



Menstruation and Menstrual Disorder: A Review

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Article History	Abstract
Received: 10 June 2023 Revised: 15 August 2023 Accepted: 21 August 2023	<i>Periodic bleeding is the visible manifestation of ovarian cycling. An average woman in developed countries can expect to experience more than 400 menstrual cycles during her reproductive lifetime. It is important to have a thorough understanding of the endometrial pathways that regulate implantation and menstrual cycles. Menstrual cycles usually last around 28 days, although they can vary from person to person. Menarche depend on the nutrition and heredity. Menstrual cycle irregularities may also be linked to endocrine instability, low body weight, intense exercise, and psychological stress. Among adolescent girls, dysmenorrhea is one of the most common gynecologic conditions. It is defined as pain in the pelvis that is directly related to menstruation. Other symptoms include headache, back pain, nausea, vomiting, and diarrhoea.</i>
CC License CC-BY-NC-SA 4.0	Keywords: Menstruation, Irregular cycle, Dysmenorrhea, PMS, Amenorrhea, Oligomenorrhea

1. Introduction

The rapid release of gonadotropin-releasing hormone (GnRH) from the hypothalamus the anterior pituitary's release of luteinizing hormone, or LH, and follicle-stimulating hormone (FSH), leading to normal ovulation and menstruation. Ovarian androgens and estradiol are produced by the direct action of LH and FSH on ovarian cells; FSH is stimulating ovarian follicles and promotes follicular expansion. (Itriyeve K 2022). significance of women's menstrual cycles as a potential sign of future metabolic diseases. (Rostami et al., 2016). While increased dietary energy intake did not improve bone mineral density, it did increase weight, body fat, and menstrual frequency (De Souza et al., 2022). A consistent pattern of behavior and its apparent relationship to a short-term alteration in hormonal status occurs during the normal menstrual cycle. The menstrual cycle plays a role in the maintenance of female reproductive function, which is impaired by excessive stimulation of stress signals (Aolymat et al., 2023). Menstrual health education is essential for the health of young women in the future. (Maekawa et al., 2023). A lack of sleep is linked to irregular menstrual cycles. This can harm female reproductive health. (Baker et al., 2018; Haufe & Leeners, 2023). The occurrence of irregular and prolonged menstrual cycles is linked to reproductive, lifestyle, and work-related factors; however, it is also associated with symptoms of menstrual distress and a perceived state of health. (Song et al., 2022). poor communication, and lack of support all point to a need for a multidisciplinary medical team and more education about the health of female athletes in the sport (Von Rosen et al.,

2022; Majumder et al., 2022). A consistent pattern of behavior and its apparent relationship to a short-term alteration in hormonal status occurs during the normal menstrual cycle. (Diekhof et al., 2020). This study shows the correlation between macro and micronutrient consumption and menstrual cycle. (Gorczyca et al., 2016; Souza et al., 2018). Consequential interactions between estrogen and progesterone, during mid-luteal increases in emotional eating. (Klump et al., 2015; Gorczyca et al., 2016). During menstrual cycle phases, food craving varies (Santos LAS et al., 2011; Bryant et al., 2006). In previous study shows that an Irregular menstrual cycle is also associated with alcohol intake, increasing hunger, and caloric intake (Maqbool et al., 2022; Anna Aulinas et al., 2019; Onieva-Zafra et al., 2020).

Menarche

The association between premature menarche and overweight and obesity was highest in Mexican adolescents and lowest in Egyptian adolescents, while urban life and high socioeconomic status were only significantly related in Mexican adolescents. (Torres-Mejía et al., 2005) In another study, Half of the phenotypic differences in the timing of menarche among girls in developed countries are due to genetic factors. (Towne et al., 2005) The prevalence of menarche among parents and adolescents is strongly linked. (Biro et al., 2018) Anthropometric factors and some socioeconomic factors also have an impact on menarche. (Zeglei et al., 2020) The dietary habit had an impact on age at menarche. Rich dietary habits, the lower the age at menarche. (Acharya et al., 2006). Significant age difference in menarche, between daughter and mother is very important. (John J et al., 2014) Energy-rich food, lack of physical activity, and socioeconomic condition have an impact on the early age of menarche (Gokhale D, 2015) Malnutrition may also affect the age of menarche (Ofuya, 2007). Increased levels of protein intake decline the age of menarche (Potdar, N.,) There is a significant association between eating patterns and eating habits. (Vale et al., 2014) Body composition and socioeconomic status at menarche. (Adoor & Moodithaya, 2019), BMI is a good indicator of adolescent diet. Though Socioeconomic status was not a significant determinant of age at menarche. (Chopra & Sharma, 2014). Late menarche and early menarche are risk factors for adult, metabolic disorders and other abnormalities (Glueck et al., 2013) Earlier age at menarche plays a role in the development of the metabolic syndrome. (Stöckl, 2011; Jansen, 2019) The researchers further determined that a greater increase in body fat percentage from age 5 to 9 and a greater increase in waist circumference from age 7 to 9 were associated with the onset of pubertal growth at age 9 (Davison et al., 2003) The study further revealed that the thelarche median age varied by region, with girls from the United States being the youngest (age 8.8–10.3) and African girls being the oldest (age 10.1–13.2). (Eckert-Lind et al., 2020) menarche by age 10.6 to 12.9 years compared to normal-weight girls (Rosenfield, 2009)

Menstrual Disorder

Menstrual irregularity especially painful periods are prevalent among adolescent girls. BMI has a key role in normal menstruation. (Singh et al., 2019) Irregular and long menstrual cycles have been associated with a greater risk of coronary heart disease, cancer, mental health problems, and multiple other common chronic conditions (Cirillo et al., 2019) Irregular menstrual cycle are common among young girls. Impact of this menstrual disorder on their day-to-day life. The most prevalent problem is dysmenorrhea and it affects academic activity. (Yücel, 2018) irregularities and lack of ovulation are very common in postpubertal adolescent women (Golden and Carlson, 2008) diagnosis and treatment of menstrual disorders are of utmost importance (Panidis et al., 2013) prevalence of menstrual disorders and their effect on young women's health status, quality of life, and social integration suggest that management of these disorders should be given more attention (Nooh et al., 2016) The prevalence of menstrual disorders among female athletes is very high. (Zhang, 2022) The primary risk factors for menstrual disorders are family history, poor quality sleep, poor diet, poor mental health, and poor ability balance. (Maïmoun, 2016), Health education for female athletes, as well as sugar supplement intervention, play a beneficial role in improving ability balance and reproductive hormone regulation.

Amenorrhea

Amenorrhea may have clinically significant pathology and may require long-term treatment. (Klein et al., 2019) Amenorrhea associated with weight loss is an effective form of FHA, characterized by anovulatory and hypo estrous conditions. It has both short-term and long-term detrimental

consequences on the health of women. (Chen, 2023) Adolescent hyperprolactinemia (galactorrhea), delayed pubertal growth, or amenorrhoea can occur in adolescents (Dawajan et al., 1978) Delayed puberty is a condition in which the pubertal hypothalamic-pituitary-adrenal (HPG) axis is not activated. CDGP is the most frequent cause of delayed puberty, affecting approximately 30% to 56% of girls with a pubertal delay. (Varimo et al., 2017) Individuals with hypogonadism are also mutating in individuals with Hypothalamic Amenorrhea. (Raivio et al., 2007) Amenorrhea is a common condition in women who have lost weight, experienced stress, or engaged in strenuous physical activity. Women who are amenorrhoea and have adequate levels of estrogen should receive cyclical progesterone, as well as hormonal therapy and calcium supplements in cases of hypothalamic amenorrhea. (Kingham et al., 1996) It is the most frequent cause of premature puberty and primary amenorrhea. It affects between 1 in 2500 and 1 in 3000 live births. (Virginia, 2004) Primary amenorrhea characterized by short stature and undersized breasts is most commonly attributed to Turner syndrome or its variant. (Kaur et al., 2020) As the prevalence of physical activity among female adolescents increased, the prevalence of menstrual changes, ranging from slight postponements to amenorrhea. (Brez K et al., 2016) The most common etiology underlying primary amenorrhea with short stature and underdeveloped breasts is Turner syndrome or its variant. (Raivio et al., 2007)

Dysmenorrhea

Adolescent girls are more likely to experience painful periods and an irregular menstrual cycle. Fatigue, physical discomfort, and back pain are also on the rise among adolescents. (Omidvar et al., 2018) Dysmenorrhea severity was significantly related to menstrual flow duration, menarche age, and cigarette smoking. Age was not an independent determinant of dysmenorrhea severity, nor was height, weight, duration of menstrual cycle, or exercise frequency. (Sundell et al., 1990) Dysmenorrhoea is a serious health condition that affects the day-to-day functioning and quality of life of adolescent women. It is difficult to accurately diagnose dysmenorrhea due to the wide variety of diagnostic tests and the unique nature of the symptoms. (De Sanctis et al., 2015) 12.4% described having severe dysmenorrhea and 74.2% had moderate dysmenorrhea. The prevalence of severe dysmenorrhoea among girls was significantly higher than that of girls without the condition, with 47.8% reporting that they were unable to engage in daily activities due to the condition, while 66.5% reported that they were restricted from engaging in sports activities. (Narring et al., 2012)

Premenstrual Symptom

PMS may be caused by an imbalance of the HPA, hormonal imbalances, nutritional deficiencies, or environmental factors. (Moghadam et al., 2014) Previously conducted studies have identified more than 200 types of signs and symptoms of premenstrual syndrome which significantly affect an individual's quality of life (Violetta, 2010) The 11 symptoms of stress and anxiety include sudden changes in mood (e.g., sadness or crying), depression, persistent anger or personal conflict, a lack of interest in social activities and work, a feeling of impotence or unmanageability, and a change in appetite. (Eating or not eating at all), Difficulty sleeping (oversleeping or insomnia), Sleeping problems (lack of concentration, tiredness or lethargy), Physical symptoms (pain in the chest, abdominal or joint or muscle area, Excessive urination, Weight gain, Back pain, Acne, Nausea, Abdominal bloating, Chest pain and sensitivity, Headache (Nisar et al., 2008) It was observed that a significant proportion of students experienced Premenstrual Syndrome. The most common symptoms experienced by these students were abdominal cramps, depression, and fatigue. (Eshetu et al., 2022) The prevalence of premenstrual syndrome (PMS) among university students was found to be particularly high, and smoking and a high caloric, fat, sugar, and salt intake were identified as significant contributors to PMS. (Hashim et al., 2019) The onset of PMS was linked to a variety of dietary and lifestyle factors, including sweets consumption and a decrease in physical activity. (Bhuvaneswari et al., 2019) The effects of PMS on high school students can be attributed to a variety of factors, including sleep, diet, involvement in a sports club, and screen time usage. (Yoshimi et al., 2019) Consumption of fish may be positively linked to the alleviation of physical symptoms associated with pregnancy, menstruation, and diabetes (PMS/PMDD). (Takeda et al., 2016) Young women who engage in moderate levels of physical activity (3000 MET-minutes per week or more) tend to experience milder signs of PMS. (Kawabe et al., 2022) Early life emotional and physical abuse increases the risk of PMS in the middle to late reproductive cycles. (Bertone-Johnson et al., 2002;

Takeda & Yoshimi, 2021; Issa, 2021) emotional health and sleep status may be related to the menstrual cycle, (Sun et al., 2023) severity of symptoms and the change in the consumption of these nutrients (Bryant et al., 2006).

Oligomenorrhea

A woman with oligomenorrhea is characterized by irregular and irregular menstrual blood flow. Some variations in menstrual flow are normal during the menarche period, postpartum period, and perimenopausal periods. However, if a woman's menstrual cycle is longer than 35 days or 4 to 9 menstrual cycles per year, she is considered to have oligomenorrhea. (Riaz & Parek, 2022) One of the most common menstrual bleeding disorders, oligomenorrhea, has been on the rise in recent decades, with more and more women seeking medical attention for this symptom. Women suffering from oligomenorrhea experience periods that are longer than 35 days and shorter than 90 days. (Deligeoroglou & Tsimaris, 2010) a total of 5–7 cycles a year (Cardigno, 2009) Oligomenorrhea has experienced a dramatic rise in incidence over the past few decades, with various studies conducted around the world indicating a prevalence rate of between 12% and 15.3%. (Yavari et al., 2014) The incidence of PCO was significantly higher in women (70%) who reported hirsutism as well as oligomenorrhea. (TaPonen et al., 2003) Oligomenorrheic obstetrics were associated with a range of adverse health outcomes, including obesity, and acne. Additionally, the ovarian size was larger and the ovarian morphology was polycystic. Women with oligomenorrhoea were more likely to experience infertility and to receive medical treatment. (Yavari et al., 2014; He et al., 2020) Obesity was associated with oligomenorrhea and irregular menstruation. (Zhou & Yang, 2020).

4. Conclusion

Unhealthy lifestyle choices can have a significant impact on mental health. Several factors associated with an unhealthy lifestyle can contribute to the development or worsening of menstrual health issues.

Lack of physical activity can contribute to poor menstrual health. It is important to note that menstrual health issues are complex, and while an unhealthy lifestyle can contribute to their development, they are influenced by a combination of genetic, environmental, and psychological factors. Taking steps towards a healthier lifestyle, such as improving diet, engaging in regular physical activity, managing stress, seeking social support, and prioritizing self-care, can have a positive impact on Menstrual health.

Conflict of interest:

The authors declare no conflict of interest.

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