

Adolescent Girls Health Screening

Col R Chandra, # Gp Capt JC Sharma. \$

Legend : #Senior specialist in Obs & Gyn, Military hospital Ranikhet, UTTARAKHAND.

\$ Prof Obs & Gyn, ESIC medical college, Faridabad, Haryana,

Corresponding Author: Col R Chandra, Senior specialist in Obs & Gyn, Military hospital Ranikhet, Ranikhet, Almora, Uttarakhand, India, Pin Code:- 263645

Abstract

Introduction

The age limit proposed by WHO expert committee on adolescence is 10-20 years which covers most of these events and is useful basic definition. Adolescence girls are at greater physical stress than boys because of menstruation. Their nutritional needs are of particular importance as they have to prepare for motherhood. They are vulnerable to anemia, menstrual ailments such as PMS, dysmenorrhoea, menorrhagia and sexual abuses.

Aim

To assess the prevalence of menstrual ailments, status of sex education, growth and development of adolescent girls.

Subject and method

A cross sectional studies of adolescent girls were conducted among the school girls at a military station and surrounding area, between March 2014 to February 2015. Three hundred and seventy five girls between 10 to 20 years of age were taken for the study.

Result

Three hundred and seventy five girls were divided into two groups – early adolescent (83) 22.1% (10-15 yrs) and late adolescent (292) 77.8 % (15-20yrs). The menstrual history were analysed and the mean age of menarche was 13.01 years. At the age of 13 years 211 (56.2%) girls had attained menarche. Twenty nine (30%) early adolescent girls and 54 (24.21%) late adolescent girls had duration of menstruation longer than 5 days respectively. Dysmenorrhoea was observed in 26.50% and 30.4% and breast discomfort was observed in 30.10% and 40.81% of early and late adolescent girls respectively. . There was great variation in weight of the girls. In early adolescent group 51.96%, 20.58% and 7.8% had weight less than 10%, in 20-30% and more than 30% of standard weight respectively. In late adolescent groups 55.67%, 23.80% and 11.72% had weight less than 10%, in 20-30% and more than 30% respectively. Haemoglobin level in 33.33% of early adolescent girls and 22.34% late adolescent girls 8-9.9 gm% range. Haemoglobin level was in the range of 6-7.9% in 10.78% of early adolescent and 5.12% of late adolescent girls. The level of knowledge of reproductive and sexual health was poor.

Conclusion

Adequate and timely intervention to correct the deficiencies, treat anemia and other infection along with imparting sex education (FLE) will improve their health and positive attitude to life

Key words : adolescent girl, menstrual problem, anthropometry, sex education.

Date of Submission: 30-09-2019

Date of Acceptance: 15-10-2019

I. Introduction

Adolescence is a period of growth when morphological changes occur in all organ system causing a gradual transition from childhood to responsible mature adult womanhood. The hypothalamic gonadal axis becomes mature. There is a marked acceleration in size and change in contour of the body, gonadal growth and development, growth sexual organs and muscular system leading to increased strength of the body and efficacy of energy production.

Adolescence (teenage) is spread almost over a decade adolescent growth spurt starts at about 10-12 years in girls. The annual peak rates for height and weight are 9-10 cm and 8-10 kgs. Development of critical bone mass is essential during this period as pattern and proportions of various body components like body water, muscle mass, bone and fat increase during the entire childhood and adolescence to reach adult values by 18 years. Adolescence girls are at greater physical stress than boys because of menstruation. Their nutritional needs are of particular importance as they have to prepare for motherhood. All these rapid anabolic changes require more nutrition per unit body weight.[1] Frisch opined that, a minimum level of fat percentage in body

weight of 17% is essential for onset of menarche; however, fat percentage for regular menstrual cycles in girls over 16 years of age was 22%. [2]

The age limit proposed by WHO expert committee on adolescence is 10-20 years which covers most of these events and is useful basic definition. [3] In India the adolescence period has been defined as the period between age 10 to 18 years. Normal puberty starts by age 8 to 12 years in Indian girls and takes 3 to 4 years for the completion of the development of secondary sexual characteristics. [4] In a study of North Indian girls, thelarche occurred only after the attainment of height of 143 cm and weight of 35 kg. [5] Chinese girls aged 13–14 years, who had reached menarche, were significantly taller and had higher BMI than girls in the same age group who had not reached menarche. [6] Gymnasts who had attained menarche were significantly taller and heavier, with a higher percentage of body fat and a lower training frequency and training duration than the gymnasts who had not attained menarche. [7] In a study the median ages of thelarche, pubarche and menarche were 10.8 (10.7-10.9) y, 11.0.y (10.8-11.2) y and 12.4 y (12.2-12.5) yrs were observed. Overweight/obese girls showed six months earlier onset of thelarche and menarche than those with normal BMI. [8]

Early menstrual age was associated with higher risk of menstrual problems. Over weight and obesity in early adulthood appears to increase the risk of menstrual problems, hypertension in pregnancy and sub fertility. [9] Abnormal uterine bleeding (AUB) is the most common gynecologic complaint of adolescents for hospital admission. Immature hypothalamic-pituitary-ovarian axis, anovulatory cycles, are the leading cause of heavy menstrual bleeding and 20% of them have accompanying bleeding disorders. [10]

Nearly more than fifty percent of women experience some lower abdominal discomfort during menstruation. But a severe dysmenorrhoea in young women requiring time off from work or studies occurs in 3-10 percent in their late teens and early twenties. [11]

Eating disorders in young women are common and associated with significant mortality morbidity. [12, 13] Cross sectional surveys had confirmed that eating disorders are common in adolescent women; around 0.5% have anorexia nervosa, 1% have bulimia nervosa, and 3% to 5% have subclinical syndrome. [14,15]. The feature of eating disorders most commonly emerge in mid adolescence before development of full syndrome. [16] Dieting is the most important predictor of new eating disorder. In adolescents controlling weight by exercise rather than by diet restriction seems to carry less risk of development of eating disorder, like anorexia nervosa or bulimia nervosa. [17]

Almost a quarter of Indian population comprised of girls below 20 years of age. The adolescent who embodies both childhood and womanhood is barely discernable shadow in our national policy and awareness. It is precisely also this segment of our population which is neglected in our education and development programmes.

II. Aim

To assess the prevalence of menstrual ailments, status of sex education, growth and development of adolescent girls.

III. Subject and method

A cross sectional studies of adolescent girls were conducted among the school girls at a military station and surrounding area, between March 2014 to February 2015. Three hundred and seventy five girls between 10 to 20 years of age were taken for the study. Information about their health was obtained from structured questionnaire, consisting of age of menarche, menstrual blood loss and symptoms of premenstrual syndrome, dysmenorrhoea and presence of any other illness.

Weight was measured to the nearest 1 kg with minimal clothing and 1 kg was deducted to account for the clothing. Height was measured with a stadiometer to the nearest centimetre, with shoes removed. The haemoglobin level was estimated by Shali's acid haematin method. The height and weight of the individual was compared with the standard age specific height and weight of Indian population as mentioned in ICMR technical series no 18. The data was collected and analysed statistically. [18]

IV. Result

The 375 girls were divided into two groups – early adolescent (83) 22.1% (10-15Yrs) and late adolescent (292) (15-20) years. The menstrual history was analysed and the mean age of menarche was 13.01 years. Sixty nine (18.4%) girls were yet to attain menarche upto 15 years of age. Eleven (2.93%) girls had menarche by completion of 11 years of age. At the age of 13 years 211 (56.2%) girls had attained menarche. (Table 1)

Table 1: Age of menarche

Age (yrs)	11	12	13	14	15	No menarche until 15 yrs
No of girls	11	63	137	76	19	69
Percentage	2.93	16.8	36.53	18.02	5.0	18.4
Mean age of menarche			13.01 yrs			

The menstrual cycle was regular in 67.46% and 64.02% of early and late adolescent girls respectively. (Table 2)

Table 2: Menstrual cycle (n=306)

Age group	Regular		Irregular	
	No	%	No	%
Early adolescent (83)	56	67.46	27	32.53
Late adolescent (292)	188	64.38	104	35.61

The menstruation was more than 5 days in 34.93% and 24.21% of early and late adolescent girls respectively. Passage of blood clots as sign of menstruation was observed in 21.68% and 30.94% of early and late adolescent girls respectively. Considering the length of menstruation and passage of clots as sign of menorrhagia; Twenty nine (30%) early adolescent girls and 54 (24.21%) late adolescent girls had duration of menstruation longer than 5 days respectively. (Table 3)

Table 3: Duration of menstruation (n=306)

Age group	1-4 days		5-7 days		8 days		Passage of clots	
	no	%	no	%	no	%	no	%
Early adolescent (83)	54	65.06	22	26.50	7	8.43	18	21.68
Late adolescent (223)	167	74.88	43	19.28	11	4.93	69	30.94

Dysmenorrhoea was observed in 26.50% and 30.4% in early and late adolescent girls respectively. Breast discomfort was observed in 30.10% and 40.81% of early and late adolescent girls respectively. Mood irritability and depression was observed in 51.80% and 26.45% early and late adolescent girls respectively, work day loss was similar about in 3% girls. (Table 4)

Table 4: PMS & dysmenorrhoea

Age group	Breast discomfort		Mood irritability /depression		dysmenorrhoea		Work day loss	
	No	%	No	%	No	%	No	%
Early adolescent (83)	25	30.1	43	51.80	22	26.50	3	3.61
Late adolescent (223)	91	40.81	59	26.45	67	30.04	8	3.58

The status of sex education was assessed by level of knowledge of normal physiology of genital organs, STD/HIV/ Safe sex, pregnancy and contraceptive / MTP among the girls. The level of knowledge of reproductive and sexual health was poor. (Table 5)

Table 5: Sex educations status

	Early adolescent(102)		Late adolescent(273)	
	no	%	no	%
Knowledge of physiology of genitalia	11	10.78	43	15.75
Knowledge of STD/HIV/safe sex	5	4.90	25	9.15
Knowledge of Pregnancy	12	11.76	96	35.16
Knowledge of contraceptives /MTP	2	1.96	14	5.12

Anthropometric measurement was taken; most of the girls had height within normal range as per age. Only about 1.96% girls had height less than 10% of standard and 6.86% girls had height above 10% in early adolescent group. In late adolescent girls group, 1% had only approximately height less than 10% of standard and 2% had height above 10% of standard. There was great variation in weight of the girls. In early adolescent group 51.96%, 20.58% and 7.8% had weight less than 10%, in 20-30% and more than 30% of standard weight respectively. In late adolescent groups 55.67%, 23.80% and 11.72% had weight less than 10%, in 20-30% and more than 30% respectively. (Table 6)

Table: 6 Anthropometry

	Variation	Early adolescent(102)		Late adolescent(273)	
		no	%	no	%
Height	<10%	2	1.96	3	1.09
	>10%	7	6.86	6	2.19
Weight	<10%	53	51.96	153	55.67
	>20-30%	21	20.58	65	23.80
	>30%	8	7.84	32	11.72

Haemoglobin level was estimated, 33.33% of early adolescent girls and 22.34% late adolescent girls had haemoglobin in 8-9.9 gm% range. Haemoglobin level was in the range of 6-7.9% in 10.78% of early adolescent and 5.12% of late adolescent girls. (Table 7)

Table: 7 Haemoglobin level

	Variation	Early adolescent(102)		Late adolescent(273)	
		no	%	no	%
Haemoglobin level	8-9.9 gm%	34	33.33	61	22.34
	6-7.9 gm%	11	10.78	14	5.12

History of other associated illness (since previous 1 years) suffered are malaria (18.62%), UTI (8.82%) dysentery (6.86%), skin diseases (12.75%), pulmonary TB(1.96%) in early adolescent girls. The late adolescent group had suffered from malaria (11.35%), UTI (5.12%), dysentery (12.45%), skin diseases (8.79%), pulmonary TB (1.09%). (Table 8)

Table no 8: Associated illness (previous one year)

Disease	Early adolescent (102)		Late adolescent (273)	
	no	%	no	%
Malaria	19	18.62	31	11.35
UTI	9	8.82	14	5.12
Dysentery	7	6.86	34	12.45
Pulm TB	2	1.96	3	1.09

V. Discussion

The adolescent girls are at a great stress due to rapid physical changes, psychological conflict, high demand of academic achievement, peer pressure, which is aggravated by several prevalent infective diseases. Menstrual disturbances are very common in adolescent period causing great suffering to them. The heavy menstrual period and dysmenorrhoea often causes severe ill health such as debilitating pain and anemia. A new universally accepted system of nomenclature to describe uterine bleeding, acronym PALM-COEIN (polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic and not yet classified) was introduced in 2011, which is used for standardized definition and management protocol.[19] In this study the menstrual related ailment like dysmenorrhoea was observed in 26 % in early adolescent and 30% in late adolescent girls. A study in Gwalior showed a high prevalence of dysmenorrhoea in adolescent girls 71.96%. [20]

This group of population are often neglected in health care system as well as by parents. Rapid spread of western culture, gradual slackening of traditional social and family bonds, coupled with degradation of moral fabrics in the society as a whole puts a great risk of sexual exploitation on the innocent adolescent girls who mentally behave as child in spite of rapid physical growth and development of secondary sexual characteristics. Often low energy level and functional hypothalamic amenorrhoea {FHA} is a form of chronic anovulation, which is associated with stress, weight loss, excessive exercise, or a combination thereof. Investigations should include assessment of systemic and endocrinologic etiologies, as FHA is a diagnosis of exclusion. [21].

Adequate nutrition and attainment of appropriate height and weight has direct bearing on the future menstrual pattern, reproductive and general health. The Female Athlete Triad observed in physically active girls and women, and manifest as three components: (1) low energy level with or without disordered eating, (2) menstrual dysfunction and (3) low bone mineral density. Early intervention is important to prevent its progression to serious endpoints that include clinical eating disorders, amenorrhea and osteoporosis. [22]. In this study, the prevalence of anemia in adolescents was 32 %. In a study at Tamilnadu, reported that the overall prevalence of anemia was 48.63% Prevalence of anemia (52.24%) in the late adolescents specially of low socioeconomic class. [23] A study of anemia in adolescent at Ethiopia, the overall prevalence was 15.2% (62/408), of which 83.9% comprised mild anemia. The prevalence was higher in female (19.3%) than male (9.4%) adolescents.[24].

The level of sex education in adolescent in this study was poor in the range of 15 - 30%. The low sex education level has potential of sexual exploitation and promiscuity. A recent study reported that population of 15–24 years age group contribute to a disproportional y large (31%) of AIDS burden in India, despite the whole demographic comprising about 25% of the country's population. UNAIDS report, published that there were 2300,000 people of 15 years and above, living with HIV in India, with one youth infected with HIV/AIDS almost every 15 s. National AIDS Control Organization and the Ministry of Human Resources and Development has termed sex education as family life/sex education (FLE) . [25] The major objectives of (FLE) can be broadly described as follows:

- To develop emotionally stable children and adolescents who feel sufficiently secure and adequate to make decisions regarding their conduct without being carried away by their emotions.
- To provide sound knowledge of the physical aspects of sex behavior , psychological and sociological aspects..
- To develop attitudes and standards of conduct for their own and other person as well as welfare of society.

The study was based on school survey, as a large number of adolescent girls who do not attend school are not included in study. Therefore it does not represent whole adolescent girls of the locality. In spite of this weakness of the study, a large number of girls have been observed to suffer from menstrual ailments like menorrhagia, irregular menstrual cycle, PMS, dysmenorrhoea along with high prevalence of anemia, under nutrition , low body weight, poor state of knowledge of sex education.

VI. Conclusion

The adolescent girls are to be considered as special category in term of their health need, they are venerable to anemia, menstrual ailments such as PMS, dysmenorrhoea, menorrhagia. Sex educations to the adolescent girls are very important to safe guard them against sex abuses, unwanted teenage pregnancy. Adequate and timely intervention to correct the deficiencies, treat anemia and other infection along with imparting sex education (FLE) will improve their health and positive attitude to life.

Conflict of Interest: None, no financial help was obtained. Study was conducted after approval of ethical committee.

References

- [1]. Working group . Dietary guidelines for Indians- A manual. National institute of nutrition, Hyderabad. First edn 1998 page 29.
- [2]. A Baker ER. Body weight and the initiation of puberty. Clin Obstet Gynecol. 1985 Sep;28(3):573-9.
- [3]. WHO Technica report series No .308.
- [4]. NPICD (Natal institute of public cooperation and child development) recommendation of the workshop on “The preparation of adolescent girls for safe motherhood through ICDS progearme” Sept 4-6 ,1989.
- [5]. Qamra Sr Mehta S, Deodhar SD , A study of relation between physical growth and sexual maturity in girls. Indian pediatrics , 1991, 28:265-272.
- [6]. Zhenjie Wang, Shaonong Dang, et al. Correlation of body mass index levels with menarche in adolescent girls in Shaanxi, China: a cross sectional study. *BMC Women's Health* volume 16, (2016) Article number: 61 .
- [7]. P Klentrou, M Plyley , Onset of puberty, menstrual frequency, and body fat in elite rhythmic gymnasts compared with normal controls. Br J Sports Med 2003;37:490–494.
- [8]. Rajesh Khadgawat, RK Marwaha, Neena Mehan, et al. Age of Onset of Puberty in Apparently Healthy School Girls from Northern India, Indian Pediatr 2016;53:383-387.
- [9]. Lake JK, Power C, Aand Cole TJ. Women 's reproductive health . the role of body mass index in early and adult life .Int J Obes ,1997, 21/6(432-438)
- [10]. Selin Elmaogullari^{1,*} and Zehra Aycan² ,Abnormal Uterine Bleeding In Adolescents. J Clin Res Pediatr Endocrinol. 2018 Sep; 10(3): 191–197.
- [11]. Lumsdean MA, Dysenorrhoea .Progressb in Obstetrics and gynaecology . Vol 3(Ed) John Studd, Churchill Living Stone , Edinburgh, London, Melbourne and New YOURK, 1985, p 276-292.
- [12]. King M. Eating disorders in general practice . BMJ , 1987, 17, 249-53.
- [13]. Harris EC, Barralough B . Excess mortality of mental disorders . Br J Psychiatry, 1998; 173:11-53.
- [14]. Johnson – Sabin E , Wood K, Patton G, Mann A, Wakeling A. Abnormal eating attitude in London school girls- a prospective epidemiological study: factors associated with abnormal response on screening questionnaires. Psychol Med , 1988;18:615-22.
- [15]. Rastom MV, Gilleberg C, Garton M , Anorexia –nervosa in Swedish urban region . Br J Psychiatry 1989;155:642-6.
- [16]. Fairburn CG, Welch SL, Doll HA, Davies BA, OConnor ME. Risk factors for bulimia nervosa a community based control study. Arch Gen Psychiatry 1997; 54:509-17.
- [17]. GC Pallon, R Selzer , C Coffey, JB Calin, R Wolfe. Onset of adolescent eating disorders: population based cohort study over 3 years, BMJ ,1999; 318: 765-768.
- [18]. Technical growth report series no 18. Growth and development of Indian infant and children . Indian council of Medical Research, Ansari Nagar, New Delhi, 1998.166-168.
- [19]. Rachael L. Polis, S. Paige Hertweck, Treatment Options for the Adolescent Patient Experiencing Abnormal Uterine Bleeding, Current Treatment Options in Pediatrics, September 2016, Volume 2, Issue 3, pp 184–195.
- [20]. Anil K Agarwal, Anju Agarwal, A study of dysmenorrhoea during menstruation in adolescent girls, Indian journal of community medicine .: 2010 | Volume : 35 | Issue : 1 | Page : 159-164.

- [21]. Gordon CM, Ackerman KE ,Berga SL,et al , Functional hypothalamic amenorrhea: an endocrine society clinical practice guideline. *J Clin Endocrinol Metab.* 2017; 102: 1413-1439.
- [22]. De Souza MJ, Nattiv A, Joy E ,et al.2014 Female Athlete Triad Coalition consensus statement on treatment and return to play of the female athlete triad: 1st international conference held in San Francisco, California, May 2012 and 2nd international conference held in Indianapolis, Indiana, May 2013.*Br J Sports Med.* 2014; 48: 289.
- [23]. Abilash Sasidharan Nair ,Chandrakumari¹, et al .Prevalence of anemia among adolescent girls in a rural area of Tamil Nadu, India. *Journal of family medicine and primary care.* Year : 2019 | Volume : 8 | Issue : 4 | Page : 1414-1417.
- [24]. Melkam Tesfaye, Tilahun Yemane, Wondimagegn Adisu, et al, Anemia and iron deficiency among school adolescents: burden, severity, and determinant factors in southwest Ethiopia, *Adolesc Health Med Ther.* 2015; 6: 189–196.
- [25]. Shajahan Ismail, Ashika Shajahan, et al, Adolescent sex education in India: Current perspectives. *Indian J Psychiatry.* 2015 Oct-Dec; 57(4): 333–337.

Ekpenyong, Nnette. “Adolescent Girls Health Screening.” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 10, 2019, pp 27-32.