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Original Research Article

A HOSPITAL BASED CROSS-SECTIONAL STUDY TO ASSESS THE PREVALENCE OF MENSTRUAL DISORDERS IN ADOLESCENT SCHOOL GOING GIRLS AT NEWLY ESTABLISHED TERTIARY CARE CENTER

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ABSTRACT

Background: Adolescent being the tender age of transformation of carefree child to a responsible adult, all problems should be dealt with carefully keeping in mind, emotional and psychological factors. These girls suffer from wide spectrum of gynecological problems among which menstrual disturbances are the commonest presenting complaint. In this study we have tried to find out the prevalence of menstrual disorders in the girls and to evaluate the factors affecting the onset of menarche. **Methods**: In the present study, we studied 200 schoolgirls between 12-17 years of age over a period of year. A detailed menstrual history was taken, and physical examination was done to look for pallor, secondary sexual characters, thyroid enlargement and signs of bleeding diathesis. Weight, height was recorded, and body mass index was calculated. **Results**: Our study showed that 4 girls in age group 15-16 years & 16-17 years had not attained menarche, and these were the cases of primary amenorrhoea. The mean BMI of girls in age group 13-14 years who had attained menarche was 17.89±2.68 kg/m^2 compared to 15.86±2.516 kg/m^2 in girls who had not attained menarche, the difference was statistically highly significant ($p < 0.001$). In age groups 15-16 years and 16-17 years, though their was a considerable numerical difference with the mean BMI being more in girls who had attained menarche than those who had not, the test for significance was not calculated as sample size in one of the groups was small. The mean BMI of girls who had attained menarche in low and high socio – economic status was (16.89 ± 2.73 and 20.12 ± 3.31) Kg/m^2, the difference was statistically highly significant ($P<0.001$) but there no statistically significant in mean BMI of girls who had not attained menarche ($P>0.05$). **Conclusion**: Menstrual disorders are common in adolescent girls. The age of menarche is influenced by body weight, height and BMI. Socio-economic status influences age at menarche indirectly through it affect on the nutrition of these girls.

INTRODUCTION

Adolescence comes from the Latin word meaning "to grow to maturity". It is the period between 10 to 19 years of age as defined by WHO and is also referred as teen age.[1]

This is the period of transition from childhood to adulthood which are formative years when maximum amount of physical, psychological and behaviour changes takes place. This is also the time of exploration and widening horizons and a time to ensure healthy all-round development. Positive physical and mental health can promote healthy and intelligent attitudes in the young girls who bloom into young women. The changes taking place are generally not well understood by adolescents themselves as well as adults. If, adolescents do not understand the cause and significance of these physical and psychological changes, they may develop anxiety and abnormal behaviour, which can sometime cause long lasting damage to the body and personality. Adolescent being the tender age of transformation of carefree child to a responsible adult, all problems should be dealt with carefully keeping in mind, emotional and psychological factors.[2] The ACOG has recommended that the

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initial visit to an obstetrician – gynecologist for health guidance, screening and preventive services should be around 13 to 15 years of age. In this visit, the clinician provides guidance to young girls and their parents on adolescent physical development based on data for normal pubertal development, menarche, menstrual cyclicity, addresses menstrual hygiene and emerging adolescent concerns. This can help ease the transition from childhood, through puberty and a healthy adolescence.[3]

However, adolescents in many countries are currently deterred from seeking help at health facilities for various reasons viz. limited experience or knowledge about symptoms and signs of some illnesses, uncertainty about where to seek help, fear of stigma or embarrassment, gender considerations and cultural norms.[4] Studies in developing countries reveal that women are concerned about menstrual disorders but little attention is paid to understanding or ameliorating women's menstrual complaints and also, menstrual dysfunction is not included in the Global Burden of Disease estimates.[5]

Teenagers or adolescent girls make 10% of total population[6] and 20% of the female population.[7] These girls suffer from wide spectrum of gynecological problems. Menstrual disturbances are among the commonest presenting gynecological complaints (75%) all over the world.[8]

Menstruation being a phase of tremendous hormonal fluctuations, adolescent menstrual patterns invites more than a cursory attention.[9] In a conservative society like ours, where these girls are shy or embarrassed to come forward with their problems or there is a lack of knowledge as to what is normal and what is abnormal, this study was assess the prevalence of menstrual disorders in adolescent in school going girls.

MATERIALS AND METHODS

The present study was a cross-sectional study done on 200 schoolgirls between 12-17 years of age from Dungarpur, Rajasthan, India for the period of one year. Stratification of schools into public and private was done on the basis that majority of girls in public schools come from low socio-economic status families whereas those in private schools come from high socio-economic status families. After taking informed consent from the principal of the schools, the study was started.

Methodology: A detailed pre-designed and pretested questionnaire was used which included information on socio-demographic variables, menstrual history and general physical examination. The girls were divided into groups of 10-15 each and were explained about the normal menstrual cycle and the questions in the proforma. They were then asked to fill the proforma which was followed by examination with emphasis on looking for pallor, acne, hirsutism, signs of bleeding diathesis, thyroid enlargement and development of secondary sexual characteristics. Weight in kg and height in mtrs was taken and then the body mass index was calculated.

Table 1: Distribution of girls in relation to Age at Menarche

Age Group (Yrs)	Total	Number Attained Menarche	Percentage (%)
12-13	4	0	0%
13-14	50	23	46%
14-15	63	52	82.53%
15-16	38	36	94.73%
16-17	45	43	95.55%

Table 2: Distribution of girls by age in relation to pattern of menstrual cycle

Age group (Yrs)	Number Attained Menarche	Regular		Irregular	
		Number	Percentage (%)	Number	Percentage (%)
12-13	0	0	0%	0	0%
13-14	23	18	78.26%	5	21.74%
14-15	52	39	75%	13	25%
15-16	36	27	75%	9	25%
16-17	43	34	79.06%	9	20.93%

Table 3: Distribution of girls by age in relation to Mean BMI with attainment of menarche

Age group (Yrs)	Total	Not menstruating		Menstruating	
		Mean BMI ± SD	Number	Mean BMI ± SD	Number
12-13	4	16.14±2.86	4	-	0
13-14	50	15.75±2.48	27	17.89±2.68	23
14-15	63	16.13±2.32	11	18.82±3.44	52
15-16	38	15.52±1.54	2	18.94±3.66	36
16-17	45	13.87±2.45	2	17.61±2.63	43

Table 4: Distribution of girls by Socio Economic Status in relation to mean BMI with attainment of menarche.

Socio- Economic Status	Total	Menstruating		Not menstruating	
		Mean BMI ± SD (Kg/m2)	Number	Mean BMI ± SD (Kg/ m2)	Number
Low	137	16.89 ± 2.73	98	15.56 ± 2.30	39
High	63	20.12 ± 3.31	57	16.42 ± 2.66	6

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RESULTS

Our study showed that 4 girls in age group 15-16 years & 16-17 years had not attained menarche, and these were the cases of primary amenorrhoea (table 1).

Out of 154 girls attained menarche, 118 (76.62%) had regular cycles and 36 (23.38%) had irregular cycles. Age wise distribution showed that 18 (78.26%) girls had regular and 5 (21.74%) had irregular cycles in age group 13-14 years. The difference was not found to be statistically significant (P>0.05) (table 2).

The mean BMI of girls in age group 13-14 years who had attained menarche was 17.89±2.68 kg/m^2 compared to 15.86±2.516 kg/m^2 in girls who had not attained menarche, the difference was statistically highly significant ($p < 0.001$).

Similarly, for age group 14-15 years the mean BMI was 18.82±3.44 kg/m^2 who had attained menarche compared to 16.13±2.32 kg/m^2 not attained menarche, the difference was statistically highly significant ($p< 0.001$). In age groups 15-16 years and 16-17 years, though their was a considerable numerical difference with the mean BMI being more in girls who had attained menarche than those who had not, the test for significance was not calculated as sample size in one of the group was small (table 3).

The mean BMI of girls who had attained menarche in low and high socio – economic status was (16.89 ± 2.73 and 20.12 ± 3.31) Kg/m^2, the difference was statistically highly significant (P<0.001) but there no statistically significant in mean BMI of girls who had not attained menarche (P>0.05) (Table 4).

DISCUSSION

Menarche is an important event during adolescence. It marks the successful progression through puberty and the onset of reproductive capability. The mechanisms triggering puberty and menarche are uncertain but are dependent on genetics, nutrition, body weight and maturation of H-P-O axis. Menstrual problems are also common among adolescent girls, with most being due to immaturity of hypothalamic – pituitary ovarian axis but an underlying organic pathology must always be considered and excluded.

In present study it was observed that as age advanced the percentage of girls having attained menarche progressively increased, with only 2 girls after 16 years having not attained menarche, Bagga A. in their study on 366 school girls between 9-16 years of age found that majority (68%) achieved menarche between 12-14 yrs of age and 94.97% had achieved menarche by 16 years of age.[10]

Ghosh D. in their study on 557 school girls found the mean age of menarche being 13.2±0.66 years with 95.2% girls having attained menarche between 11 and 16 years of age and only 1.8% girls after 16 years of age. [11]

Out of 154 girls attained menarche, 118 (76.62%) had regular cycles and 36 (23.38%) had irregular cycles in our study. Mukherjee GG[12] in their study on 116 schoolgirls between 13-17 years of age found mean age at menarche was 13.2 years. Menstrual problems were present in 25.7% girls of which irregular cycles (42.3%).

Demir SC et al found the mean age at menarche as 12.9 years. The prevalence of menstrual disorders were irregular cycles 26.7% girls of which 11.3% consulted a gynecologyist, dysmenorrhoea 38.7% girls and PMS 46.6% girls.[13]

The difference in mean weight, height and BMI of girls who had attained and who had not attained menarche was statistically highly significant ($p< 0.0001$). Vaidya RA in this study also found a statistically significant difference in the mean weight, height and BMI of girls who had attained menarche with those who had not attained menarche. Mean BMI of girls attained menarche was around 19.7 kg/m2 compared to 17.25 kg/m2 for those who had not attained menarche.[14]

Thus comparing present study with this study we come to the conclusion that irrespective of the age, a critical value in body weight, height and BMI is required for menarche to take place. A similar trend was also observed for mean body height being more in girls with earlier menarche and less in girls with late menarche.[10]

Thus coming to the conclusion that girls who achieved the weight and height required for attainment of menarche early, had an early menarche and girls who achieved these late had late menarche.

In our study also we observed earlier menarche in high SES group which could be due to improved nutritional status of these girls. Girls belonging to high SES achieved the critical weight, height and BMI required for the onset of menstruation earlier than girls from low SES. The girls from high SES who failed to achieve these critical values had late menarche as no statistically significant difference was noted between the mean weight, height and BMI of girls who had not attained menarche in low and high SES group i.e. the mean weight, height and BMI were comparable in both groups ($p>0.5$). Thus concluding that mean weight, height and BMI were the determinants for the age at menarche and not the socio-economic status per se (affects through nutrition).

Menstrual disorders are common in adolescent girls and constitute an important unmet area of health services in developing countries. Therefore, attention should be given to inclusion of diagnosis and treatment of menstrual complaints within the health care programs. Guidelines should be developed for the diagnosis and treatment of these disorders in adolescent girls, thereby ensuring them to be the healthy mothers of tomorrow. Basic information about physiology of menstruation and menstrual abnormalities should be provided to these girls to allay their anxieties and thus improving their health.

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CONCLUSION

Menstrual disorders are common in adolescent girls. The age of menarche is influenced by body weight, height and BMI. Socio-economic status influences age at menarche indirectly through it affect on the nutrition of these girls.

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