

Irregularities of the Ovarian Cycle in Young Females *Etiology, Awareness and Management*

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Abstract—The menstrual cycle of a human female is approximately 28 days long. It is a process in which the endometrium lining of the uterus is shed during each cycle if the implantation of the zygote fails to occur. Menstrual cycle is an important indicator of health and fertility of females and irregular cycles may be indicative of underlying endocrine disorders due to stress or emotional problems, Polycystic Ovarian Syndrome (PCOS), excess weight or anorexia, dietary factors and hormonal imbalance. Menstrual irregularities are abnormalities in which menstruation is irregular, heavy, and painful or does not occur at all. Abnormal bleeding patterns may be attributed to significant underlying medical issues with the potential for long-term health consequences. Therefore, the identification of abnormal menstrual patterns in young females would be of paramount importance to ensure future reproductive health. The current study comprising of 275 females therefore primarily constituted of young adults from an age group of 17-21, pursuing undergraduate courses at Shivaji College, University of Delhi. A questionnaire based survey was carried out to assess the prevalence of menstrual irregularities (dysmenorrhea, menorrhagia etc.). A total of 29.8% female students were found to experience irregular menstrual cycles, and only 14.6% of those students were found to adopt remedial measures like taking hormonal pills. A relationship between irregular cycles and low energy levels/depression/lack of appetite was ascertained. Since, young girls often have difficulty in assessing what constitutes a normal menstrual cycle /pattern of bleeding, this study also aimed at making them aware of their condition and the related complications like anemia, osteoporosis etc.

1. INTRODUCTION

Menstrual cycle consists of the monthly cycle of changes in the ovaries and the lining of the uterus (endometrium), starting with the preparation of an egg for fertilization. When the follicle of the prepared egg in the ovary breaks, it is released for fertilization and ovulation occurs.

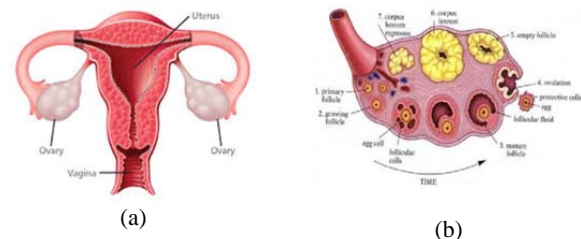


Fig. 1: Human female reproductive system. a) the female reproductive system consists primarily of the ovaries, the uterus and the vagina. b) Structure of the ovary and changes occurring over a time period of 28 days

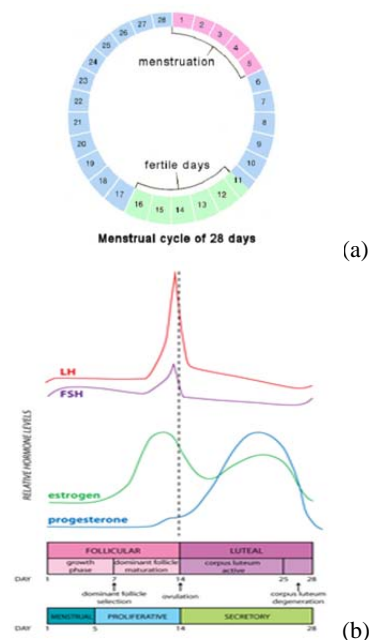


Fig. 2: The ovarian cycle of the human female. a) duration of the ovarian cycle b) hormonal surges during the ovarian cycle

Unless pregnancy occurs, the cycle ends with the shedding of part of the endometrium, which is menstruation [1]. The typical human ovarian cycle constitutes for approximately 28 days, and the menstrual period typically lasts for 3-5 days.

A regular menstrual cycle is essential for the reproductive health of a female. Many different factors can trigger menstrual disorders, such as hormone imbalances, genetic factors, clotting disorders, and pelvic diseases. The Common abnormalities of a woman’s menstrual cycle include a variety of conditions in which menstruation is irregular, heavy, painful, or does not occur at all.

Most common types of menstrual irregularities include: Amenorrhea (when a teenager does not get her period by age 16, or when a woman stops getting her period for at least three months and is not pregnant); Dysmenorrhea (painful menstrual periods); Menorrhagia (heavy menstrual periods) and Polycystic ovarian syndrome (ovaries produce high amounts of androgens) [2-6]. Many factors have been shown to be involved in menstrual disorders such as hormone imbalances, genetic factors, clotting disorders and pelvic diseases.

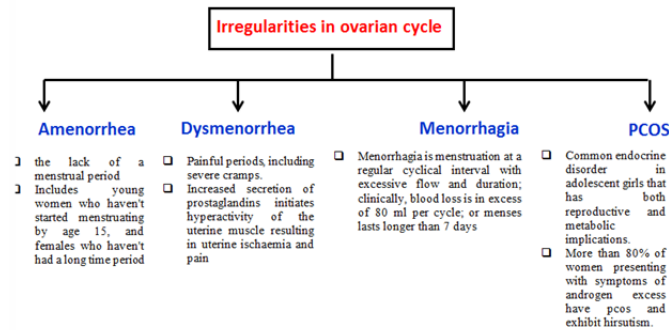


Fig. 3: Major menstrual anomalies occurring in the female menstrual cycle.

It has been shown that these disorders of the ovarian cycle may be triggered by many factors. Excessive weight/ Obesity and stress have been reported in many studies to lead to irregularities of the cycle. The mechanism by which this occurs is still under investigation and indicates to hypothalamus being affected and further downstream signaling leads to irregular bleeding in the form of amenorrhea, menorrhagia etc. [7-9]. As young females have recently stepped into puberty find it further more difficult to cope with menstruation as a biological phenomenon, irregularities, if any, are a source of further distress. Hence as, a sample population, studies such as this serves the dual purpose of identifying problems as well as educating them [10-11].

2. METHODOLOGY

A survey based study was conducted at Shivaji College, a constituent of the University of Delhi. A total of 275 female students, of the age group 17-21, pursuing undergraduate

studies in the college, were included in this study. Data was obtained by requesting participants to fill a detailed questionnaire, which included general information, and specific questions regarding their overall health and activity levels. Stress was laid on obtaining data regarding their menstrual cycle and irregularities if any and associated issues. It was also investigated if they were consuming any contraceptive/hormonal pills as remedial measures.

3. RESULTS

Of the total 275 female students surveyed, a total of 82 individuals (29.8% females) were found to suffer from varying forms of menstrual irregularities, ranging from dysmenorrhea to menorrhagia. Of these females with irregular cycles, 12 individuals (14.6% females) were found to take hormonal pills as preventive measures.

Table 1: Distribution of subjects on the basis of their regularities of menstrual cycles and consumption of hormonal/contraceptive pills

Regularity of cycles	Ever taken hormonal pills		Total (n = 275)
	NO	YES	
Irregular	70	12	82
Regular	183	10	193

We observe a strong evidence of relationship between Irregular cycles and uptake of hormonal pills

($\chi^2 = 7.359$, $df=1$, $p < 0.01$). Furthermore, the contingency coefficient (0.162) reveals a weak relationship which is statistically significant ($p < 0.01$)

An attempt to observe a relationship between irregularities of menstrual cycles and ailments like depression, low self-esteem etc. using chi-square distribution was carried out as a part of this study. The analysis of the data is shown in the table 2. We note that there is a strong evidence of relationship between irregularity of menstrual cycles and low self esteem, inability in movement & speech. Moreover, the contingency coefficient values show that there is weak relationship between these variables which is statistically significant. Further data is required to substantiate our preliminary investigation.

Table 2: Analysis between irregularities in menstrual cycles and selected behavioral characteristics*

Characteristic investigated	χ^2 , $df=1$ (p value)	Contingency coefficient (p value)
Lack lustre behavior (Yes=0, No=1)	0.299 (0.585)	0.035 (0.585)
Depression (prolonged) (Yes=0, No=1)	3.042 (0.081)	0.108 (0.081)
Difficulty in sleeping (Yes=0, No=1)	0.648 (0.421)	0.051 (0.421)

Low energy levels (Yes=0, No=1)	1.359 (0.244)	0.073 (0.244)
Poor appetite (Yes=0, No=1)	0.349 (0.554)	0.037 (0.554)
Low self esteem (Yes=0, No=1)	15.487 (0.000)	0.240 (0.00)
Difficulty in concentrating (Yes=0, No=1)	3.326 (0.068)	0.114 (0.068)
Inability in regular movement and speech (Yes=0, No=1)	7.285 (0.007)	0.170 (0.007)

* Regular cycles (Yes = 1, No = 0)

4. DISCUSSION

The current study was aimed to investigate the prevalence of menstrual irregularities in young females, using the undergraduate student pool of Shivaji College as the sample population. It was found that almost 1/3 subjects were suffering from varying degree of discomfort and irregularities during their menstrual cycles every month. About 15% of the individuals with irregularities were also found to consume hormonal/contraceptive pills. However, all of them were not taking the pills under medical supervision, which is a cause of concern. The individuals with irregularities in their cycles were also found to have a higher propensity to behavioral characteristics like depression, low self-esteem, poor appetite etc. However the correlation of regularity in cycles with these characteristics needs to be further explored using a bigger sample size to make it of better significance in the statistical analysis. Our study was also aimed at creating an awareness regarding various health issues faced by them, and remedial measures that can be adopted to reduce these ailments.

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