



Original Research Article

Menarcheal pattern and knowledge of reproductive health in young adolescent girls of a village in India

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Abstract

Introduction: Adolescents' health makes a platform for Reproductive and Child Health (RCH). Knowledge and practices of healthy life style during this period may bring vast changes in overall standards of health of a community, especially maternal and child health. Menarche in girls is the opening of reproductive phase of life which requires appropriate knowledge, care and healthy practices.

Material and methods: As a practical training to the undergraduate female medical students, their clinical posting phase of Community Medicine was used to conduct the field study. This included interview, examination and health education to the girls of menarcheal age on menstruation and other aspects of reproductive health.

Results: Out of 385 girls interviewed in the age group of 9-16 years, 207 had attained menarche with mean menarcheal age worked out as 12 years 7 months. Maximum girls attained menarche in the age group of 12-13 years. Average menstruation cycle and menstruation period were calculated as 27.8 and 5.5 days respectively. Health education imparted on adolescent and reproductive health to girls during this period made an impact of improving their level of knowledge from 20.4 to 69.3 percent, an improvement of about 49 percent.

Conclusion: The study was found useful in working out the mean menarcheal age, average duration of menstrual cycle and menstrual period. For the undergraduate medical students, it was an early



exposure to learn the methods of field study and impart health education to the rural adolescent girls. It also improved level of knowledge of the rural girls on adolescent health.

Key words

Adolescent health, Young adolescent girls, Menarcheal pattern, Menstruation cycle, Menstruation period, Reproductive health, Health education.

Introduction

Adolescence is the critical period that determines the trajectory of the girls' lives. Care, support and a suitable environment provided during this period set girls on the path to lead a healthy life, whereas discrimination, recurrent constraints, harmful practices and violence can send them down to live with miseries. Adolescent girls in the underdeveloped world face multiple social problems such as inequity, under nutrition, early marriage, adolescent pregnancy, violence against them and lack of affection, schooling and health education etc. [1]. In many families of rural India, a girl child begins menstruation as a surprise to her which is mainly due to lack of information and sharing of knowledge by the parents. Reproductive health begins in the girls with the onset of menarche and development of secondary sexual characters. Menarche usually occurs at 12-13 years with a marginal variation of an early onset due to urban stress, obesity and eating habits etc. Menstrual cycle in normal women averages 28 days with variation of 2 days on either side, while duration of menstrual flow is of 4 days with variation of 2 days. Average menstrual cycle in the young adolescent girls is considered to be longer averaging 33 days in comparison to 25 days in the women of above 30 years' age. Similarly the duration of menstruation period is longer averaging 6.6 in young girls compared to shorter duration in older age [2, 3]. In traditional Indian culture practiced strictly in the villages, it is considered inappropriate to discuss with the children the matter related to reproductive health. Even mothers don't find themselves at

ease to discuss such matters with their daughters. To study the menarcheal pattern and improve the level of knowledge of reproductive health of the adolescent girls and sensitize mothers to share their knowledge with the daughters, it was planned to conduct the present study among the girls of Khera village of western Uttar Pradesh. The study was found useful for the adolescent girls in improving their knowledge on menstruation, nutrition, reproductive health including maintenance of hygiene during this period. To the undergraduate medical students also, it was an early exposure of learning the methods of conducting a field study and imparting health education to the adolescent village girls.

Material and methods

An Indian village girl from the time of attainment of her learning abilities lives a subdued and submissive life, which is largely controlled by father, brother and even mother, leaving no space for expression of her views. She is not able to think about herself, eat food of her choice or dress up according to her wish. Mothers in many families do not even discuss about physical changes taking place in the period of adolescence. Onset of menarche in many of the girls comes as a surprise or a fear which makes them further cowed and unable to lead a normal life. To overcome the feelings of neglected life and to make the young girls learn and understand the normalcy of the menstruation, present subject was selected for the study and training to the undergraduate medical students.



Adolescence is the period of second decade (10-19 years) of life. Represented by about one fifth of the India's population, it is considered as the healthiest period of the life. During this period, significant physical, physiological, psychological and emotional changes take place which basically contribute into the development of individual personality and temperament. About 50 percent of the adult weight and more than 20 percent of the adult height is gained by an adolescent, which is termed as the growth spurt. For healthy growth and development during this period, there is a requirement of a healthy diet [4, 5].

Adolescence as an intermediate stage of transition from the childhood to becoming of an adult is a delicate phase that requires physical, mental and behavioral adjustments. A careful dealing with patience is necessary by the parents, family members, teachers and all others coming in contact with an adolescent to pass through the transition. Their prime need is to get correct and complete information on health, menstruation and its hygiene, right age of marriage, reproduction, nutrition, growth and development, puberty, sexuality, sexually transmitted diseases, modes of safe sex and contraception [6]. In the absence of such information the adolescents are likely to land up with the incorrect experimentations inviting self-trouble for them.

The selected village has a population of about 8,500 and is provided medical and health cover by Rural Health Training Centre of the Medical College. Undergraduate medical students conducted the interview and health education campaign for the adolescent girls falling in the menarcheal age under guidance of faculty members of the Department of Community Medicine. About 85 medical girl students participated in the campaign. They were trained initially by the department to interview the girls,

impart them basic knowledge on different aspects of menstruation, healthy diet, and behavioral changes in period of adolescence and disadvantages of early marriage and early pregnancy. Each student was given a task to interview, examine and educate minimum 5 adolescent village girls and their mothers. Interview was intended to find out the level of knowledge, examination was to diagnose anemia to provide IFA tablets and education was given on different aspects of adolescent health. A predesigned and pretested proforma consisting of a separate questionnaire having 20 simple questions, each of 1 mark covering different aspects of adolescent health and menstruation was filled up to assess the knowledge by marking them out of maximum 20 marks. Those secured 10 marks were considered of having sufficient knowledge. The assessment was done twice, once in first visit before giving health education and second after 3-6 months of first visit to see the level of improvement in them. The students were helped by Medical Social Workers (MSWs) of the department and ASHA and Anganwadi workers of the local area. In all, 86 female students of two academic years conducted the interviews. A follow up visit to each adolescent girl was conducted by the same student or by the MSW. The data relating to menarche and level of knowledge of the girls was compiled and analyzed in the department to draw the results.

Results

In all, 385 girls of 9-16 years were contacted, each of them twice, at an interval of 3-6 months. 207 of them were found attained menarche making it to 53.77 percent of the total girls. Information on their menstruation was taken from each girl separately in the presence of her mother. Mother helped in giving the information. All the girls could not participate in the interview as few of the mothers did not want them to give reply of few of the questions.



Names of such girls were omitted from the list of respondents. Only 301 of them responded in first visit and 238 could be contacted in the follow up visit. Out of 207 menstruating girls, 13 (5.60%) girls attained menarche between first and follow up visit in the period of about 3-6 months.

Age at menarche

The number of girls attained menstruation in different age groups was as per **Table – 1** and **Graph - 1**. The girls were distributed in seven groups. Each group was of one year beginning from 9 years to 16 years. Number of girls in each age group was between 54 to 57 years with an average of 55 girls in a group. In all 207 out of 385 girls were found attained menstruation up to 16 years of age. Earliest age of menstruation was noticed as 9 years 5 months and the latest was 15 years and 7 months. Based on history given by girls and their mothers, number of the menarcheal girls was calculated in each age group. Maximum percentage of girls attained menarche in the age group of 12-13 years with 89 (42.99%) girls, followed by the 11-12 years age group with 35 (16.91%). Next were the age groups of 13-14 years, 14-15 years, 10-11 years, 15-16 years and 9-10 years with number of girls being 27, 20, 16, 12 and 8 respectively in each group. Considering 10-15 years age as normal for menarche, an early menarche was observed in 3.87 percent girls before 10 years, while late menarche was seen after 15 years of age in 5.81 percent girls. Only 3 girls out of 54 (5.23%) did not attain menarche up to 16 years of age.

Duration of menstrual cycle

As depicted in **Table - 2**, girls attained menses were divided into four groups based on duration of menstruation. These were 25 days or less, 26-27 days, 28-29 days and 30 days and more. Range of cycle varied between minimum and maximum cycles of 24 to 32 days respectively with one girl having menstrual cycle of 24 days,

2 of 31 days and 1 of 32 days. Maximum number of girls 65 (31.40%) fell in the group of 28-29 days, followed by 54 girls (26.05%) in the group of 30 days and more. Category of 26-27 days was ranked 3rd with 51 girls (24.63%) which were followed by the category of 25 days and less with least number of 27 girls (13.0%).

Period of menstruation

The distribution of menstruating girls according to the number of days of their period was as per **Table - 3**. They were divided into four categories of less than 3 days, 4 days, 5 days and 6 days and more. Maximum number i.e. 96 girls (46.38%) were observed in the category of 6 days and more, followed by 59 girls (28.50%) in the category of 5 days. 32 girls (15.45%) were in the category of 4 days and the minimum number of 20 girls (9.67%) fell in the category of the smallest period of 3 days or less.

Effect of the education campaign

It is observed from **Table - 4** above that overall level of knowledge of the girls on adolescent and reproductive health as assessed on the criteria mentioned in the table was very low (20.4%) before the campaign as compared to the level (69.3%) after the campaign with a rise of about 49%. There was a gradual improvement in the level of understanding on the subject matter with the advancing age with maximum level of knowledge (59.8%) gained by the girls in the age group of 14-16, as compared to the youngest age group of 9-12 years with a gain of about 38.7 (54.6-15.9) percent.

Discussion

Menarcheal age to begin the study was considered from 10-16 years but later it was changed to 9-10 years on finding 2 girls falling in the category of 9-10 years. The range of menarcheal age in this study was observed between 9 years 5 months to 15 years 7 months and average menarcheal age was calculated as

12 years and 7 months. Maximum 42.99% of the girls attained menarche in the age group of 12-13 years, followed by 16.91 and 13.04% in the age groups of 11-12 and 13-14 years. Least number of girls attained menarche in the age groups of 9-10 years with 3.87% followed by the group of 15-16 years with 5.81%. Considering 10-15 years as normal age of menarche, an early menarche was observed in 8 girls (3.87%) before 10 years while late menarche after 15 years of age was seen in 12 girls (5.81%). 3 girls out of 54 (5.23%) did not attain menarche up to 16 years of age. They were considered as abnormal and were advised to consult gynaecologist. A study conducted by Amrita Bagga, et al. in 2000 on 366 Maharashtrian girls revealed similar results with majority of girls (68%) attaining menarche between 12-14 years. An early menarche (9-11 years) in 18% and late (15-16 years) in 13.6% was observed [7]. Another study conducted by Dharampal G, et al. in Wardha of Maharashtra on 1100 school girls worked out a mean age of menarche as 13.51 years [8], which is higher than the present study.

Menstrual cycle in the girls was observed in the range of 24-32 days with an overall mean calculated as 27.8 days. In the beginning years of the menarcheal age the cycle is longer which gradually shorten in the duration with the growing age.

Considering 3-6 days of menstrual period as normal, 194 girls (93.72%) had periods in this range while 13 (6.28%) were beyond the range. Out of them 4 had periods of less than 2 days and 9 girls of more than 7 days. These girls were advised to keep watch till completion of 16 years of age consult a gynaecologist if such irregularity persists. Average duration of the menstrual period was worked out to be 5.5 days. In younger girls the duration was longer nearing 6 days which gradually shortened to near 5.3 days in older age group of 15-16 years.

A large number of girls had low level of knowledge on adolescent and reproductive health at the time of first interview, as only 20.4% were found to have sufficient knowledge. The level of knowledge improved significantly to 69.3% in the second visit after health education campaign. **Table - 4** also reflects the level of understanding of the girls which was on the lower scale in younger age but improved in the older age group. Mothers and other family members found the education campaign useful to improve the basic knowledge that will be useful in their life.

A health education drive for girls may be conducted through the school curriculum for the girls of 13-15 years of age for better reproductive health of the young generation.

Conclusion

Present study was conducted in the rural population to ascertain the mean age of menarche, duration of menstrual cycle and period of menstruation among the young adolescent girls of 9-16 years age. Study revealed mean age of menarche as 12 years and 7 months. Maximum percentage (42.99%) of girls attained menarche in 12-13 years age group. Averages of menstrual cycle and menstrual period have been worked out as 27.8 days and 5.5 days respectively. In the health education campaign conducted by medical graduate students on adolescent health, a considerable gain was noticed in the knowledge of the adolescent girls with overall rise in the level of knowledge by about 49% (from 20.4 to 69.3%). In addition, the clinical posting period of the medical undergraduate students was gainfully utilized in learning the methods of a field study by giving them an early exposure to conduct a study in rural area.

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Graph - 1: Bar diagram showing percentage of girls attaining menarche at different ages.

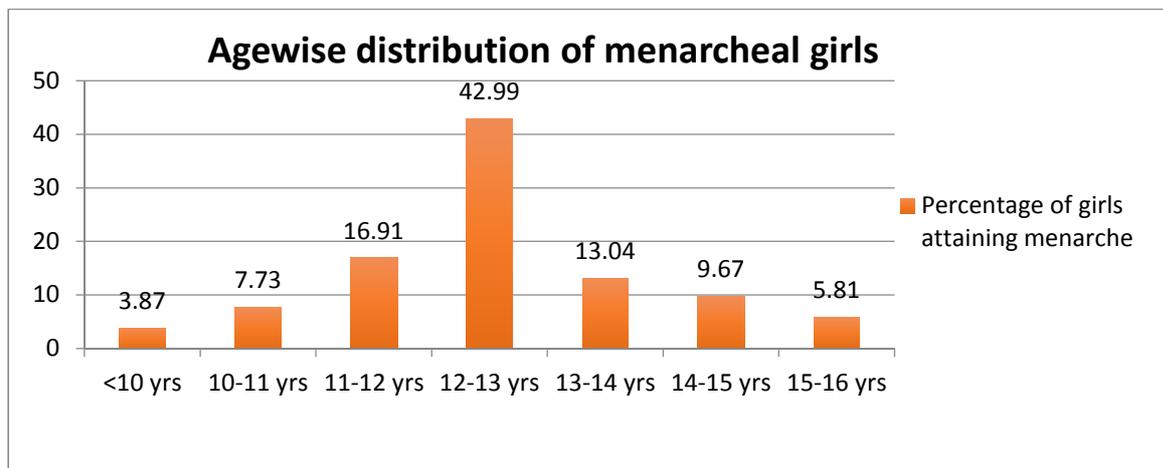


Table - 1: Distribution of girls of menarcheal age in different age groups.

Sr. No	Status of menses in girls	Age groups (in years)								
		9-10	10-11	11-12	12-13	13-14	14-15	15-16	Total	%
1	Girls interviewed	54	54	55	56	57	55	54	385	100
2	Menstruation status									
	Menstruating*	2 (3.70)	6 (11.11)	15 (27.27)	38 (67.86)	45 (78.95)	50 (90.90)	51 (94.44)	207	53.77
	Not menstruating	52	48	40	18	12	5	3	178	48.23
3	Girls attained menarche									
	Number of girls	8	16	35	89	27	20	12	207	100.00
	Percentage	3.87	7.73	16.91	42.99	13.04	9.67	5.81		

Table - 2: Variation of menstrual cycle in different menarcheal age groups.

Sr. No.	Pattern of menstrual cycle	Age groups (in years) of the girls attained menstruation								
		9-10	10-11	11-12	12-13	13-14	14-15	15-16	Total	%
1	Girls attained menses	2	6	15	38	45	50	51	207	%
2	Duration of the cycle									
a	25 days and less	--	1	1	6	8	12	9	27	13.02
b	26-27 days	--	--	3	9	15	10	14	51	24.63
c	28-29 days	1	2	6	10	13	17	16	65	31.40
d	30 days and more	1	3	5	13	9	11	12	54	26.05
3	Average duration of cycle	29.5	28.8	28.5	28.0	27.5	27.6	27.7	27.8	

Table - 3: Variation in period of menstruation in different age groups.

Sr. No.	Pattern of menstrual cycle	Age groups of the girls (in years) attained menstruation								
		9-10	10-11	11-12	12-13	13-14	14-15	15-16	Total	%
1	Girls attained menses	2	6	15	38	45	50	51	207	%
2	Duration of menstrual period									
a	3 days and less	0	0	1	3	4	6	6	20	9.67
b	4 days	0	0	3	5	5	8	11	32	15.45
c	5 days	1	2	2	12	14	13	15	59	28.50
d	6 days and more	1	4	9	18	22	23	19	96	46.38
3	Average period of menses	6.0	6.2	5.7	5.6	5.6	5.4	5.3	5.5	

Table - 4: Level of knowledge of the girls before and after education campaign.

Sr. No.	Level of knowledge on health of adolescent	Age groups of the girls									
		9-12 years		12-14 years		14-16 years		Total			
1	Total number of girls	163		113		109		385			
2	Number of girls responded before (B) and after (A) education campaign	B	A	B	A	B	A	B	A		
		122 (74.9)	92 (56.4)	88 (77.9)	69 (61.0)	91 (83.4)	77 (70.6)	301 (78.1)	238 (61.8)		
3	Assessment criteria	Number of girls having sufficient knowledge in each category									
	a. Menstruation	26	45	16	47	23	71	65	(21.59)	163	68.48
	b. Growth and development	15	33	19	51	26	68	60	(19.93)	152	(63.86)
	c. Health/MCH/FP	21	57	22	52	24	63	67	(22.26)	172	(72.27)
	d. Nutrition	17	49	18	47	21	59	56	(18.60)	155	(65.12)
	e. Marriage and pregnancy	18	67	17	46	25	70	60	(19.93)	183	(76.89)
4	Average of satisfactory level of knowledge	19.4 (15.9)	50.2 (54.6)	18.4 (20.9)	48.6 (70.4)	23.8 (26.1)	66.2 (85.9)	61.6 (20.4)	165 (69.3)		