

COMPARISON OF MENARCHE AGE BETWEEN TWO GENERATIONS (TEHRAN LIPID AND GLUCOSE STUDY)

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ABSTRACT

Objectives: Menarcheal age is considered to be an indicator of puberty. There is a lack of information on menarcheal age in Tehranian girls, in comparison to that of their mothers. This cross-sectional study was aimed at comparing the age of menarches between two generations.

Methodology: The subjects were 812 (406 daughters and 406 mothers) chosen from among 15005 participants of the longitudinal Tehran Lipid and Glucose Study. Demographic information and the age of menarche were recorded in a questionnaire. We have considered a minimal of 25 years duration to be one generation. Distribution of the menarcheal age and linear regression were performed.

Results: The mean age of menarche in daughters and their mothers were 13.2 ± 1.4 and 13.6 ± 1.5 years, respectively. There was significant correlation between the mother's and daughter's menarcheal age ($r=0.25$, $P<0.002$). 25th, 50th and 75th percentiles for menarcheal ages in daughters and their mothers were 12.2, 13.1, 14.1 and 12.7, 13.5, 14.5 years respectively. Minimum and maximum ages of menarche were the same (10 and 18 years) in the two groups.

Conclusion: We found a decrease in the average menarcheal age during 25 years (one generation) similar to the results of other studies.

KEY WORD: Menarche, Adolescence, Women, Puberty.

Pak J Med Sci July - September 2007 Vol. 23 No. 4 523-525

INTRODUCTION

Puberty is a process leading to physical and sexual maturation that involves the development of secondary sexual characteristics as well as growth changes in body composition and psychosocial maturation.¹ Puberty among females appears to begin earlier than previously thought.² Normal puberty in girls

begins between 8 and 14 years of age.³ Menarcheal age can be considered as an indicator of puberty.⁴ Median ages of menarche were 12.9, 13.1, 13.3, 13.6, 13.9 and 14 years in Hong Kong, Geneva, Zafed, Israel, Stockholm and Swedeeo, urban Colombo, Nigeria and Srilanka respectively.⁵ Menarcheal age and socioeconomic factors were studied in 1331 Tehranian girls in 1983 and 1994. The age of menarche was 13.90 and 13.50 years respectively. There was no relationship between age of menarche and socioeconomic factors.^{6,7} Some factors influencing the age of menarche are environment, family size, and social class⁵ BMI⁸ and genetic factors.⁹ This study was conducted to determine the differences in menarcheal age between two generations of Tehranian women.

METHODOLOGY

The Tehran Lipid and Glucose Study (TLGS) is a study conducted to determine the risk factors for arteriosclerosis among Tehran's urban

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* Received for Publication: January 17, 2007

* Accepted: April 16, 2007

population, to develop population-based measures to change the lifestyle of people and to prevent the rising trend of diabetes mellitus and dyslipidemia. A multi-stage stratified cluster random sampling technique was used to select 15005 people aged 3-69 years from Tehran's urban population of district 13.¹⁰ The subjects of the present study were 812(406 daughters and 406 mothers) chosen from among 15005 participants of the TLGS. A generation was considered to have at least 25-year duration. The mean age of daughters and their mothers were 14.0 ± 4.0 and 39.0 ± 4.0 years respectively. The study protocol was approved by the independent Ethics committee and was conducted in accordance with the declaration of the Helsinki guidelines. All subjects provided written informed consent before screening. Demographic information and age of menarche was recorded in a questionnaire. Descriptive data were shown as mean \pm SD, percentile, distribution of menarcheal age and linear regression was performed with SPSS (statistical software package version 9.05 Chicago IL). A P value of 0.05 was considered statistically significant.

RESULTS

The mean age of menarche in daughters and their mothers were 13.22 ± 1.39 and 13.61 ± 1.47 years respectively. Distribution of the menarcheal age showed a decrease in the average age of menarche between the two generations (Fig-1). There was significant correlation between the menarcheal ages of mother's and daughter's ($r=0.25$, $P<0.002$). 25th, 50th and 75th percentiles for menarcheal ages in daughters and their mothers were 12.2, 13.1, 14.1 and 12.7, 13.5, 14.5 years respectively. Minimum and maximum age of menarche were the same (10 and 18 years) in two groups (Table-I).

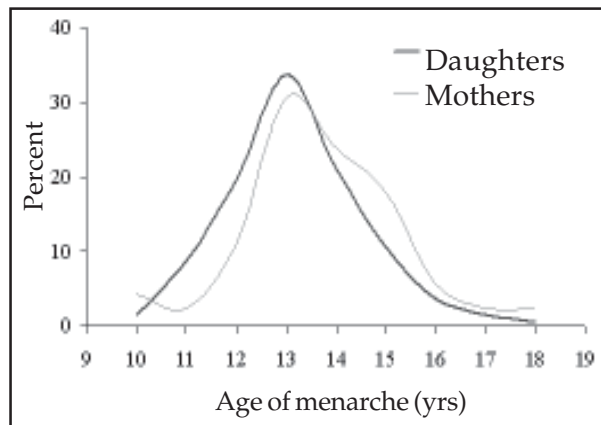


Fig-1: Comparison of menarcheal age between two generations in Tehran.

This research project has been supported by grant No 121 NRCI Research Projects and with the Support of National Research Council of Islamic Republic of Iran.

DISCUSSION

In this study we found a decrease in the average menarcheal age during 25 years (one generation). A study in Greek girls that was conducted after 15 years, shows that there is still a secular trend, although a small one, towards lower menarcheal age.¹¹ The mean ages of menarche in Spanish and Indian daughters and their mothers were 13.03 ± 1.28 , 13.45 ± 1.51 and 12.52 ± 1.25 , 13.02 ± 1.57 years respectively ($p<0.01$).^{9,12} In London, mean age at menarche fell from 13.29 years in 1954 to 13.05 years in 1959.¹³ Menarcheal ages in Turkish,¹⁴ Omani¹⁵ and Chinese girls¹⁶ were 12.90 ± 1.21 , 13.3 ± 0.09 and 11.50 ± 0.47 respectively. The significant association between mothers and daughters menarcheal ages is supported by other studies. Countries are experiencing rapid modernization, i.e. a change in life styles. Some factors influencing the age of menarche are environment, family size, and social class⁵ BMI⁸ and genetic factors.⁹ These

Table-I: Means and percentiles of menarcheal age in mothers and their daughters Menarcheal age (years)

Groups	Mean \pm SD	Percentiles			Minimum	Maximum
		25	50	75		
Mothers	13.6 \pm 1.5	12.7	13.5	14.5	10	18
Daughters	13.2 \pm 1.4	12.2	13.1	14.1	10	18

factors are common in all races. It seems that changing life styles is a major cause of the decrease in mean age at menarche. A greater gap was observed, as data regarding the confounding variables was not available. There was no information about population weight at menarcheal age or family size. This is a major weakness of this study. According to other findings from TLGS, about one fifth of daughters around the age of puberty are overweight.¹⁷ It seems that overweight can be one of the major causes of the decrease in mean menarcheal age of daughters as compared to their mothers in this study. The health system must therefore focus on educational programming and encourage changes in the present life styles of adolescent girls.

ACKNOWLEDGMENTS

We would like to express our appreciation to our colleague Nilufar Shiva for her help and cooperation. This research project has been supported by grant No 121 NRCI Research Projects and with the Support of National Research Council of Islamic Republic of Iran.

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