CORRELATES OF AGE AT MENARCHE AMONG UNMARRIED GIRLS IN UT CHANDIGARH

Dinesh Kumar, N. K. Goel, Sonia Puri, Nancy Gupta

Department of Community Medicine, Government Medical College and Hospital, Chandigarh, India.

ABSTRACT

Background: Age at menarche is an important factor in health planning and reproductive health of females. Studies have indicated that girls are attaining puberty earlier than in the past.

Objectives: To explore age at menarche and factors determining it among unmarried girls.

Methods: This community based cross-sectional study was conducted in Rural, Urban and Slum strata of UT Chandigarh ,during April 08 to March 09 in total duration of 12 months .Stratified Multistage Random Sampling Design with probability proportional to size (PPS) was utilized. 744 respondents were selected and interviewed by personal interview method to collect desired information.

Results and Discussion: The study showed, Maximum respondents 282 (37.9%) were found in the age group 13-15 years followed by 240 (32.3%) in the age group 16-18 years. Maximum number of respondents attained menarche between 13-14 years of age. Mean age at menarche was found to be varying significantly according to type of family (P< 0.001), home environment (P < 0.001), menstrual problems (P=0.03) and menstrual cycle (P=0.001). Respondents whose home environment was not religious, attained menarche significantly earlier (P<0.001).This study reported several correlates of age at menarche but their casual relationship could not be established being a cross-sectional study. Menarche an event of the past, was investigated in this study and possibility of recall-bias cannot be ruled out.

Key Words: Multistage random Sampling, Menarche

INTRODUCTION

The age of menarche varies from 9-18 years with the average age in the United States being about 12 years and 8 months whereas in India it is around 12 years[1-4].Several studies have documented the importance of environmental factors in the timing of menarche in girls. Sociocultural, environmental, nutritional, and life style related factors are among some potential correlates of age at menarche apart from genetic factors.

Eveleth and Tanner (1990)[5], in their review of the sexual development of adolescents worldwide, found that the timing of menarche varies greatly across cultures. A variety of other factors including family conflict, stress and nutrition have also been found to influence the age of menarche. Detailed account of correlates of age at menarche is available in the study by AYATOLLAHI ET AL[6] in Iran. With the advancement in modern communication technology, age at menarche is likely to be influenced by exposure to mass media also. There is a need for investigating factors associated with variations in the menarcheal age.

The manner in which a girl learns about menstruation and its associated changes may have an impact on her response to the event of menarche. Menstruation is still regarded as something unclean or dirty in Indian society[7]. Without prior knowledge, the first menstruation is often horrifying and frightening experience to them[8].

Unmarried girls are prone to various reproductive health related problems. Although menstruation is a natural process, it is linked with several misconceptions, ignorance and practices among young girls, which sometimes results into adverse reproductive health outcomes and may adversely affect their daily routine and quality of life[9]. Unmarried girls are prone to various menstrual problems like pain and discomfort, heavy bleeding, absence of menstruation and some symptoms related to fluctuating hormone levels like depression, breast tenderness and slight, temporary weight gain. Menstruation disorders are also responsible for emotional, physical,

behavioural and dietary practice changes[10]. Kushwaha and Mittal[11] studied the knowledge and attitude of adolescents, but their study was confined to out- of school adolescents attending some training program only and does not reflect their knowledge status in the general community.

Despite the fact that menstruation is closely associated with reproductive health matter of females, community based research among unmarried girls on this particular topic has been relatively unexplored. This study aims to explore the various factors determining the age of menarche in adolescent unmarried girls in UT, Chandigarh, The place characterized by high population growth due to increasing migratory population

MATERIALS & METHODS

744 respondents were selected from different wards/strata by using Stratified Multistage Random Sampling Design with probability proportional to size (PPS) .Only those unmarried girls who have already attained menarche to find extent of their menstrual problems, perceptions beliefs practices and restrictions and who/ their parents were willing to participate in the study were included.

Optimum sample size was calculated on the basis of a pilot survey using the formula: -

$$N_{(optimum)} = (1.96)^2 P (1-P)/L^2$$

Where

P = Prevalence of adolescent girls having some menstrual health problem.

L = Permissible error in estimation

House-to-house surveys were conducted to collect the desired information. Respondents were interviewed individually in privacy. Interview schedule was finalized after conducting a qualitative survey to explore relevant questions and to get insight of the problem. A well-trained team of female investigators of the department were involved in data collection.

Informed consent following Ethical Guidelines of World Medical Association Declaration of Helsinki[12] was taken. In case of respondents below 18 years of age, consent from her parents was taken.

STATISTICAL METHODS:

Data analysis was done by using SPSS-12 Software.

RESULTS

Table 1 Maximum respondents (37.9%) were found in the age group 13-15 years followed by 240 (32.3%) in the age group 16-18 years. Overall mean age of respondents was found to be 16.84 years. Maximum respondents 304 (40.9%) were studying in 10th standard while 82 (11.0%) were illiterate and 68.1% were already dropped from their respective schools mostly before 5th standard. Maximum numbers of respondents were from Hindi medium followed by English and Punjabi medium.

Respondents were mostly from nuclear families (80.8%). Parents were from different educational categories. Fathers of 119 (16.0%) respondents and mothers of 187(25.1%) were either illiterate or just literate Majority of mothers 433 (58.2%) were house-wives whereas fathers of only 30(4%) were unemployed. Respondents represented different socio economic classes (29.4%) low, (48.9%) middle and (21.6%) of high socio economic status. Mean family size was found to be (5-15±1.67).

Table 2 Maximum number of respondents274 (36.8%) attained menarche between 13-14 years of age.

Table 3 Majority of respondents 572 (76.9%) were exposed to TV. Against the usual hypothesis of high degree of exposure to internet in highly urbanized city of Chandigarh, it was found to be only among 75 (10.1%) respondents. A total of 448 (60.2%) respondents were having prior knowledge regarding menstruation before attaining menarche and most of these respondents (46.8%) got this knowledge from their mothers followed by their friends (28.3%) and elder sisters (25.9%).

Overall mean age at menarche was found to be 13.02 ± 1.13 years. Medium of education, literacy status of mothers were found not to be significantly associated with menarcheal age. Mean age at menarche was found to be varying significantly according to type of family (P< 0.001), home environment (P < 0.001), menstrual problems (P=0.03) and menstrual cycle (P=0.001. Respondents whose home environment was not religious attained menarche significantly earlier (P<0.001) at mean menarcheal age of 12.85 years as compared to those respondents whose home environment was religious attaining menarche at an average of 13.25 years.

DISCUSSION

Mean age at menarche in this study was 13.02 years as compared to 13.6 years in Delhi [13] and 13.5 years in Chennai respectively. Dasgupta & Sarkar (2008)[14] reported mean age at menarche to be 12.8 years. The average age of menarche was higher (14 years) in Seagram study[15]. The mean age at menarche found in this study is consistent with finding of study conducted in Chennai[16], report-

ing age at menarche to be 13.6 years and it was also consistent with age at menarche of 12.98 years[17]. Mean age at menarche among Rajasthani Girls is reported to be 13.2 years [18]. The median age at menarche measured in a World Health Organization study 20 years ago was 12 years and 09 months, but recent study[19] among girls in Hong Kong found that the median age at menarche was 12.1 years. Type of family and home environment were found to be significant correlates of menarcheal age. Menarcheal age influenced menstrual problems and regularity of cycle also, though casual relationship was not attempted in the present study. Body Mass Index (BMI), was significantly correlated with age at menarche (P<0.001). An inverse relationship was found between age at menarche and SES.

Several difficulties were faced while conducting the present study. In spite of all necessary measures to tackle non-responses, respondents were reluctant to give answers to some specific questions concerning menstrual cycle. Problems were also faced due to heterogeneity of studied population of Chandigarh including migratory slum population. Different local / regional speaking languages and different terms were being used apart from Hindi, English and Punjabi. Several such problems were tackled on the basis of qualitative survey and with interviewing skills of investigations.

CONCLUSIONS AND SUGGESTIONS

The study has several limitations in terms of study design and inability to do medical investigations / clinical diagnosis. Present study is based on several reported factors of different aspects of menstruations but there casual relationship cannot be established being a cross-sectional study. Also there is possibility of temporal relationship between several correlates. Clinical diagnosis of menstrual problems could not be done in absence of medical investigations not permissible / feasible in the community set-up.

Also menstrual problems and misinformation on the part of respondents as well as of their parents particularly mothers can lead to several adverse outcomes on prospective reproductive lives of unmarried girls. Their education, daily routine and social life can also suffer. All these adverse outcomes could not be studied in the present study. Effects of interventional package suggested at different levels are also desired on the basis of some more sophisticated long-terms study designs.

ACKNOWLEDGEMENT

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Table 1: Respondents By Socio-Demographic Characterstics

CHARACTERSTIC	NO.	%
Age		
10-12	20	2.7
13-15	282	37.9
16-18	240	32.3
18-21	162	21.8
22-25	40	5.4
Mean ± SD	16.84±3.05	
Educational Status		
Illiterate	82	11.0
Drop-out from school	60	8.1
Primary	46	6.2
Middle	69	9.3
High School/10th standard	304	40.9
10+2	74	9.9
Graduation	8	1.1
Post graduation	7	0.9
Professional Courses	94	12.6
Medium if studying presently (N=556)		
Hindi	356	63.4
English	122	20.4
Panjabi	78	16.1
Type of Family		
Joint	133	17.9
Nuclear	601	80.8
Extended	10	1.3
Educational Status of Father		
Illiterate/Just literate	119	16.0
Primary	55	7.4
Middle	96	12.9
High School	169	22.7

Table 1: (Continued)

CHARACTERSTIC	NO.	%
Intermediate	116	15.6
Graduate	117	15.7
Post Graduate	58	7.8
Professional Degree	14	1.9
Educational Status of Mother		
Illiterate/Just literate	187	25.1
Primary	136	18.3
Middle	121	16.3
High School	134	18.0
Intermediate	32	4.3
Graduate	73	9.8
Post Graduate	36	4.8
Professional Degree	25	3.4
Occupation of Father	744	100.0
Unemployed	30	4.0
Service	373	50.1
Business	162	21.8
Labourer	111	14.9
Skilled Worker	53	7.1
Others	15	2.0
Occupation of Mother	744	100.0
Housewife	433	58.2
Service	87	11.7
Business	10	1.3
Labourer	80	10.8
Skilled Worker	106	14.2
Others	28	3.8
Socio-economic Status	744	100.0
Low	219	29.4
Middle	364	48.9
High	161	21.6
Total	744	100.0
Family Size		
Upto 3	100	13.4
4-5	384	51.6
6-8	229	30.8
above 8	31	4.2

Table 1: (Continued)

CHARACTERSTIC	NO.	%
Mean ± SD		
BMI		
Below18.5	240	32.2
18.5-25.0	476	64.0
25 and above	28	3.8
Overall	**744**	**100.0**

Table 2: Distribution of Respondents by Age at Menarche

Age at Menarche (in years)	No.	%
10-11	7	.9
11-12	36	4.8
12-13	201	27.0
13-14	274	36.8
14-15	161	21.6
15-16	49	6.6
16-17	11	1.5
17-18	5	.7
Total	**744**	**100.0**
Mean ± SD	**13.02 ± 3.05**	

Table 3: Age at Menarche by Associated Factors

Factor	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Literacy					
illiterate/just literate	188	12.92	1.300	12.73	13.11
school level	447	13.04	1.021	12.95	13.14
college level	109	13.12	1.215	12.89	13.35
					F=1.6, P=0.28
Literacy of Mother					
illiterate/just literate	323	13.02	1.205	12.89	13.15
School level	287	13.07	1.033	12.95	13.19
college level	134	12.93	1.125	12.74	13.13
					F= 0.71, P = 0.49

Table 3: (Continued)

Factor				95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Lower Bound	Upper Bound
Type of Family					
Joint	133	13.15	1.288	12.93	13.37
Nuclear	601	12.98	1.081	12.90	13.07
Extended	10	13.90	1.197	13.04	14.76
				F = 4.3, P = 0.01	
TV Exposure					
No	172	12.89	1.192	12.71	13.07
Yes	572	13.06	1.105	12.97	13.16
				F = 3.2, P = 0.07	
Internet Exposure					
No	669	13.04	1.117	12.96	13.13
Yes	75	12.85	1.205	12.58	13.13
				F = 1.9, P = 0.17	
Adult Literature					
No	737	13.03	1.130	12.95	13.11
Yes	7	12.71	.756	12.02	13.41
				F = 0.53, P = 0.46	
Religious Environment at home					
No	414	12.85	1.130	12.74	12.96
Yes	330	13.25	1.085	13.13	13.36
				F = 23.6, P = 0.001	
Discussant					
Mother	405	13.07	1.136	12.96	13.18
Others	339	12.97	1.116	12.85	13.09
				F = 1.6, P = 0.21	
Prior Knowledge					
No	296	12.97	1.248	12.82	13.11
Yes	448	13.06	1.039	12.97	13.16
				F = 1.3, P = 0.25	

Table 3: (Continued)

Factor				95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Lower Bound	Upper Bound
Hindi	356	13.05	1.039	12.94	13.16
English	122	12.98	1.185	12.77	13.20
Panjabi	78	13.22	.949	13.00	13.43
				F = 1.2, P = 0.30	
Menstrual Problem					
No	267	13.14	1.230	12.99	13.29
Yes	477	12.96	1.060	12.86	13.05
				F = 4.6, P = 0.03	
Menstrual Cycle					
No response	131	12.67	1.048	12.49	12.85
Regular	454	13.21	1.148	13.10	13.32
Irregular	159	12.79	1.015	12.63	12.95
				F = 16.8, P <0.001	
Overall	**744**	**13.02**	**1.127**	**12.94**	**13.11**