

## The Distribution of Pubertal Age among Male School Students in Jatinangor District from April to June 2013

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### Abstract

**Background:** Puberty is important and exciting lifetime changes in an individual. Many new changes are experienced during puberty, such as physically, mentally, and emotionally. Currently, young males worldwide have different onset of pubertal age. Many factors may result in this change of pubertal age. The exact pubertal age was still unknown due to less study conducted previously. Therefore, the aim of this study was to identify the distribution of pubertal age among male school students in Jatinangor.

**Methods:** A descriptive study was conducted from April to June 2013. A secondary data were obtained from the Jatinangor Cohort Study, from the Department of Epidemiology and Biostatistics, Faculty of Medicine, Universitas Padjadjaran. The samples were taken via cluster random sampling from 48 schools around Jatinangor. Randomization was conducted and a total of 219 male students were finally obtained from the overall data which had at least single onset of pubertal changes. This presents a response rate of 82.33%.

**Results:** The earliest onset of pubertal age was identified as 9 years old and the oldest onset was 18 years old. The majority onset of pubertal age ranged from 12 to 15 years old with average mean of 13 years. Voice changes were identified as the early sign of puberty among males.

**Conclusions:** Majority of the students undergo puberty at age 13 which is earlier compared to previous studies. Thus, this study indicates decreasing in onset of pubertal age among male school students in Jatinangor. [AMJ.2016;3(1):6-11]

**Keywords:** Jatinangor, male school students, pubertal age, puberty

### Introduction

Changing trends occurring between childhood and adulthood, in the transitional phase of growth and development varies in every individual. This period is known as pubertal phase.<sup>1</sup> The development of physical growth is known as adolescence stage which roughly ranges from 11–19 years old.<sup>2</sup> According to American Academy of Pediatrics (AAP), currently, young males start puberty much more earlier compared to previous decades.<sup>1</sup> Now, males begin puberty six months to two years earlier. Some males undergo precocious puberty (PP), as the development of pubertal changes, at an age younger than the accepted lower limits for age of onset of puberty.<sup>3</sup>

Thus, United State boys reach puberty between ages of 9–10, compared to 25 years ago where the first sign of puberty occurs at

ages of 11 years or more.<sup>4</sup> Black American boys start showing pubertal changes around age 9.1 years while white and Hispanic boys undergo changes just after turning 10.<sup>5</sup> Similar trends towards earlier puberty in boys have been seen in studies in Europe.<sup>4</sup> However, in Asian countries, the mean age for pubertal among males is 15 years old.<sup>6</sup> Several studies conducted stated that fewer data are available on the age and pattern of pubertal development in boys. This reflects less cultural awareness of male pubertal development.<sup>7</sup> Besides, the current reducing in the pubertal age is still left unknown and the exact time period of male puberty is not clearly stated. Therefore, the aim of this study was to determine the pubertal age among male school students in Jatinangor in order to give a hint what intervention should be given.

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## Methods

The type of study conducted was descriptive study. This study was carried out from April to June 2013. A secondary data were obtained from the Jatinangor Cohort Study from the Department of Epidemiology and Biostatistics, Faculty of Medicine, Universitas Padjadjaran. Jatinangor Cohort Study comprised of reproductive health among school students in Jatinangor District and was approved by Health Research Ethics Committee. The samples were taken via cluster random sampling from 48 Elementary School (Sekolah Dasar, SD), Junior High School (Sekolah Menengah Pertama, SMP) and Senior High School (Sekolah Menengah Atas, SMA) around Jatinangor, which made up a total of 7542 male students.

The six schools selected were SD Negeri Cibeusi, SD Negeri Cikopo II, SMP Al-Masoem, SMP PGRI, SMA PGRI and SMA Negeri Jatinangor which had a total of 1250 male students. Randomization was conducted by the Jatinangor Cohort Study team by only selecting Class IV–VI male students from Elementary School, Class VII–IX male students from Junior High School and Class X–XII male students from Senior High School which had a total of 266 male students. These students were given an informed consent form to be filled by their parents or guardians. Questionnaire forms which comprises of onset of pubertal age measured by secondary sexual characteristics were given to the students. The questionnaire

was validated by the Jatinangor Cohort team.

A total of 219 male students were finally obtained from the whole data which had at least single onset of pubertal changes. This presents a response rate of 82.33%. All the data collected from the questionnaires were composed into Statistical Product and Service Solutions (SPSS) software version 15. The distribution of pubertal age among male students was analyzed. All the results were presented in suitable graphs.

## Results

A total of 219 male students, with onset of pubertal changes were divided according to their level of education. The highest number of onset of pubertal age was experienced among Junior High School students while the lowest number was from Elementary School students (Figure 1).

The earliest age for voice changes among male students was at age 9 years old with a total of 6 students and the oldest occurs at age 18 with only 1 student. The highest number experiencing onset of voice changes was 53 students at age 12 years old. The age range for majority voice changes was 12–14 years old (Figure 2).

The onset of wet dream occurrence among male students began at age 9 years with a total of 4 students. There are 3 students with onset at age 16 years, while the highest number experiencing onset of wet dream as 66

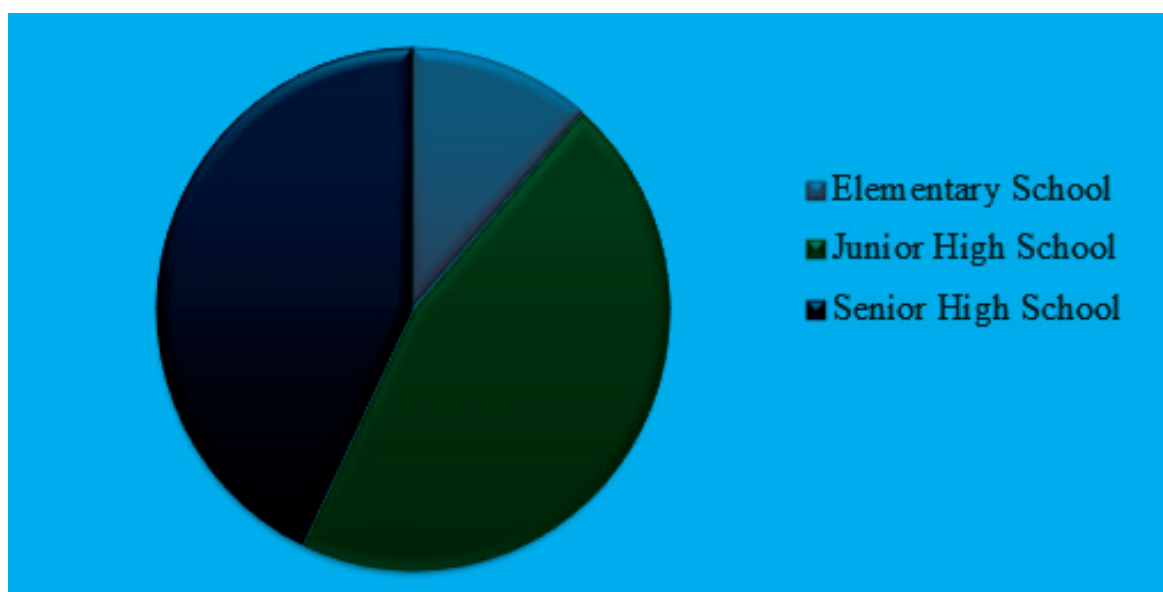


Figure 1 Total Male Student with Pubertal Changes according to Level of Education

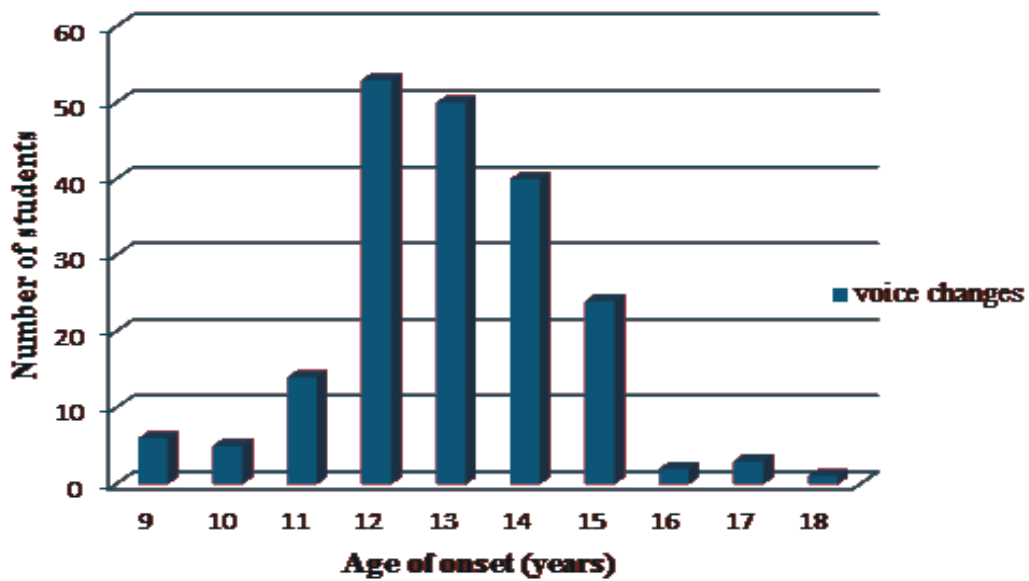


Figure 2 Number of Students with Onset of Voice Changes according to Age

students at age 13 years old. The age range for majority wet dream occurrence was at 12–14 years old (Figure 3).

Moustache and pubic hair showed earlier onset of growth at age 10 years old, while beard and axillary hair started growing at age

12 years. The highest onset of hair growth varied. The highest number experiencing onset of pubic hair growth was 56 students at age 13 years old. Meanwhile, for onset of moustache and axillary hair growth, the highest number experiencing was at age 15 years, with 34

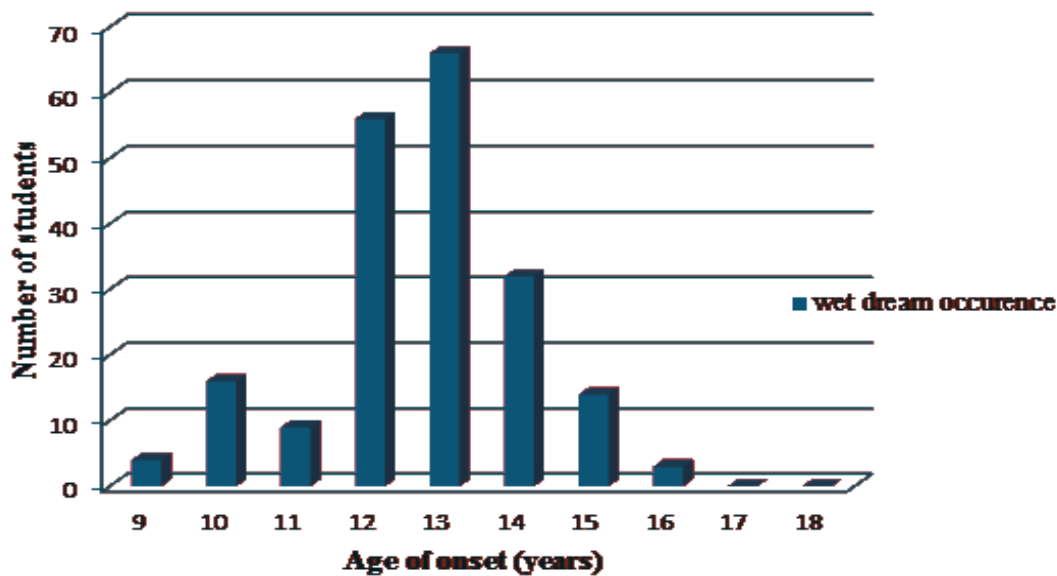


Figure 3 Number of Students with Onset of Wet Dream Occurrence according to Age

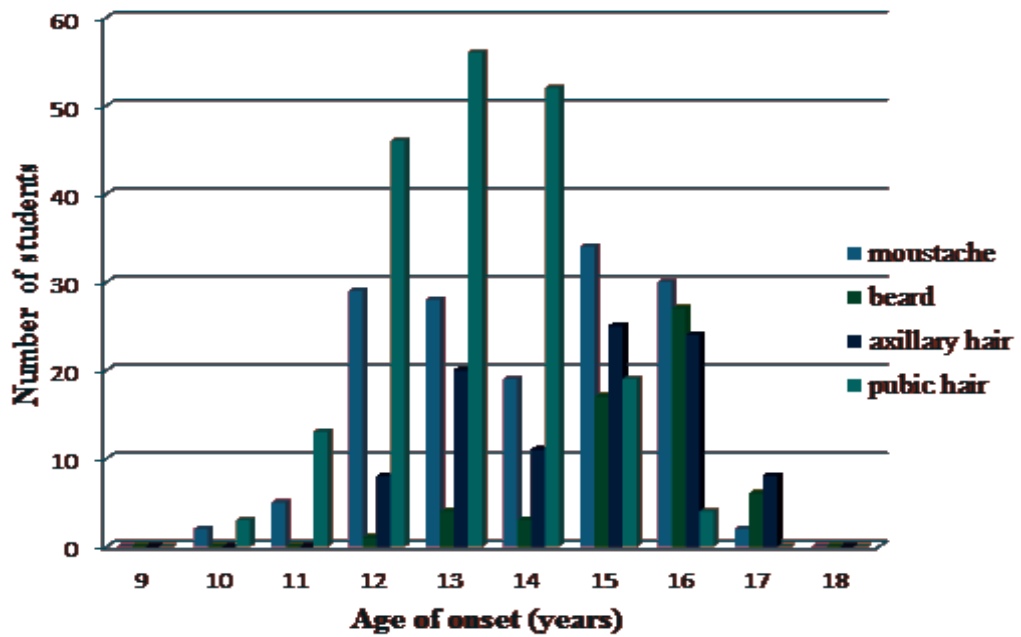


Figure 4 Number of Students with Onset of Sexual Hair Growth according to Age

students and 25 students respectively. Onset of beard growth had the highest number at age 16 years with 27 students. Thus, the majority age range for sexual hair growth among Jatinangor boys was 12–15 years (Figure 4).

The earliest age for penis, scrotal, and testes enlargement among male students was at age 9 years old. Penis and testes enlargement had the same highest number experiencing its onset which was at age 13 with 47 students

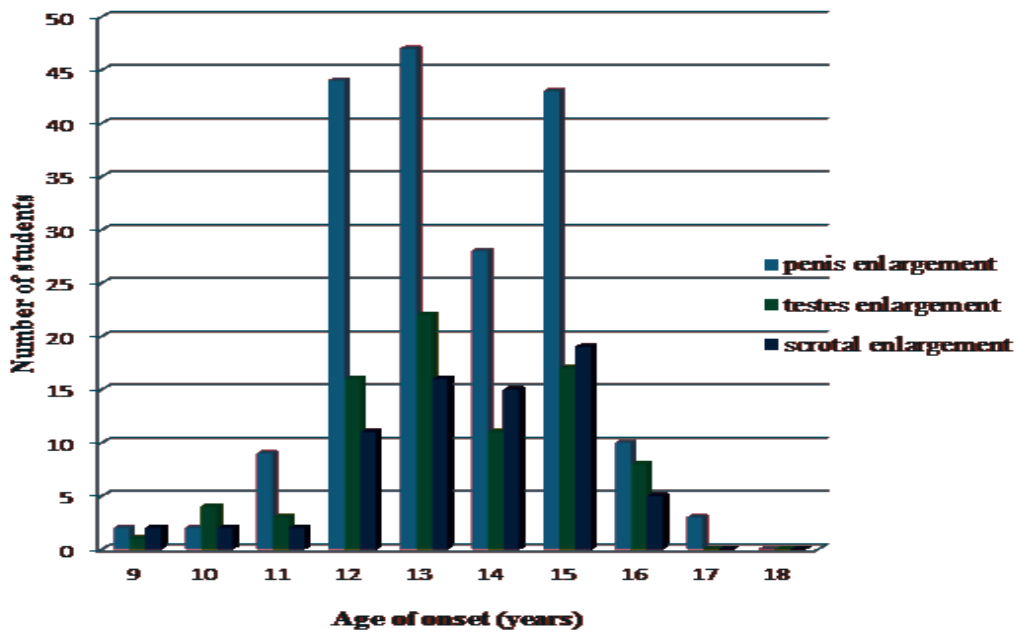


Figure 5 Number of Students with Onset of Sexual Organ Enlargements according to Age

and 22 students respectively. Meanwhile, the highest number experiencing onset of scrotal enlargement was 19 students at age 15 years old. The majority age range for the enlargement was 12–15 years old (Figure 5).

## Discussion

The study to find the distribution of pubertal age among the 219 students was conducted. The students were divided according to the onset of pubertal age corresponding with their pubertal changes. The pubertal changes that were taken in count were voice changes, moustache growth, beard growth, axillary hair growth, pubic hair growth, penis enlargement, scrotal enlargement, testes enlargement, and occurrence of wet dream. The range of pubertal age was based on the earliest onset of pubertal changes and the latest onset. The majority age range was also identified from this study.

The result showed that the earliest onset of pubertal changes was at age 9 years old and the oldest onset occurred at age 18 years old. This showed a wide range of pubertal onset among Jatinangor males. In Elementary School, there were 25 students with onset of pubertal changes and among them, the highest onset was seen in occurrence of wet dreams. Fourteen students experienced these changes, while voice changes took second highest with 11 students experiencing it. Meanwhile, among Junior High School students, pubertal changes occurred in 100 students. Wet dreams occurred mostly in all students, followed by voice changes and pubic hair growth. Finally, there were 94 students obtained from Senior High Schools with onset of pubertal changes. Wet dreams, voice changes, and pubic hair growth still remained the most frequent secondary sexual changes with onset of puberty. However, more students experienced voice changes prior to wet dream occurrence, resulting in voice changes as early sign of puberty in Jatinangor male school students.

The majority onset of pubertal changes occurred at age 12–15 years old. This showed a clear decrease in the onset of pubertal age. Previous study showed that the onset of puberty among Asian males is 15 years old.<sup>6</sup> Now, males began puberty six months to two years earlier. Similar trends towards earlier puberty in boys have been seen in studies in Europe. United State boys reach puberty between ages of 9–10, compared to previous years where average boys undergo the first sign of puberty around 11 years old or more.<sup>4,7</sup>

Voice changes had the highest number of students experiencing earlier onset which is at age 12 years old. Study showed that generally a boy's voice starts to change somewhere between ages of 11–15 years.<sup>2</sup> Thus, for males in Jatinangor, the voice changed at age 12–14 years old. Voice changes is a result of hormonal changes, the increase of testosterone level during puberty.<sup>6</sup>

The secondary sexual characteristic is due to the result from the stimulation of gonads by pituitary gonadotropin. Testes enlargement are relatively constant until age 11 years then the testicular enlargement begins.<sup>8</sup> Similar trend was seen among males in Jatinangor. This sudden increment could be the result of the hormonal changes that takes place in the male students.<sup>2</sup> Therefore, certain studies classify the increase in testicular size as a definite sign of puberty.<sup>8,9</sup> The distribution of hair growth is also similar to other secondary sexual characteristics. The majority age range for onset of hair growth is also 12–15 years old. Pubic hair has the earliest growth at age 12 just after increase in the testicular volume. This showed the change in testosterone production in a male undergoing pubertal age.<sup>8</sup> Occurrence of wet dreams is also strongly related to change in body hormonal level.

The factor that causes this decreasing trend of pubertal age is still unknown. Although puberty is mostly due to the change in body hormonal level, but current lifestyle and environmental factor could be causes of early onset of puberty among younger generations.<sup>10</sup> Current lifestyle which includes the dietary pattern on an individual might be a predisposing factor to the decrease in onset of puberty in males. Huge amount of fat intake is said to fasten the body metabolism to result in an early onset of puberty.<sup>4</sup>

The study proves that the distribution of pubertal age is at age 12–15 years old. However, the number of participants in this study was based on the data obtained from Department of Epidemiology and Biostatistics Faculty of Medicine, Universitas Padjadjaran. Thus, limited information was obtained from the data. Additional information on the pubertal age could not be obtained as the data was collected prior to the study. For the upcoming study, other criteria of concluding the onset of puberty among males, such as Tanner Staging can be conducted with proper procedures to obtain a better result. Tanner Staging will give a more precise result on what stage of pubertal development does that the individual is going through.

In conclusion, the pubertal age in Jatinangor is around age 9–18 years old with the majority age range of 12–15 years old. The overall mean age for onset of puberty is 13 years old. The sign of puberty that appears early is voice changes followed by wet dreams and pubic hair growth.

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