUB-M	0	0
AUB-C	2	2
AUB-O	90	90
AUB-E	0	0
AUB-I	1	1
AUB-N	5	5

Table 4:- Menstrual hygiene management practices of adolescent girls participating in the study.

Absorbent Material used during Menstrual period	No. of patients	%
Disposable pads	30	30
Reusable clothes/towels	70	70
Tampons/menstrual cups/others	0	0

Table 5 :- Frequency of changing absorbent material on one of the heavy bleeding days

Frequency	No. of patients	%
Once a day	40	40
Twice a day	35	35
Three or more times a day	25	25

Table 6:- Frequency of bathing including vaginal wash during menstruation

Frequency	No. of patients	%
none	60	60
Once a day	25	25
Twice a day or more	15	15

Table 7:-Association of participants with sleep and stress level grading

Sleep level grading	No of patients	%
Lower normal daytime sleepiness	7	7
Higher normal daytime sleepiness	16	16
Mild excessive daytime sleepiness	12	12
Moderate excessive daytime sleepiness	35	35
Severe excessive daytime sleepiness	30	30
Stress level grading	No of patients	%
No to mild stress	66	66
Moderate to severe stress	34	34

Table 8:- Lifestyle Approach of the participants

Variables	No of participants	%
Sitting inactive in public places	20	20
Watching television	15	15
Lying down to rest in the afternoon	40	40
Doing exercise	10	10
Healthy diet	15	15

Table 9:- Psychosocial stress affecting menstrual bleeding pattern

Stress Level Grading	Pattern Of Bleeding	NO.	%
No To Mild Stress	Infrequent (one or two episode In a 90 days period)	27	27
	Frequent (more than 4 episodes In a 90 days period)	19	19
	Irregular (variation >20 days over a period of one year)	12	12
	Intermenstrual bleeding	8	8
Moderate To Severe Stress	Infrequent (one or two episode In a 90 days period)	12	12
	Frequent (more than 4 episodes in a 90 days period)	8	8
	Irregular (variation>20 days over a period of one year)	10	10
	Intermenstrual bleeding	4	4

Table 10:- Relationship of menstrual hygiene management with abnormal menstrual bleeding pattern on the basis of frequency of changing absorbent material during bleeding days

Frequency	Pattern of bleeding	No.	%
Once a day	Infrequent (one or two episode in a 90 days period)	15	15
	Frequent (more than 4 episodes in a 90 days period)	10	10
	Irregular (variation >20 days over a period of one year)	9	9
	Intermenstrual bleeding	6	6
Twice a day	Infrequent (one or two episode in a 90 days period)	14	14
	Frequent (more than 4 episodes in a 90 days period)	9	9
	Irregular (variation >20 days over a period of one year)	7	7
	Intermenstrual bleeding	5	5
Three or more times a day	Infrequent (one or two episode in a 90 days period)	10	10
	Frequent (more than 4 episodes in a 90 days period)	8	8
	Irregular (variation >20days over a period of one year)	6	6
	Intermenstrual bleeding	1	1

Conflicts Of Interest:- There is no conflicts of interest.

Ethical Approval:- This work has been reviewed and approved by Ethics Review Committee Of **Burdwan Medical College And Hospital.**

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