

THE AGE OF MENARCHE IN MADRAS STATE

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In an adolescent girl menarche is the most important event and indicates that functionally the growth is progressing satisfactorily. With establishment of menstruation the physical, emotional and sexual maturity is not reached. But lack of supervision at this period may lead to several health problems which may influence the well-being of the future mother and her child.

The age of menarche ranges from 11 to 17 years as reported from different countries. Susruta (about 400 BC) said that every month, from 12th year of age to 50th year, the mouth of the uterus opens like a lotus at sunrise and the chyle or 'Rasa'

collected in the course of the month is expelled as a bloody discharge for 3 to 4 days before the uterine orifice again shuts like the lotus with the approach of sunset. (Rao, 1956). The menarchal age reported by different authors is shown in Tables I and II. In most countries it is between 13 to 15 years.

Material and methods

To determine the age of menarche, 500 healthy medical students and nurses hailing from different parts of Madras State and working in this institution and attached to the hospital were interviewed during a medical check up. The average age of these

TABLE I
Age of menarche in different countries

Country or city	Author (year)	Age of menarche (in years)
1. Helsinki	Widholme et al (1967)	13.2
2. Budapest	Thoma (1961)	12.75
3. Britain	Ellis (1947)	13.73
4. Nigeria	Ellis (1950)	14.22
5. South Africa (Bantus)	Kark (1943)	15.07
(Indians)	Kark (1943)	13.6
6. U. S. A.	Jones (1954)	12.5
7. Alaska (Esquimos)	Levine (1953)	14.4
8. Ceylon	Wilson and Sutherland (1950)	12.8 (urban) 14.4 (rural)
9. Singapore	Wadsworth (1953)	13.6

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girls was 20.9 years. The data collected consisted of the exact date of birth, occupation and income of parent or guardian, dietary habits, age at menarche (preferably the date of menarche, if known), nature of men-

TABLE II
Age of menarche in Indian girls

City or Region	Author (& year)	Age of Menarche
1. Calcutta	Robertson (1851)	12.5
2. Deccan	do	13.5
3. Bombay	Purandare (1945)	13.6
4. Central India	Thomson (1953)	14.65
5. Madras	Devi (1955)	13.15
6. Bombay	Peters and Srikande (1957)	13.15
7. India	Israel S. (1959)	13.42
8. Madurai	Authors	14.84

strual cycle and the social customs associated with menarche. The height and weight of each were also recorded.

Results

The mean age of menarche for the whole group was 14.84 years. In 181 girls where the exact date of menarche was known it was 15.09 years. It may be seen from Table III that the

TABLE III
Distribution of the age of menarche amongst 500 girls

Age at menarche (years)	Number of girls	Per cent
10	1	0.20
11	6	1.20
12	15	3.00
13	63	12.60
14	123	24.60
15	135	27.00
16	102	20.40
17	35	7.00
18	19	3.80
19	1	0.20
	500	100.00

earliest in this series was 10 years and oldest was 19 years. There was no appreciable difference in the menarche age between the vegetarians (14.77 years) and the non-vegetarians (14.89 years). When grouped according to the income of the

parents, the age of menarche was 13.77 years in those with income of over Rs. 300 (\$40) per month as compared to 15.18 years for those below it. The average weight of girls in this series was 44.54 Kg. In those weighing 50 Kg. and over (101 patients) the age of menarche was 13.36 years as compared to 14.94 years for 121 individuals whose weight was 40 Kg. and below. Similar correlation was also possible between the height and the age of menarche. For the whole group the average height was 146.9 cm. When it exceeded 157 cm. the menarchal age was 14.4 years as compared to 15.59 years amongst those with a height of 137 cm. or less. Dysmenorrhoea was present in 84.3% of girls soon after menarche but it was moderate to severe only in 28.4% of them. It is interesting to note that hardly 25% of these girls had some sort of health education pertaining to menstrual hygiene given by their mothers, elder sisters or friends. The social rites and practice connected with menarche were reported to have been performed in 35% of them.

Discussion

The average age of menarche is almost the same—13 to 15 years—all

over the world. It is determined mainly by the genetic and environment factors. Petri (1935) found that the average difference in age at menarche of identical twins is small (less than 3 months) as compared to that of heterozygous twins (12 months) or between mothers and daughters (over 18 months). That the age of menarche is not influenced by geographical factors is shown by Ellis (1950), Bojlen *et al* (1954), Israel (1959), Donovan *et al* (1963). Tanner (1955) has shown that in Europe a girl reaches menarche earlier now than 100 years ago. Donovan and ten Bosch (1963), however, explain that the present age of menarche, about 13 to 14 years in most countries, approximates to that which prevailed before the 19th century. The Industrial Revolution caused a set back and now this has been overcome. Menarche is occurring earlier than in the 19th century mainly because of the improved nutritional and socioeconomic factors. "There is some reason to believe that this trend may soon cease in those groups where environmental circumstances have been favourable for many years (W.H.O. Tech. rep. ser. 308). Wilson and Sutherland (1950; 1953) concluded after a study of this problem amongst school girls in Sussex that the mean height and weight were greater in those who started menstruating early as compared to those who had attained menarche later. They also showed that a girl in the urban area attains menarche earlier than those from the rural parts. In our series, too, it was found that girls from higher socioeconomic

groups had earlier menarche. The height and weight of individuals are influenced by socioeconomic factors. Those people who are socially well off have better nourishment and grow taller and heavier. In our study it was found that in girls with height and weight above average, the menarche was earlier. The influence of strenuous physical exercises on adolescent growth and menarchal age has not been fully studied.

The earlier onset of menarche occasionally produces emotional and social problems. It is necessary that these adolescent girls are given some elementary instructions regarding the physiology of menstruation and the significance of certain menstrual abnormalities, like dysmenorrhoea or juvenile metropathia. Health education during this period is more useful as ignorance is more often the cause of sexual misadventure. The social rites and customs connected with menarche are believed to have emotional value and in certain communities bring about a group feeling, increasing the confidence of the adolescent individuals.

Summary

1. The age of menarche in a group of 500 healthy girls, interviewed and examined in Madurai, was 14.84 years.
2. The age of menarche was earlier in those from higher socioeconomic groups.
3. It was earlier in girls who were taller or weighed more than the average.
4. The factors regulating the age of menarche are discussed.

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