

Secular Trend in the Onset of Menarche in Urban Population

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Abstract

Among all the developmental characteristics associated with the adolescence for girls, the onset of menarche is especially noteworthy and obvious. The onset of menarche in girls is a function of multiple factors and has its importance in relation to nation, culture and locality. The onset of menarche is an indication of pubertal growth spurts. The most favorable orthodontics and orthopedic treatment outcomes occur when the treatment begins at a patient's maturation age. This period helps in carrying out various treatments required for the interception of developing malocclusions.

Hence, the aim of our survey was to assess the mean age of onset of menarche in school girls from Bangalore city of Karnataka and compare their age with that of their mothers and their grandmothers to assess the secular trend in the onset of menarche, if it existed. The sample of 1062 student was considered representative of a major percentage of urban school girls in Bangalore. The findings are reported.

Keywords: Age at puberty, Girls in Bangalore, Mean age at menarche, Onset of menarche, Secular trend.

Introduction

Among all the developmental characteristics associated with the adolescence for girls, the onset of menarche is noteworthy and obvious. The onset of menarche in girls is a function of multiple factors and has its importance in relation to nation, culture, socioeconomic status and locality.¹ The onset of menarche is an indication of pubertal growth spurt. The most favorable orthodontics and orthopedic treatment outcomes occur during the pubertal growth spurt period. This period helps in carrying out various treatments required for the interception of developing malocclusions.²

Menarche occurs earlier than it once did in many parts of the world especially in Europe and North America. In these regions, it declined at the rate of approximately four months per decade till it stabilized at around 13 years. This was attributed to better socioeconomic status and improved health and nutrition. This decline is expected in Indian girls considering the economic development of country in past few decades. As the industrialization progressed and hence the wealth is concentrated more in urban areas than the rural ones, its impact on the girls residing in urban areas is more prompt.³

Hence the present survey was undertaken to assess the mean age of onset of menarche in school girls from Bangalore city of Karnataka and to assess the secular trend in the onset of menarche, if it existed.

Aims and Objectives

The aim of our survey was to assess the mean age of onset of menarche in school girls from Bangalore city of Karnataka and compare their age with that of

their mothers and their grandmothers to assess the secular trend in the onset of menarche, if it existed.

Objectives

1. To find mean age of onset of menarche in girls, their mothers and grandmothers.
2. Compare the mean age of onset of menarche in girls, their mothers and grandmothers to see if secular trend exists in the onset of menarche.

Material and Methods

1062 school girls of Bangalore city in the age group of 11 to 16 years were included in the study. At our first visit to the schools, the girls were explained about the survey and were informed to find out the age of onset of menarche of their mothers and grandmothers and theirs. After one week, the mean age of onset of menarche in girls, age of onset of menarche of their mothers and grandmothers, height and weight of the girls were recorded. Data was collected between the months October to December 2011.

From the data obtained, the mean age of onset of menarche in girls, their mothers and their grandmothers of those girls included in the study were calculated and compared statistically.

Inclusion criteria: The girls who could get information of age of onset of menarche of their mothers and their grandmothers were included in the study.

Exclusion criteria: The girls who could not get information about the onset of menarche in their mothers or grandmothers were excluded in the study.

Results

Fig. 1 and Table I shows the age distribution of the school girls included in the study.

Out of 1062 school girls, 2 girls were of 11years, 57 girls were of 12years, 209 girls were of 13years, 434 girls were of 14years, 294 girls were of 15years, 66 girls were of 16years of age.

Table II gives us the descriptive statistics of the onset of menarche in girls, their mothers and their grandmothers. The mean age of onset of menarche in the girls was 11+ years with Standard Deviation (S.D) of 0.9092. The mean age of onset of menarche in their mothers was 14+ years with the Standard Deviation (S.D) of 0.9103. The mean age of onset of menarche in their grandmothers was 15+ years with the Standard Deviation (S.D) of 0.8319.

In figure 2 the girls were classified into three groups according to the distribution in the onset of menarche of girls which is shown in Table III. In figure 2, the maximum no. of girls were of 11+ years and 12+ years for the onset of menarche. Hence 11+ years and 12+ years were considered as ideal age of onset of menarche. The subjects with onset of menarche in 9+ years and 10+ years were grouped under early onset of menarche, 13+ years and 14+ years were grouped under late onset of menarche.

In figure 3, of the 1062 girls, 79.65% attained menarche between the age 11 years and 13 years. From the collected data, the mean age of onset of menarche was 11+ years in the girls, 14+ years in mothers, 15+ years in grandmothers of those girls. There is decrease in age on onset of menarche in girls as compared to that of their mothers and grandmothers. Thus the girls of present population showed an early onset of menarche.

Comparison of age of onset of menarche of subjects, their mothers and their shown in table IV. The comparison of the age of onset of menarche in done using test between the girls and their mothers, between the girls and their grandmothers, between their mothers and their grandmothers. There is statistically significant difference in the onset of menarche (P value <0.001) between the girls and their mothers. There is statistically significant difference in the onset of menarche (P value <0.001) between the girls and their grandmothers. There is statistically significant difference in the onset of menarche (P value <0.001) between their mothers and their grandmother.

Table 1: Age distribution of the school girls

Age	No. of girls	Percentage (%)
11yrs	2	0.18
12yrs	57	5.36
13yrs	209	19.67
14yrs	434	40.86
15yrs	294	27.68
16yrs	66	6.25
Total	1062	100

Table 2: Descriptive statistics of age of onset of menarche of the girls, their mothers and their grandmothers

	Mean age of onset of menarche	(S.D)	Min values	Max values
Girls	11 years	0.9092	9	14
Mothers	14 years	0.9103	11	16
Grandmothers	15 years	0.8319	12	16

Table 3: Distribution of the school girls according to early/ideal/late menarche

Age in years	Number of girls	Percentage
Early menarche 09	18	13%
10	110	
Ideal 11	455	76%
12	297	
Late menarche 13	94	11%
14	11	

Table 4: Comparison of age of onset of menarche between subjects, their mothers and their grandmothers

Age in years	Age of onset of menarche in subjects	Age of onset of menarche in their mother	Age of onset of menarche in their Grand mother
Mean age of onset of menarche	11.38±0.91	14.33±0.91	14.59±0.84
P value	<0.001**	<0.001**	<0.001**

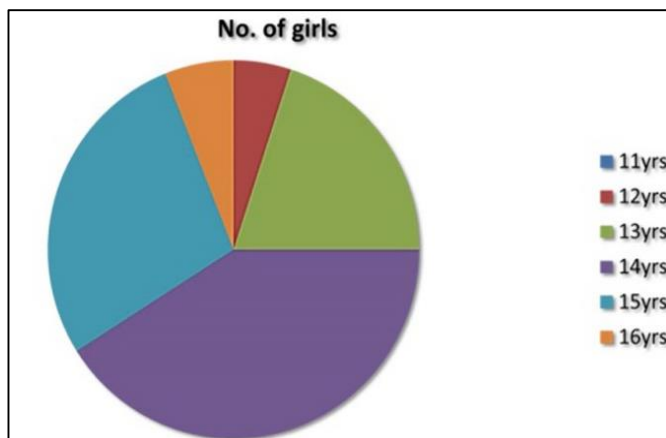


Fig. 1

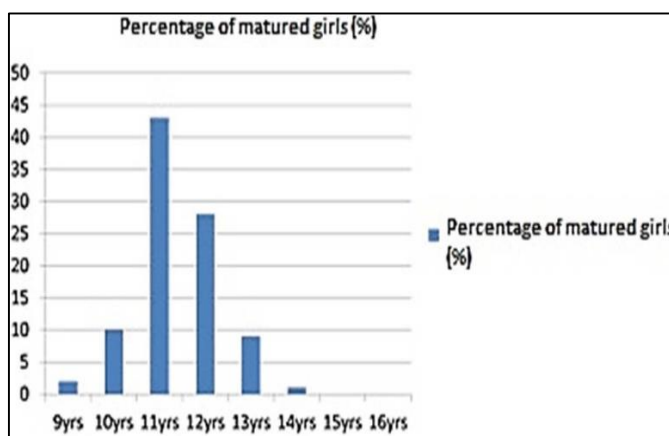


Fig. 2

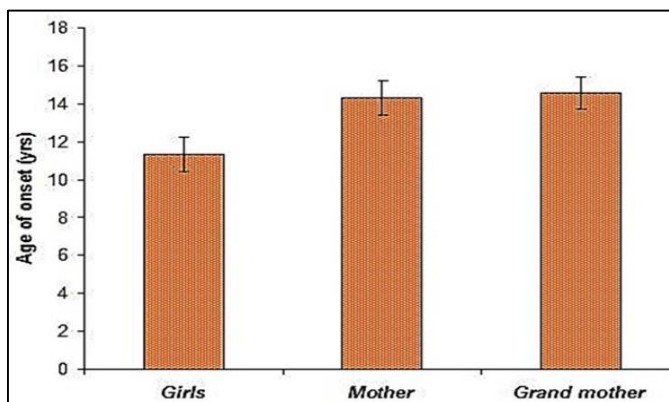


Fig. 3

Discussion

The onset of menarche is an indication of pubertal growth spurt. The most favorable orthodontics and orthopedic treatment outcomes occur during the pubertal growth spurt period. This period helps in carrying out various treatments required for the interception of developing malocclusions. Hence the present survey was undertaken to assess the mean age of onset of menarche in school girls from Bangalore city of Karnataka and compare their age with that of

their mothers and their grandmothers to assess the secular trend in the onset of menarche, if it existed.

1062 school girls of Bangalore city in the age group 11 to 16 years were included in the study. The mean age of onset of menarche in girls, their mothers and their grandmothers, height and weight of the girls were recorded. Data was collected between the months of October to December 2011. The data collected was subjected to statistical analysis. Limitations of the study in that only the age of onset of menarche is considered. Hence further studies with larger sample size to be

taken and other factors like socioeconomic status, locality, religion etc. to be considered. The following conclusions were drawn from the study.

Conclusion

1. The mean age of onset of menarche in girls is 11+ years (49.16%).
2. The mean age of onset of menarche in the mothers of those girls was 14+ years (41.61%).
3. The mean age of onset of menarche in the grandmothers of those girls was 15+ years (44.82%).
4. There is marked decrease in the age of onset of menarche in girls compared to that of their mothers, and slight decrease in the age of onset of menarche in their mothers compared to their grandmothers.

There is secular trend in the onset of menarche.

Conflict of Interest: None

Source of Support: Nil

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