



AGE AT MENARCHE AND FACTORS ASSOCIATED AMONG GIRLS OF A PRIMARY HEALTH CENTRE AREA IN DAVANGERE, INDIA

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INTRODUCTION

Menarche is considered a distinct benchmark for sexual maturation. It is also considered as an indicator of quality of life of a population since a number of biological & socio-economic factors influence.² Menarche is affected by genetic factors, race, environmental conditions, nutrition, physical activity, geographic location, urban or rural residence, health status, psychological factors, blindness, body mass index (BMI), family size, socioeconomic status, parental educational level, occupation of parents, loss of parents, child sexual abuse, physical stress, tea consumption, and passive smoking.³ There have been reports that there is a fairly good

ABSTRACT

Background: The age at menarche is a developmental milestone, which is highly variable and highly sensitive to a variety of internal and external forces. Knowledge of the age at menarche will help the government to design and implement programmes about reproductive health of women, to set laws about age at marriage, family planning, etc and to decide the appropriate age at which the topics like the sex education, contraception and sanitary practices can be incorporated in schools.

Methods: This observational cross sectional study was conducted among school going adolescent girls aged between 10 and 16 years. 246 girls participated in the study and predesigned questionnaire was administered.

Results: Out of 246 cases studied 152 cases were having menstruation, most frequent age of menarche being 12 years when 46 cases (18.7%) had its onset. Mean age at menarche was found to be 12.14 (± 1.086). There seems to be definite association of various factors which modify the age at menarche like mother's menarcheal age, socio-economic status.

Conclusion: There was a positive correlation between menarche and maternal age at menarche and socioeconomic status.

Key Words: Mean age at menarche, Body mass index, Menarche, Socio-economic status

correlation between the age of menarche of mothers' and their daughters'.^{4,5}

Variation in the timing of puberty (onset/timing of menarche) are marked between well of and under privileged population with a marked delay in menarche reported in under privileged girls.⁶

Girls with early menarche were more likely to be overweight at ages 7, 11, and 16 years than those with late menarche, although early menarche was also reported by girls who were underweight or of average weight. These findings support the hypothesis that in well nourished populations the relation between menarche and body size is largely regulated by genetic factors and that nutrition is less important.⁷

Aim of the study was to know the age at menarche and factors associated with age at menarche.

MATERIALS AND METHODOLOGY

The study was conducted among school going adolescent girls aged between 10 and 16 years on voluntary basis. After obtaining permission and consent from the school Principal/ class teacher, a predesigned questionnaire was administered and girls were briefly examined by a female doctor. Detail information about girls and their parents were taken to know the mother's age at menarche and also to know the socioeconomic status of the family. Few more information like girl's age at menarche, number of hours of sleep, any stressful environment in the family, participation in the sports activity was collected. Study was carried out for duration of 2 months from February-March 2016. All the schools of Rural Training Health Centre Area, Lokikere (PHC) attached to SS Institute Of medical Science & Research centre were covered in two months.

Ethical clearance was obtained from Institutional Ethical Board.

Girls in the age group of 10-16 years, present on that day and willing to participate in the study were included in the study. Girls absent on that day or not willing to participate in the study were excluded.

Data collected was analysed using MS excel and EPI info version 4. To analyse the socio-demographic characteristics like age, socio-economic status, and educational level etc. descriptive statistics was used. Chi-square test of significance was used to test for association between various factors. A P value of ≤ 0.05 was considered for statistical significance

RESULTS

Out of total 246 cases, 152 cases reported having menstruation while 94 did not.

The most frequent age of menarche among mothers is at 13 years. The lowest age of menarche was 10 years & the highest age was 17 years. Mean age of menarche was found to be 13.52 (± 1.315).

Menarcheal age was earlier in higher socioeconomic class compared to lower socioeconomic class.

There is a positive correlation between girls menarcheal age with that of mother's menarcheal age upto 12 years.

Table 1: Girl's age at menarche

Girl's age at menarche	Number of girls (%)
10years	10 (4.1)
11years	35 (14.2)
12years	46 (18.7)
13years	46 (18.7)
≥ 14 years	15 (6.1)
Total	152 (61.8)

Table 2: Mean age, lowest and highest age at menarche for girls and for the mothers

	Mother's age at menarche (years)	Girl's age at menarche (years)(n=152)
Mean (\pm SD)	13.52 (± 1.315)	12.14 (± 1.086)
Minimum	11years	10years
Maximum	18years	14years

Table 3: Mean age at menarche for the girls of mothers with different menarcheal age

Mothers age at menarche (in years)	Girls	Mean (\pm SD) age at menarche for girls (in years)
11	8	11.88 (± 0.991)
12	26	12.04 (± 0.871)
13	50	11.94 (± 0.956)
14	37	12.35 (± 0.949)
15	22	12.64 (± 1.049)
16	7	12.86 (± 0.900)
17	1	12.00
18	1	13.00
Total	152	12.20 (0.979)

Table 4: Showing girls mean menarcheal age among different socioeconomic classes.

SES	Girls	Mean (\pm SD) age at Menarche (in years)
class1(upper)	52	12.21 (± 0.957)
class 2(upper middle)	76	12.17 (± 1.051)
class 3(lower middle)	14	12.29 (± 0.726)
class 4(upper lower)	10	12.30 (0.949)
Total	152	12.20 (0.979)

Table 5: Association between girls menarcheal age and BMI categories

BMI categories	Girl's age at menarche (in years)				Total (%)
	11 (%)	12 (%)	13 (%)	14 (%)	
1 (<18 kg/m ²)	25 (37.3)	18 (26.9)	17 (25.4)	7 (10.4)	67
2 (18-23 kg/m ²)	15 (22.4)	23 (34.3)	22 (32.8)	7 (10.4)	67
3 (>23 kg/m ²)	5 (27.8)	5 (27.8)	7 (38.9)	1 (5.6)	18
Total	45 (29.6)	46 (30.3)	46 (30.3)	15 (9.9)	152

$\chi^2 = 4.705, df=6, P=0.582$

Table 6: Showing girls mean menarcheal age among different BMI categories

BMI categories	Girls	Mean (\pm SD) age at menarche (in years)
1 (<18 kg/m ²)	67	12.09 (± 1.026)
2 (18-23 kg/m ²)	67	12.31 (± 0.941)
3 (>23 kg/m ²)	18	12.22 (± 0.943)
Total	152	12.20 (± 0.979)

DISCUSSION

The mean menarche age in the present study is 12.14 (± 1.086). This is in agreement with Purushathan (1978),⁸ Amrita et al(2000)⁹ and Banerjee et al (2007)¹⁰ they found the mean age at menarche as 12.78 years, 12.6 years and 12.3 years respectively.

In present study findings are consistent between 10 to 15 years in which maximum incidence is seen between 12 to 13 years when 92cases (37.4 %) had its menarche.

Factors affecting age at menarche:

Mother's menarcheal age: The mean age at menarche of mothers involved in the study was significantly higher [13.52 (± 1.315)] than the mean age at menarche of their daughters 12.14 (± 1.086). A secular trend towards an earlier age at menarche has been regarded as a positive indicator of a population's health status^{11 12}.

A positive correlation was observed between menarcheal age of mothers and their daughters and correlation persisted upto 12 years and 12 years onwards it is found that girls had earlier menarche compared to their mothers. This may be attributed to the improved health status.

Socio-economic status: The Age at menarche in different socio-economic groups were studied according to Modified Kuppuswamy Scale.this study shows that age at menarche in higher socio-economic classes i.e class I is12.21 (± 0.957), class II is12.17 (± 1.051) was found to be earlier compared to lower classes i.e class III is12.29 (± 0.726) & IV&V is 12.30 (0.949) respectively. This figure is an agreement with study conducted in central India by Dambhare DG et al according to which age of menarche in higher class is 12.89 + 1.22 years and in lower classes is found to be 13.48 + 1.35years¹³.and also in agreement with study conducted by Ray S et al. in west bengal¹⁴

Body mass index: This study shows that mean age at menarche in obese is 12.22 (± 0.943) in underweight is 12.09 (± 1.026) and in normal is12.31 (± 0.941) therefore body mass index does not significantly influence the mean age at menarche. No significant association between BMI and average age of menarche was found in a study conducted by Cuatero G B et al.¹⁵ and also in other studies like ICMR (1972),¹⁶ Bai & Vijaylaxmi (1973)¹⁷ and Sidhu (2002).¹⁸

No significant statistical relationship between weight and age of menarche was found in a study conducted by Khakbazan Z et al.¹⁹

CONCLUSION

The mean age at menarche was 12.14 (± 1.086). The lowest age of menarche is 10 years and highest is 15 years. A positive association is found between girls menarcheal age with that of mother's menarcheal age. The mean age at menarche was earlier in class III and IV group and delayed in class I and II socio-economic group. Thus the trend of lowering of age at menarche is well marked as we moved from lower and middle to higher socioeconomic stratum. In the present study there seems to be a definite association between Bio-Social factors and mean age at menarche.

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Annexure:

The new multidimensional scale (instrument) developed to measure social wellbeing (MSSW) of the breast cancer patients.

No	Contents	Not at All	A Little	Quite a Bit	Very Much
1	Is support of relatives making you more peaceful?				
2	Is support of family making you in high spirits?				
3	Do you feel friends are important part of your life?				
4	Are you satisfied in your life?				
5	Are you worried about future of your any family members?				
6	Do you worry about your future?				
7	Is a thought of death bothering you every time?				
8	Is hospitalization making you uncomfortable?				
9	Do you feel dispute will arise due to your illness in family?				
10	Do you feel hesitant in discussing your disease to anyone?				
11	Do you feel mental disturbance due to repeated discussion about the disease with guest?				
12	Can you do cooking and other homework?				
13	Are you suffering from loneliness?				
14	Are you satisfied with your treatment?				
15	Are you satisfied with your nursing?				
16	Has your attitude changed towards life after diagnosis?				
17	Are you considering yourself very emotional person?				