Journal of Saidu Medical College 2016; 6(1)

PATTERN OF MENARCHE IN ADOLESCENT POPULATION OF DISTRICT NOWSHEHRA, KHYBER PUKHTOONKHWA, PAKISTAN.

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ABSTRACT

BACKGROUND: Variations in menstrual pattern of females may affect their physical, psychological and social well-being. Present work was planned to study pattern of menstruation in young adult females of District Nowshehra, Khyber PukhtoonKhwa, Pakistan.

OBJECTIVE: to see the pattern of menstruation in young adults of District Nowshehra, and to asses factors to minimize the possible complications.

PATIENTS AND METHODS: It is a descriptive study of school going female students, with age group of 12 to 16 years. A pre-designed, pre-tested questionnaire was used for the collection of information.

RESULTS: Out of 500 female students screened, 47% students had menarche at the age of 12 years, 36% at the age of 13 years and 17% at the age of 14 years respectively. Mean age at menarche was 13 years. 7 % of the girls had duration of menstrual cycle less than 21 days, while this duration was between 21–25 days for 38%, 26-30 days for 40% and was 31-35 days for 15% respectively.

CONCLUSION: Menstrual abnormalities needs to be addressed as early as possible in order to minimize the unto wards consequences. Adolescents should be encouraged to chart their menstrual frequency and regularity. In case of detection of any abnormality it should be referred to the gynecologist for management.

KEYWORDS: Puberty, Menarche, Premenstrual syndrome, Dysmenorrhea.

INTRODUCTION

Puberty is defined as the state of being functionally capable of procreation. The term is generally used in a more comprehensive sense to refer to the whole period of time during which secondary sexual characteristics develop. There are five main physical features of puberty in females that include, breast growth, pubic and auxiliary hair growth, increase in height and menstruation[1]. The onset of menstruation is influenced by a number of factors: genetics, nutrition, body weight and maturation of the hypothalamic pituitary ovarian axis. Menstruation may not always mean that ovulation has occurred. In majority of cases early menstrual cycles are an-ovulatory. The cycle length varies and take 5-8 years before the normality of menstrual cycle is established. During this time, presentation with menstrual irregularities is common[2]. The first menstruation refers to Menarche, which is one of the noticeable events of puberty occurring between 10 to 16years[3,4]. By the age of eight to nine years, pituitary gonadotropin hormones begin to secrete, under the action of rhythmic secretion of gonadotropin-releasing hormone (GnRH) from the hypothalamus[3]. The onset of menstruation is due to activation of the ovaries by the gonadotropins of the anterior pituitary leading to production of estrogen by the ovaries [3-5].

Estrogen acts on the endometrium causing its proliferation thus leading to the first menstruation (menarche) [5]. The action of estrogen and progesterone modify the endometrium into thick layers which are shed in a cyclic manner when these hormones are at low levels in the cycle[4,6-7]. The duration of normal menstrual flow is two to seven days but majority of women experience menstrual flow that last three to five days leading to loss of about 30-80 ml of non-clotting blood from the endometrium[6-9].

Dysmenorrhea, or painful menstruation, is one of the most common gynecological complaints. It is estimated to affect almost half of all women at some time during their child bearing age[10,11]. Lower abdominal cramps and pain that may radiate to the thighs and lower back is the most common symptom[11,12]. Headache, nausea, constipation or diarrhea, and urinary frequency are often present and vomiting may also occur[13]. The symptoms tend to peak after 24 hours and usually subside after 2 days[11]. While many women suffer mild discomfort during menstruation, dysmenorrhea is present if pain prevents normal activity and requires over-the-counter or prescription medication. Dysmenorrhea may be primary, secondary, and membranous [13].

The present study was aimed to see the pattern of menstruation in young adult females of District Nowshehra, KPK, Pakistan and to evaluate the causes and minimize the risks of unto wards consequences which are usually rectifiable, when addressed at proper time.

SUBJECTS AND METHODS

The present study was conducted at Department of Biochemistry, Khyber Medical College, Peshawar in collaborations with the Department of Gynecology and Obstetrics, Lady Reading hospital (LRH), Peshawar. The study population consisted of apparently healthy, secondary school going unmarried female individuals, with the age range between 12 to 16 years. A total of five hundred randomly selected female subjects (n=500) of secondary schools, district Nowshehra, after taking their consent, were recruited in the study. All the respondents were volunteers and provided written consents. Students on hormonal medication therapy were excluded from the study. Each participant was interviewed about the age of first menstrual cycle (menarche), interval between two most recent menses and heavy menstrual flow, and the information were recorded on pre-designed; pre-tested questionnaire. The questions were properly explained to avoid any form of misunderstanding and to facilitate accurate response by the participants.

RESULT

Five hundred randomly selected female subjects (n=500) of age at menarche is shown in Table-1. which revealed that 47% students had menarche at the age of 12 years, 36% subjects had menarche at the age of 13 years, while 17% of the subjects had delayed menarche i.e., at the age of 14 years respectively.

Table 01: Age at Menarche

Menarche (First Menstrual Cycle)		
Variable (s)	**No. of Students**	**% Population**
Age (Years)		
12	235	47
13	180	36
14	85	17

Table-2 shows symptoms of premenstrual syndromes (PMS) in the study population. The commonest psychological symptoms of PMS was fatigue in 94% study population, followed by depression (63%) anger (65%), aggression (57%), acne (55%), irritability (51%), weight loss (39%), sleepiness (33%) and weight gain (20%) respectively.

Table 02: Symptoms of Pre-Menstrual Syndrome (PMS)

S. No	Symptoms of PMS	Percent (%)
01	Fatigue	94
02	Depression	63
03	Anger	65
04	Aggression	57
05	Weight loss	39
06	Weight gain	20
07	Acne	55
08	Sleepiness	37
09	Irritability	51

Table 03: Menstrual Cycle Interval

S. No.	Days	Number of Individuals	Percent (%)
01	15-20	35	07
02	21-25	190	38
03	26-30	200	40
04	31-35	75	15

Table-4 and 5 show the duration of dysmenorrhea in days and state of dysmenorrhea according to degree of severity. Dysmenorrhea less than 1 day duration was seen in 25% of the study population, 1-2 days in 29%, 2-3 days in 30%, and more than 3 days was seen in 16% of the study population respectively. Severe dysmenorrhea was observed in 33% of the study subjects.

Table 04: Duration of Dysmenorrhea

Days	Number of Individuals	Percent (%)
< 1	125	25
1 to 2	145	29
2 to 3	150	30
> 3	80	16

Table 05: State of Dysmenorrhea

State of Dysmenorrhea		
State of Dysmenorrhea	No. of Student	Percent (%)
Mild	255	51
Moderate	080	16
Severe	165	33

Percentage of subjects experiencing common symptoms related with dysmenorrhea is depicted in Table-6. Data shows that 72% study subjects complained of abdominal pain, 83% of low back pain, 51% of dizziness, 44% of decreased appetite, 68% of nervousness and 30% of skin rash.

Table 06: Symptoms of Dysmenorrhea

Symptoms of Dysmenorrhea	
Symptoms	Percent (%)
Abdominal Pain (n=360)	72
Low Back Pain (n=415)	83
Dizziness (n=255)	51
Decrease Appetite (n=220)	44
Nervousness (n=340)	68
Skin Rash(n=150)	30

DISCUSSION

Menstrual cycle is a hallmark of female reproductive life and menarche, the first menstrual period, is an index of female puberty. Most of the females' experience it in the age group of 10 to 16 years[14]. In the present study mean age of menarche was found to be as 13 years which lies within the quoted range. However, other studies have shown higher mean age of menarche i.e., 13.5 years and 14.5 years[15] in Indian population. In the U.S population it is reported as 12.72 years[16] and 15.0 years in Igbo women of Southeast Nigeria[17]. Recently it has been noted that age at menarche has fallen regardless of region or race because of improvements in nutrition and physical growth and changes in the socio-economic environment[18]. Thus, age at menarche is not fixed, but rather varies among population groups and over time[19]. For example, surveys of English adolescents in 1940 to 1960, during and after World War II, showed that age at menarche decreased by 3 to 4 months every 10 years[20]. In Western countries, age at menarche has fallen by 2 to 3 months every 10 years over the last 150 years[21,22]. In the USA and Europe, age at menarche was 17 years in the 19th century, 14.7 years in 1877[23], and 12.2-12.9 years in recent

years[24,25] is in agreement with the above stated studies. Mean age at menarche has generally decreased; from 14.8 years in 1962 to about 14 years in 1973, 14.4 years in 1979, 13.4 years in 1986, 12.5 years in 1988, and 12.4±1.1 years in 1993[26]. Regionally, age at menarche was 1 year earlier in Seoul than in other regions of Korea[27]. Age at menarche was 16.2 years in urban women and 16.3 years in rural women[28], and 13.4 years in women living in large cities while 13.7 years in those residing in small cities[29]. These results support the concept that age at menarche varies from population to population depending upon nutritional, geographical ethical, socio-demographic, environmental conditions as well as genetic factors[30,31]. Our results are in agreement with the above cited research works.

When subjects were asked about how they coped with the symptoms, 96% reported that they did not use any medication; only 4% took proper medication such as pain killer or consulted the doctor. The premenstrual syndrome, a common menstrual disorder that usually features mood swings occurring about 1 week before menstruation, is experienced by most menstruating women, particularly those who are 20 to 40 years of age. The symptoms vary among individuals and may differ from cycle to cycle. The principal problems include weight gain, weight loss, fatigue, acne, anger, aggression, anxiety, irritation, and depression. These symptoms usually appear 7 to 10 days before menstruation and disappear several hours after commencement of menstruation[32]. In our study majority of the subjects suffered from premenstrual syndrome and thus our results is consonance with the above reported studies. Lee and colleagues has reported that 69.4% of Malaysian adolescent girls experience dysmenorrhea. Dysmenorrhea in adolescent and young adults is usually primary and is associated with normal ovulatory cycle. Students remain absent from the school or college because of dysmenorrhea which may lead to poor academic performance[33]

Menstrual interval of less than 21 days is called polymenorrhea while menstrual interval of more than 35 days is called oligomenorrhoea. In this study, 7% of the females presented with polymenorrhea having menstrual cycle interval of less than 20 days. About 38% of the study subjects had 21-25 days interval, 40% had 26-30 days interval while 15% presented with oligomenorrhea having 31-35 days menstrual cycle interval. Dumbhare*et al.,* reported that the inter-menstrual interval in school going adolescent Indian girls was between 21-35 days in 69.52% of the study population; moreover, 8.38% of the girls presented with polymenorrhea and 22.1% with oligomenorrhoea[14] are almost consistent with the present study.

Occasional irregularity in menstrual cycle may be due to an immature hypothalamic-pituitary-ovarian axis which is common in the first 2 to 3 years after menarche. Changing trends of lifestyle, dietary habits and tough competition contribute to psychological and physical stress in the adolescent age group causing hormonal imbalance. This could be one of the possible causes of temporary menstrual disturbances[34]. Present study has many limitations. First of all study subjects were secondary school students in Nowshera district and our results thus cannot be automatically generalized to students in other region of Pakistan. A large-scale nationwide survey is required and the data in age at menarche by birth cohort is needed. Second limitation was lack of awareness about premenstrual syndrome. This means that our study of symptoms memory may have been influenced by information bias. In other words those who did not understand "premenstrual syndrome" may not have given valid response to the relevant questions.

CONCLUSION

In conclusion, the age at menarche and other menstrual characteristics observed in this study are similar to adolescent menstrual characteristics described by studies performed in populations in other parts of the world. Adolescent girls suffer some morbidity related to

menstruation which makes it necessary to give them accurate education about menstruation. Health professionals have a greater role to play to complement the current efforts made by parents to accurately educate their daughters about menstruation.

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