Prevalence of Amenorrhea Among Undergraduate Females at BUITEMS: A Cross-Sectional Study

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ABSTRACT

An amenorrhoeic female is characterized when she has missed her menses for two or more months consecutively in a row. Such menstrual-related issue is prevalent in young females that are reproductively active and requires medical attention otherwise complications like infertility, psychosocial developmental delays, and osteoporosis, fractures, etc might result in such adolescent females at a very early age. Therefore it is crucial to diagnose and identify amenorrhea and its contributing factors in young females'. The obtained results of our study suggested that amenorrhea is prevalent among adolescent females that suffer from a high level of stress due to academic burden, hormonal imbalance, dietary deficiency, and premenstrual symptoms.

Key Words: Amenorrhea; Osteoporosis; Infertility; Premenstrual symptoms; Menstrual pattern.

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Introduction

The absence of menstruation in females during the reproductive ages of approximately 12-49 years is called Amenorrhea. [1] In general, if a female does not have menses for two months or more, she has amenorrhea. [2] Studies have shown that a large proportion of the female population of reproductive age suffers from menstruation-related amenorrhea. [3] Menstrual problems not only carry an economic burden but are also one of the most common causes of absenteeism and poor academic performance among young females [4,5]. The majority of young females who happen to be undergraduate students reported that they have skipped their periods due to continuous and chronic academic stress related to their studies and exams. [6] Nutritional deficiency is another factor causing

amenorrhea because of long term shortage of essential nutrients required by the reproductively active adolescent females [7] On the other hand high prevalence of amenorrhoea was observed in those young females that were involved in athletics due to prolonged decreases in their hormone levels. [8] Menses irregularity is a usual occurrence during teenage however it's not a normal situation and is responsible for causing significant medical illness. [9] Menses patterns can be an indicator of overall health status and self-perception of well-being. [10] Therefore it is essential to understand the various causes of amenorrhea otherwise complications like infertility, psychosocial developmental delays, and osteoporosis, fractures, etc might result in the adolescent females at a very early age. [11, 12]

Therefore this research study aimed to determine the prevalence of amenorrhea among undergraduate females studying at BUITEMS and

also to identify those factors that contribute towards such a mensuration problem.

S. No	Menstrual pattern	No of students (%) (n=100)
1	Number of cycle missed	
	• None missed	63
	• 1 months	16
	• 2 or more months (Sign of amenorrhea)	21
2	Menstrual regularity	
	• Regular	58
	• Irregular	42

Table 1: Menstrual pattern of the undergraduate female students

Materials and methods

This study was a cross-sectional study, conducted among the female undergraduate students studying in different departments at BUITEMS, Quetta, Pakistan. The students were selected at random studying in different departments. Informed consent was obtained from these students keeping the sample size 100.

Inclusion criteria: Adolescent undergraduate female students (aged between 18 and 25 years), who were willing to participate in the study.

Exclusion criteria: Those adolescent undergraduate females that were married was excluded from this study.

The study was conducted with the help of a self-developed amenorrhea identification questionnaire designed to find the prevalence of amenorrhea and its associated contributing factors among undergraduates' females. The questionnaire included items relating to the participants' menstrual pattern (cycle interval in days, menstrual regularity), premenstrual symptoms, eating patterns and stress. Statistical analysis of the data was done by means of Microsoft Excel in 2013. Results

Results

Table 1 and Graph 1 depicts the menstrual pattern of the adolescent undergraduate females including number of cycle missed and menstrual regularity.

Graph 1: Menstrual pattern of the undergraduate female students

Table 2 and Graph 2 depicts the different Amenorrhea associated premenstrual symptoms suffered by the undergraduate female students.

Graph 2: Amenorrhea associated premenstrual symptoms suffered by the undergraduate female students.

Eating patterns of the 100 adolescent undergraduate female students were given in Table 3 and Graph 3.

S. No	Eating pattern	No of students (%) (n=100)
1	Health condition	
	• Balanced	37
	• Malnourished	63
2	Exercise	
	• Regular	0
	• Irregular/none	100
3	Meal times	
	• Regular three times a day	31
	• Irregular i.e. skipping meals	69

Table 2: Eating patterns of the undergraduate females

S. No	Amenorrhea associated premenstrual symptoms	No of students (%) (n=100)
1	Generalized pains	63
2	Headaches	49
3	Tiredness	41
4	Acne	67
5	Mood swings, anger, irritability	71
6	Loss of appetite	52

Table 3: Different Amenorrhea associated premenstrual symptoms

Graph 3: Eating patterns of the undergraduate females

Prevalence of stress among 100 adolescent undergraduate female students were given in Table 4 and Graph 4.

S. No	Incidence of stress	No of students (%) (n=100)
1	• Stressed	34
2	• Non-stressed	66

Table 4: Incidence of stress among undergraduate females **Graph 4: Incidence of stress among undergraduate females**

Prevalence of Amenorrhea among 100 adolescent undergraduate female students were given in Table 5 and Graph 5.

Graph 5: Prevalence of Amenorrhea among undergraduate females

Discussion

Our study revealed that the overall prevalence of Amenorrhea is low among the studied female undergraduates as depicted in graph 5. The result suggested that out of 100 undergraduate females only 21% were amenorrheic while 79% were non-amenorrheic. However, a total of 42% of undergraduate females out of 100 were having irregular menstrual patterns as shown in graph 1 accompanied with apparent premenstrual symptoms (Graph 2). The prime contributing factor responsible for causing amenorrhea in undergraduate females were reported to be stress [13] as 34% of these undergraduate females were under a high level of stress due to academic burden (Graph 4) as amenorrhea and stress are among the most common health problems in young females [14,15]. This study also depicted that females with amenorrhea also suffers from premenstrual symptoms such as 49% suffered headache, 63% generalized pain, 67% acne and a large proportion of females were troubled by mood swings 71% (Graph 2) which makes it difficult for these females to cope up with their

daily routine causing discomfort and distress [16,17]. Varying prevalence of premenstrual symptoms can be caused by abnormal functioning of the hypothalamic-pituitary-adrenal axis (HPA), hormonal imbalance, nutritional defects, and environmental factors [18]. A possible physiological mechanism responsible for irregular menstruation and amenorrhea in these young females with associated pre-menstruation symptoms can be prolonged activation of the hypothalamic-pituitary-adrenal axis by stress, which may alter hormonal profiles, resulting in the disruption of normal ovulation and menstrual cycles [19, 20]. However, there were certain limitations in this study such as factors like body mass index, lack of sleep, socioeconomic status of the studied females were not considered and moreover, this studied was based on data obtained through the questionnaire only and no medical examination was performed.

Conclusion

This research study concluded that amenorrhea is a menstrual related health issue that is triggered by high stress among undergraduate females

studying at BUITEMS. In addition to stress factors like eating patterns, premenstrual symptoms, etc were also characterized in amenorrheic females. Therefore it is important that young females should be provided with therapeutic counseling on stress management and menstrual issues at their respective institutions to help them deal with such distress.

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