Short Report

A Secular Trend in Age at Menarche in Sendai City and Its Surroundings

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MORIYAMA, M., KASHIWAZAKI, H., TAKEMOTO, T. and SUZUKI, T. A Secular Trend in Age at Menarche in Sendai City and Its Surroundings. Tohoku J. exp. Med., 1977, 123 (4), 393-394 — A secular trend in age at menarche was examined for 1,333 women living in Sendai city and its surroundings by applying the birth-year cohort analysis and the cross-sectional probit analysis. The trend toward younger menarcheal ages was consistently observed by both analyses, and it started off soon after the second World War. The speed was 0.11 year/year for the observation period of 1946 to 1966. —— age at menarche; sexual maturation; secular trend in age at menarche

The age at menarche has become earlier through over the period of a century (Tanner 1955) and now seems to be at the end of acceleration (Damon 1974) in several Western countries.

In Japan, the trend toward earlier menarche in a certain period after the second World War has been noticed by some investigators (Matsumoto et al. 1963; Uno 1972), but the periods of observation in these reports were not adequately long to find when the trend started off and how was the speed of acceleration in sexual maturation. A chance to study age at menarche was available to us when a relatively large-scale enquete survey was conducted on the health of women working as teachers in primary and secondary schools or nurses in hospitals or day nurseries in the city of Sendai and its surroundings.

Number of responses amounted to 1,333 (age of respondents: 18-52 years old). Of these 1,333 women, none menstruated before 10 years of age, and 3 women attained their menarche after 20 years of age. Mean and standard deviation of age at menarche were calculated for each birth-year cohort of women — 35 birth-year cohorts since 1924 to 1958 of varying sizes (11-92). In addition to calculation on the birth-year cohort, the probit analysis was applied to obtain the mean menarcheal age on each calendar year, when rates of menstruating in different age groups (10-20 years old) at the end of each calendar year were used for calculation. To make the trend in age at menarche clear, the method of moving averages using 7 consecutive values was applied for both sets of the mean menarcheal ages.

Thus, the results are shown in the figure, which shows a constant downward trend in age at menarche. The trend is conspicuously consistent between the two sets of results except that the recent mean ages are slightly younger in the probit analysis than in the birth-year cohort analysis. The downward trend started off soon after the second World War in the groups of women born in the middle of 1930’s. The speed of acceleration is estimated at 0.11 year/year. The downward trend of menarcheal age began to stagnate in the women born after 1952.

Interesting is the release of the downward trend soon after the second World War. The socio-economic confusion during and after the second World War should have worsened

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Fig. 1. Secular trend in age at menarche.
Age at menarche of each birth year cohort: ○, mean; △, the latest; ▽, the earliest.
Age at menarche on each calendar year: ⋄, mean.
Age at menarche of each birth year cohort is plotted at year of birth, and age at menarche on each calendar year is plotted at year of observation. All the values in the figure are moving averages by 7 consecutive values.

the nutritional status of adolescent girls at that time. Therefore, the improvement in nutrition does not explain the secular trend, or at least the initiation of the trend. Not nutrition, but what? This is a question of further scrutiny.

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References