

The timing and evolution of puberty in a sample of school-aged children in a Brazilian city

Feibelmann, TCM; Silva, AP; Silva, DC; Resende, EAMR; Scatena, LM; Borges, MF

UNIVERSIDADE FEDERAL DO TRIÂNGULO MINEIRO-BRAZIL



Background

Puberty is the phase of life during which transition from the immature to mature sexual stage occurs, culminating in reproductive capacity¹.

Studies have indicated a secular decline in the age and time of evolution of puberty, especially menarche². These findings raise an important question: should the normal age at which puberty commences be redefined as 7 years old? For boys, although some studies indicate a trend of earlier onset of puberty, the data is less consistent and there are no proposals to change the parameters currently considered normal³. However, since the onset and progression of pubertal process can change according to genetic, socio-economic, ethnic and geographical features², it is important to know if the data found in developed countries could be extrapolated to developing countries such as Brazil.

Objectives

Our objective was assessing age of beginning and evolution of puberty in boys and girls acknowledging the age of thelarche (T), menarche (M), period between thelarche and menarche (PTM) among girls, Tanner staging in boys and pubarche (P) in both.

Method

A cross-sectional study was conducted in which we evaluated 1,095 students from the city of Uberaba, between February 2012 and September 2013. 665 (60.7%) girls and 430 (39.3%) boys between 5-18 years old participated in the survey. The evaluation of pubertal development was performed by status quo method, followed by recall method. Students answered a semi-structured questionnaire and pointed at classic pictures of Tanner staging about the characteristics associated with puberty, including age at menarche.

Results

The distribution of age samples for the pubertal stages of pubic hair and breast development for girls and pubic hair and genital development for boys are represented in figures 1 and 2 respectively. The age of onset of secondary sexual characteristics in girls and boys are described in figures 3 and 4 respectively. The period between thelarche and menarche was 1.7 ± 1.3 years (95% CI: 1.6-1.9).

Figure 1- Number and age of 665 Brazilian girls according to Tanner staging

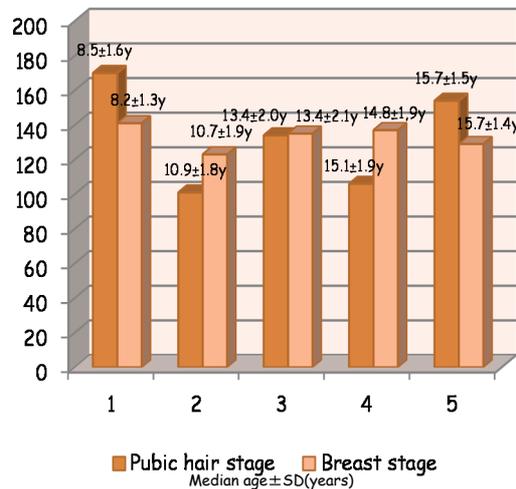


Figure 3- Age of onset of secondary sexual characteristics of Brazilian girls

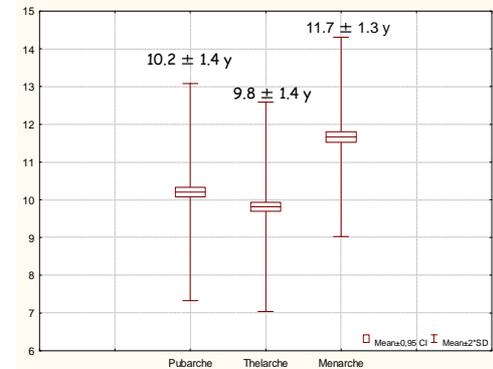


Figure 4- Age of onset of the secondary sexual characteristics of Brazilian boys

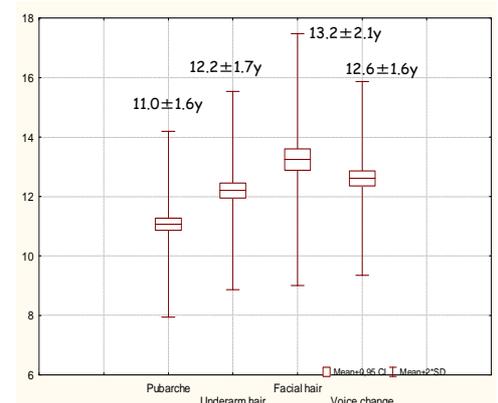
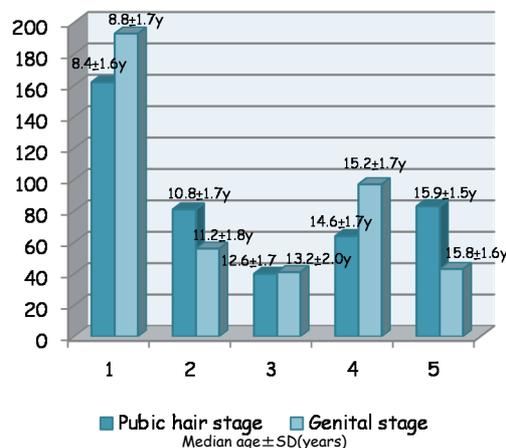


Figure 2- Number and age of 430 Brazilian boys according to Tanner staging



Discussion and Conclusions

Puberty in girls occurred earlier than expected, suggesting that the phenomenon of a secular trend of early onset of puberty, as reported in studies conducted in other countries may also be occurring in our sample. Among boys, the data set may be less reliable due to methodological difficulties in measuring the onset of puberty. However, the results of this research indicate a trend to earlier development in males as well. From our results, we confirm that puberty may actually be starting sooner. However, we believe that before we accept a hypothesis of change in the age of the occurrence of these characteristics of puberty, we should further advance our studies in order to find the causes and consequences. We suggest conducting longitudinal and multicenter studies in order to know the reality of a representative sample of Brazilian children and adolescents.

The age range in which 95% of participants had pubertal events was between 7.0 and 12.0 years for thelarche; 7.0 to 13 years for pubarche and 9.0 to 14.0 years for menarche. For this value, the possible prevalence of premature puberty among girls was 0.6% (n= 4) compared with 2.7% (n=18) for the classical value of <8 years old. The age range in which 95% of the boys had pubarche was between 8-14 years.