RESEARCH ARTICLE

PREVALENCEOFMENSTRUAL DISORDERS AMONG MEDICAL STUDENTS- A CROSS SECTIONAL STUDY

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Manuscript Info

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Abstract

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Many young women experience menstrual abnormalities, which is a typical gynaecological issue. As the backbone of our society, women, it is imperative that they maintain good health. The study's main aims and objectives are to determine the prevalence of menstrual irregularities in medical students, to identify the relationships between these irregularities and variables like bleeding disorders, endocrine issues, infections, and stress, and to provide health education to lessen the impact of these disturbances on medical students' menstrual cycles. A cross-sectional study was conducted at a medical school with 200 female medical students. We looked examined the relationships between menstruation problems and relevant variables. Participants in the study were 19.86 ± 1.56 years old on average. The average Menarchial age of the participants ranged from 12.86 to 0.937. The BMIs of 24% of the participants were high. The correlation between premenstrual syndrome and perceived stress levels was statistically significant (p 0.001). There was a statistically significant correlation between menstrual irregularities and perceived stress level (p 0.05).

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Introduction:-

Menstrual irregularities are a common gynecological problem that many young women deal with. Since women are regarded as the foundation of our society, it is crucial to take good care of their health. Menstruation is a phenomenon that only affects women and is almost a universal experience for them. A typical physiological process is the menstrual cycle. Between the ages of 12 and 15, teenagers begin to menstruate normally for the first time[1]. In response to hormones, the endometrium sheds cyclically every 28 7 days[2]. This cycle must occur in order to produce oocytes and prepare the uterus for pregnancy. The progressive rise in estrogen levels during the follicular phase, which is stimulated, causes the discharge of bleeding to halt and the uterine lining to begin thickening. Follicles begin to form. The oocyte is stimulated to release by the luteinizing hormone. The oocyte has a 24-hour life span after ovulation, and if fertilization does not occur, progesterone and estrogen levels will place, and progesterone and estrogen levels will fall precipitously, leading to endometrial lining loss [3]. Taking care of adolescents often presents gynecologists, pediatricians, and primary care physicians with the issue of abnormal uterine bleeding (AUB). The issue encourages social isolation and school absenteeism, which dramatically decreases the quality of life. [4].An average menstrual cycle endures approximately 21 to 35 days for the vast majority of women. However, 14% to 25% of women experience monthly irregularities, including cycles that are heavier or lighter than usual, shorter or longer than usual, cycles that are heavier or lighter than usual, shorter or longer than normal, or include other problems like abdominal cramping.[5]. Amenorrhea, which signifies the lack of

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menstruation, and oligomenorrhoea, which means occasional, irregularly spaced episodes of bleeding typically occurring at intervals of more than 35 days apart, are the two most typical menstrual irregularities[6]. A frequent menstrual cycle, known as polymenorrhagia, typically has intervals of 21 days or less.[6]. Metrorrhagia refers to irregularly timed episodes of bleeding superimposed atop regular cyclical bleeding, whereas menorrhagia denotes frequently occurring bouts of bleeding that are excessive in amount (>80 ml) and/or duration of flow (> 5 days) [6]. Both hypomenorrhea and dysmenorrhea refer to menstruation that is painful but occurs on an ongoing basis. One of the most common menstrual issues during adolescence is dysmenorrhea, which can even make women bedridden.

According to a survey in India, the prevalence of dysmenorrhea among the selected group was 78.2%. 68.8% of the participants mentioned that their working ability was affected to a moderate extent, the association between severities of pain and limited workability was statistically significant [7]. PMS is defined as the physical cognitive behavioural or moral cycle of changes with symptoms such as acne, pain, limb edema, fatigue, abdominal bloating, breast tenderness, insomnia, anger and moodiness. A more precise description of the relationship between menstrual irregularities and associated factors will enable women and their healthcare providers to make a more informed assessment of observed menstrual cycle changes and help to distinguish between possible incident disturbance and underlying pathologies. Menstrual patterns can be affected by a number of factors, including age, ethnicity, family history, smoking, physical activity, and dietary habits.There are various factors which cause this menstrual abnormality [7]. Thyroid disorder is various mechanisms by which thyroid hormone affects menstruation [8]. Hypothyroidism reduces sex hormone binding globulin which causes greater estrogen exposure and therefore heavy periods, in contrast, hyperthyroidism increases SHBG causing lighter periods. Both Hypo and Hyperthyroidism cause disturbances in the pituitary hormone. Hypothyroidism also causes a decrease in coagulation factors which causes heavy periods and vice versa.[6] In a study of patients with menstrual disorders, 44 % had thyroid disorders in which subclinical hypothyroidism was prevalent in 20 %, overt hypothyroidism in 14 %, and overt hyperthyroidism in 8 % of the women. Autoimmune thyroid antibodies were present in 30 % of patients of women with menstrual disorders. On endometrial sampling, hypothyroid patients mainly had proliferative endometrium (42.85 %) whereas hyperthyroid had atrophic endometrium (60 %)[9].Anaemia during menstruation,women with heavy bleeding lose a lot of blood-approximately 200-250 mg \pint. Thus, menstruation led to iron deficiency anaemia, the condition in which the body can't make enough red blood cells. Now this anaemia delay or altogether stop menstruation. [6]. Polycystic ovarian disease (PCOD) is the main cause of ovulatory infertility. The main reason is due to hormonal imbalance. Every month follicle matures and gets released by the ovaries to be fertilized and because of the hormonal imbalance seen in PCOD (typically higher levels of androgens like testosterone and high level of luteinizing hormone), the follicle doesn't mature or get released. Instead of being released follicles stays in the ovaries.[6]. One analysis yielded 27 surveys with a pooled mean prevalence of 21.27% using different diagnostic criteria. The proportion of women with PCOS also increased in the last decade.[10]. The female reproductive systems, including the uterus, ovaries, and fallopian tubes, are infected by pelvic inflammatory disease (PID). One of the most dangerous effects of a female sexually transmitted disease is PID.

Women who have pelvic inflammatory disease are more likely to experience menstrual disorders because the infection's impact on the ovaries can alter hormone levels. Because it frequently results in the clotting factor functioning either very much or very little, bleeding disorders typically contribute to monthly abnormality[7]. Stressful life has been encountered as a cause for impaired ovarian function and low concentration of circulating estrogen.The common stresses include job strain, financial worries, daily hassles and menstrual cycle characteristics, such as cycle length and quality of bleeding, and amenorrhea. High stress has been associated with both a longer menstrual cycle (Fenster et al,1999) [11],as well as an incidence of the anovulatory cycle(Hater et al,1999).Lower stress was associated with a more regular pattern (Matteo 1987) [12]. Sanders and Bruce found that cortisol levels were highest among women with long menstrual cycles[13].The mechanism by which stress affects menstruation is shown in Figure 1[14]. Understanding the factors associated with menstrual cycle disturbance is considered significant for a number of medical, economic and social reasons. Abnormal bleeding may lead to blood loss,severe pain can cause psychological effects and loss of normal work.It is also important because women need to distinguish age-related changes from changes due to other influences. The literature has little research on the frequency of menstruation issues and their connection to psychological stress. However, most of the current research either lacked a validated stress questionnaire or used a small sample size. The goal of the current study is to close this gap. Using a validated perceived stress scale questionnaire, the goal of this study is to determine whether there is a relationship between psychological stress and other factors and menstruation disorders (PSS10) and to find out which is more prevalent with stress. The study's findings will be useful in examining this relationship and in formulating plans for enhancing both mental and reproductive health.Understanding the menstrual irregularities and associated factors will

enable women and their healthcare providers to help distinguish possible incident disturbance and underlying pathologies.Themain aim and objectives of the study are to access the prevalence of menstrual irregularities in medical students,to find out the association of menstrual irregularities with the factors like bleeding disorders, endocrine problems, infection, and stress and to provide health education, to reduce the impact on menstrual disturbances among the medical students.
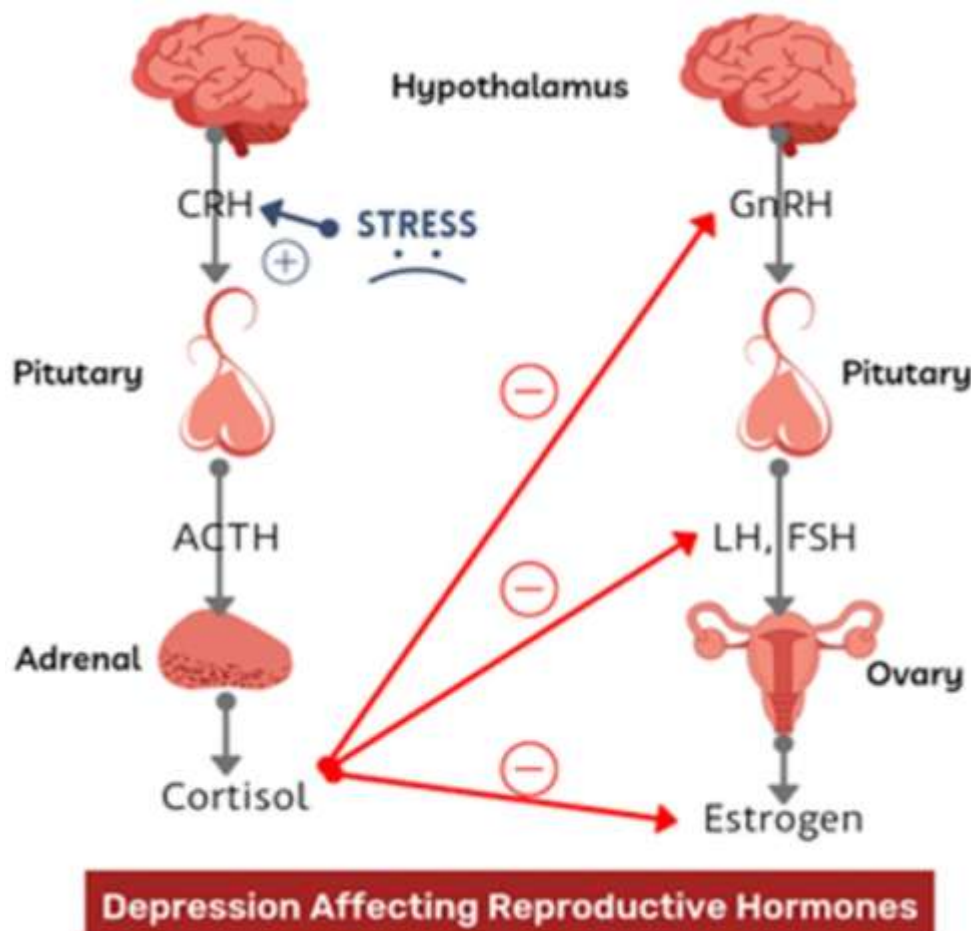

Figure 1:- Effect of stress on menstrual irregularity.

Literature Review: -

According to a study in India, the mean age of the subjects at menarche was 13.36 ± 1.25 years with a range being 10 to 17 years. The mean duration of menstrual flow was 4.77 ± 1.06 days. The most prevalent menstrual symptoms were tiredness (47.9%), backache (38.3%), and anger (34.5%). The prevalence of menstrual irregularity and dysmenorrhea was 11.9 and 78.2%. 6.7% of the participants had severe dysmenorrhea. 76.6% of the girls with dysmenorrhea reported that their working ability was affected. 60.4% of the girls were aware of menstruation prior to menarche. Mothers and friends were the main sources of information (47.8%).[7]

The menstrual patterns of the participants, including cycle length, amount of blood lost, and duration of flow in days, are shown in a similar study done on young female students in Saudi Arabia. 91% of the young Saudi students in the survey reported having a monthly problem, which is a high rate of menstrual disorders. For instance, it has been noted that 4.1% of women in South India have menstrual periods longer than 35 days while 2.2% are shorter (less than 21 days). In this study, 13% of subjects reported having brief periods, whereas 5% reported having lengthy ones. However, Nigeria recorded a 7% and 24% prevalence of the same. In the current study, only 3.4% of patients had menorrhagia, while 13% reported polymenorrhagia (short cycle length of less than 21 days). These findings are in line with those of other researchers who have found menorrhagia is more common in people over 35 and less common in younger people. However, the current investigation did not discover any correlation between

psychological stress and menorrhagia or polymenorrhagia, in contrast to the findings of Zhou et al. and Fenster et al. [18]

In a study of Academic stress and menstrual disorders among female undergraduates in Uyo, South Eastern Nigeria – the need for health education it was found. In this study, the prevalence of menstrual disorders among female undergraduates was 34.6%. And they reported that there was a strong and significant association between academic stress and menstrual disorders. Those who reported a high level of academic stress had about two times the likelihood of having menstrual disorders than those without academic stress.[19]

In a study examining the features and prevalence of dysmenorrhea in college-bound girls, 84.2% (261) of girls reported having the condition, while 15.8% (49) did not. In accordance with the VAS, 34.2% of girls reported severe pain, 36.6% moderate pain, and 29.2% mild pain. Nearly 90.9% of females who have dysmenorrhea in their family have the condition themselves. Girls had a three times higher likelihood of developing dysmenorrhea if there was a family history of the condition. As a result, this study has discovered that there may be a link between menstrual irregularities and family history.[20]

Materials and Methods:-

Study Design:
This is a cross-sectional study

Study Setting:
Medical students of a medical college in south India.

StudyDuration:
This study is done on the participants in the study setting for two months.

Study Participants:
All female students of the age group 18 -25 were willing to participate in the study.

Sample:
From a study of the prevalence of menstrual problems and their association with psychological stress in young female students studying health sciences the prevalence of dysmenorrhea is 89.7% from this, (p-value) the sample size is obtained.

$$\text{SAMPLE(N)} = \frac{4PQ}{D^2} \tag{1}$$

SAMPLE(N)=4PQ/D2 (2)

WERE,
P=89.7,
Q=100-P,
=100-89.7
=10.3
d=5*89.7=4.485
$d^2 = 20.11$
n=4*89.7*10.3/20.11=183.7
My sample size for data recording is 200

Criteria for Sample Selection:
Inclusion Criteria:
All female students of age 18-25 years.
Students available at the time of data collection

Exclusion Criteria:
Students who are on long-term leave.
Women who are taking contraceptive pills.

SamplingTechnique:
Simple random sampling, by selecting 300 people from the study setting.

Tool for Data Collection:
QUESTIONAIRE, by a self-administered method. The questionnaire was designed by the authors, based on some previous similar studies. [15,16]

Method of Data Collection:-
After obtaining permission from the ethical council, a sample of 300 who fulfilled the inclusion criteria was chosen and the tool is given to them in the study setting. After obtaining their concern the same tool is used for data collection The Helsinki Declaration's tenets were scrupulously adhered to because this study involved human volunteers. The questionnaire contained questions about the participants' demographic information as well as their menstrual pattern (menarche age, cycle length in days, duration of flow in days, menstrual regularity), characteristics of blood loss, and history of dysmenorrhea, amenorrhea, and premenstrual symptom. In order to measure individual stress levels, PSS10 was used, which is found to be very reliable for determining the role of stress in the etiology of disease and behavioural disorders. Based on PSS 10, Scores ranging from 0-13 were considered to indicate low perceived stress, 14-26 moderate perceived stress, and 27-40 high perceived stress (HPS) [17]. All participants were given the assurance that their identities would be kept private and a written agreement was acquired. The terms used in the questionnaires were explained to participants during a quick, 15-minute briefing. Due to the students' affiliation with health sciences programs, there was less potential for error because of how well they understood and filled out the surveys.

Data Entry:
Microsoft Excel is used for data entry.

Descriptive statistics:
Mean, Median, Mode, Frequency, Distribution and Standard deviation was calculated.

DataAnalysis:
SPSS (Statistical Package for Social Sciences) software is used for data analysis for Windows, Version 22.0. Descriptive statistics were used to determine the demographic data, menstrual patterns, and incidence of different menstrual disorders in female medical students. The Chi-square test was used to compare the presence or absence of menstrual irregularity in the students with various menstrual problems, and a **p**<0.05 was considered statistically significant. Correlation between stress and various menstrual problems was carried out via Spearman Pearson's correlation coefficient. Whereas odds ratios were calculated by applying logistic regression analysis.

Results and Discussion:-
A sample of 200 medical students was selected from the data collected from the medical students of a medical college in south India for menstrual irregularities including long cycles, pain during menstruation, short cycles, infrequent cycles, heavy bleeding, and the association with other factors responsible for that. A questionnaire was given to them in a study setting and is used to collect data. The study's participants' average ages were found to be 19.86 + 1.56. Participants' average menarcheal ages ranged from 12.86 to 0.937.In 24% of the samples, the BMI was over normal.Figure 2 shows that stress is affecting 62% of the study's participants. According to Figure 3, more than 67% of the study's participants experience irregular menstruation.Medical students were found to have a wide spectrum of menstrual abnormalities. Premenstrual syndrome accounts for 64.5% of cases, followed by dysmenorrhea (66%), hypomenorrhea (28.5%), oligomenorrhea (18.5%), polymenorrhea (47.5%), secondary amenorrhea (10%), and polymenorrhea (47.5%).
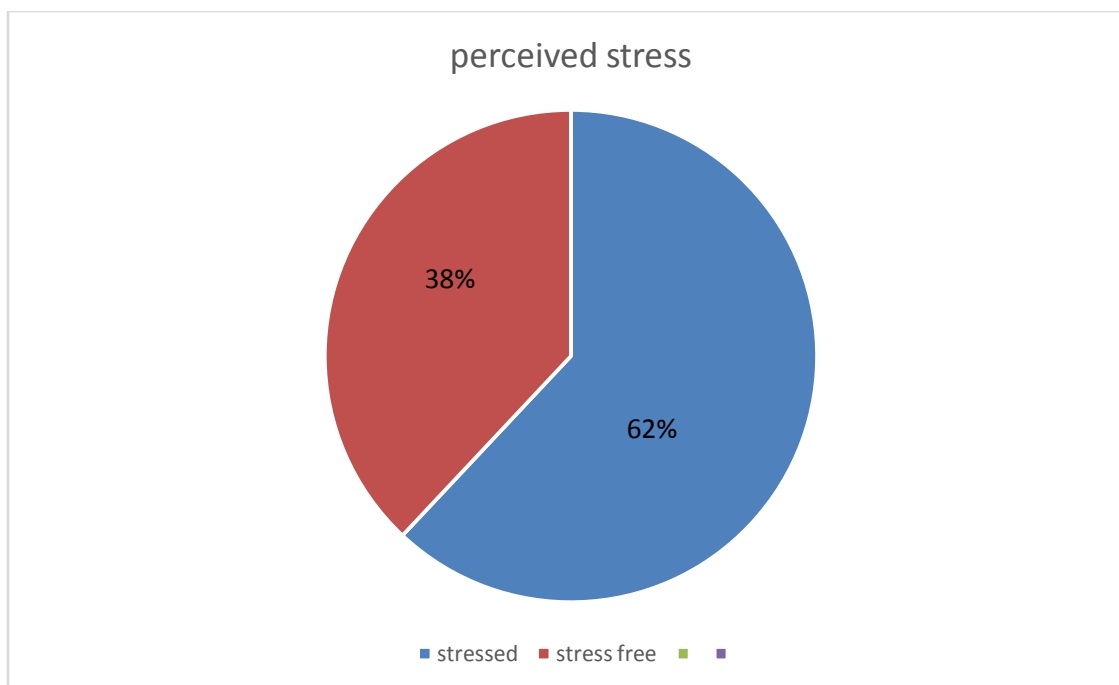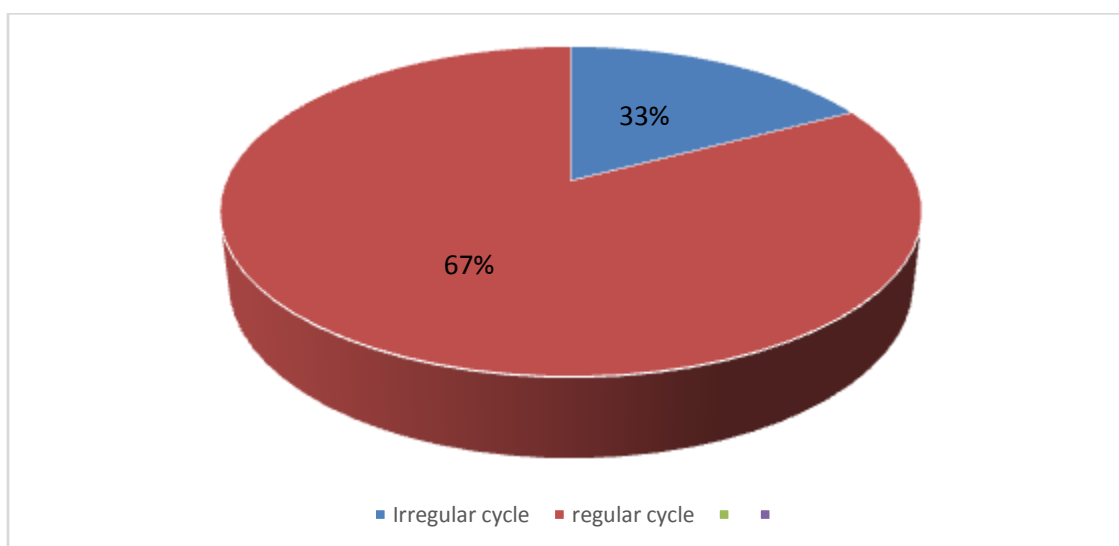
Figure 2:- Perceived Stress Among StudySubjects.

Figure 3:- Menstrual Irregularities in Study Participants.

Table 1:- Menstrual disorders in study participants.

MENSTRUAL DISORDERS	FREQUENCY	PERCENTAGE
PMS	129	64.5%
Hypomenorrhea	57	28.5%
Oligomenorrhea	37	18.5%
Polymenorrhagia	95	47.5%
Secondary amenorrhea	20	10%
Dysmenorrhea	132	66%

Association:
There was a statistically significant association between Premenstrual syndrome and Perceived stress score (p<0.001).The association between Perceived stress score and menstrual irregularities was statistically significant (p<0.05).

Discussion:-

Stress and menstrual issues are two of the most prevalent health issues among young women studying health sciences. In many cases, painful periods and premenstrual symptoms were severe enough to interfere with a person's everyday activities or ability to attend class. Menstrual discomfort was frequently identified as the primary reason why teenage girls missed school in Moroccan research. A significant number of women of reproductive age experience menses-related health issues, such as premenstrual symptoms, dysmenorrhea, and irregular menstrual cycles, according to several research. Another study reported that 75% of girls experience some problems associated with menstruation and in a study among female prisoners 33% reported menstrual irregularity.Thus, menstrual problems can be caused because of stress and vice versa is also true that menstrual irregularities itself can cause stressful life. 62% of the study population is under the influence of stress which is concomitant with another study in which the prevalence of stress in medical students was 71.9%.[21]and 61.3% [22].

This study identified that over 67% of our study population was suffering from some type of menstrual problem, whereas the prevalence of menstrual irregularity in other studies is 31.2%, which is comparatively on the lower side.[23].There was a varied range of menstrual irregularities among medical students noted. The premenstrual syndrome accounts for 64.5% of our selected population whereas there are reports showing 100 % in a study [24] whereas Iran recorded the highest prevalence (98%) and the lowest (12%), respectively. [25].The prevalence of hypomenorrhea was found to be 28.5% in our study, compared to 8.48% of respondents in BAIG et al's study, which is similarly low when compared to other menstrual irregularities.[26] In our study population, the prevalence of oligomenorrhea is 18.5%, and secondary amenorrhea is 10%, which is also consistent with other studies with 11.3% and 2.6%, respectively, and is on the lower side when compared to other menstrual irregularities.In this group, significant weight reduction (more than 20 pounds) and running were linked to oligomenorrhea or amenorrhea, according to research by Bachmann et al. [27]. In our study, polymenorrhagia was reported at a significant rate (47.5%). The menstrual irregularity with the highest prevalence among research participants was dysmenorrhea, which accounted for 66% of cases. The prevalence of dysmenorrhea and severe dysmenorrhea in their young study groups was reported by other authors to be 50% and 28%, and 80% and 37%, respectively [28,29]; and 89.5% [13], 65% [30], 62.5% [31], and 73.27% [32]. Additionally, our study discovered a favourable connection between PSS and PMS. Premenstrual symptoms were observed to be rather uncommon (18.4%) in research by Raval et al. [33] Premenstrual symptoms strongly positively linked with PSS in students with a PSS of >27, which was another intriguing finding of this study (p 0.0001). Kollipaka et al. [34] and Gollenberg et al. (35) reported similar findings, finding that premenstrual symptoms were substantially related to high levels of stress (p=0.08 and p=0.0001, respectively). Premenstrual symptoms can be brought on by hormonal imbalance, dietary deficiencies, aberrant hypothalamic-pituitary-adrenal axis (HPA) function, and environmental causes.[36].Premenstrual stress-related declines in brain serotonin function may be the root of the high incidence of premenstrual symptoms, particularly anger and irritability in the individuals of the current study. This would exacerbate cardinal mood disorders.[37]

Limitations of this Study:
Although this study recruited a large sample size to correlate the association between menstrual irregularities with the associated factors,there are certain limitations of this study. Moreover, the analysis relied on data obtained via the questionnaire only, and no history was taken, or medical examination/investigations performed. The present study, because it was a cross-sectional study, so it was impossible to draw any conclusions about the causality of the association between psychological stress and menstruation issues. The effect of other confounding variables oral contraceptive pill use, sleep deprivation, and parental socioeconomic level were not taken into account. In conclusion, this study concludes that the prevalence of dysmenorrhea and stress is quite high in young in addition proves the strong association between stress and menstrual irregularities and also finds the association with other factors.

Conclusion:-

The most common menstrual disorder is dysmenorrhea which accounts for about 66% and which leads to absenteeism from academics by 63.5%. Understanding the factors associated with menstrual cycle disturbance is

considered significant for a number of medical, economic and social reasons. Abnormal bleeding may lead to blood loss, severe pain can cause psychological effects and loss of normal work. This concludes that the prevalence of menstrual problems and stress is quite high in medical students in the study setting and. In addition,from the data compiled in the study, there seems a strong association between stress and menstrual disorder.In order to avoid issues in the future, it is advised that medical students receive early psychiatric and gynaecological counselling. Furthermore, health education will enable early detection of menstruation diseases. It is advised that all students of health sciences receive brief courses on stress management strategies as part of their curriculum. Additionally, all health sciences colleges should set up procedures for the early detection of students who have menstrual problems because these issues can have a significant impact on the students' psychological and reproductive health in addition to their academic performance. The selected pupils should receive prompt gynaecological and psychiatric treatment, as well as guidelines and tactics for averting issues in the future. We advise comparable research to be conducted in other schools and colleges.

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