
ORIGINAL ARTICLE

Survey on Sexual Maturation on Freshmen
at the University of North Sumatera Medan,
Indonesia.

by

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Abstract

A survey was conducted on freshmen in the year 1975. They consisted of 971 students: 705 boys and 266 girls. The boy's age ranged from 18 to 23 years while the girl's age ranged from 18 to 22 years. The survey was done with the retrospective method by filling questionnaires.

We found that puberty started earlier among the girls than the boys and that menarche started at the age of 14.75 years, which was later than found in other countries.

Introduction

Widely used methods for assessing the onset of puberty are:

- a. Prospective method/Longitudinal study.
- b. Retrospective method,
- c. Status quo method (Brundtland and Welloe, 1973; De Wijn 1965).

All these three methods have their own shortcomings. Menarche and other physical changes like enlargement of the breast, appearance of axillary and pubic hair are the signs of puberty in girls, while physical change in boys are a change in the voice, appearance of axillary and pubic hair together with other physical changes.

Puberty requires a normal function of the hypothalamus, pituitary, ovaries and adrenal glands. Menarche requires a normal development of the genital tract. Late onset of menarche can happen in a normal woman, but it can also be caused by a dysfunction of the above mentioned organs.

Studies on the onset of puberty was never done before in North Sumatera and studies on this subject are still few in Indonesia.

The purpose of this study is to know the onset of puberty among freshmen at the University of North Sumatera, Medan, Indonesia.

Material and method

University of North Sumatera is one of the 14 Government Universities in

Indonesia. Before entering the University the students have to do entrance examination and medical check up.

At that time the new academic year 1975/1976 started in mid January.

This study was done during a medical check up on freshmen admitted to the different faculties at the University of North Sumatera.

There were 971 freshmen, consisting of 705 boys and 266 girls. The boy's age ranged from 18 to 23 years (Mean 19.4 ± 1.04) while the girl's age range from 18 to 23 years (Mean 18.64 ± 0.86).

These students came from different places. They were requested to fill in a questionnaire sexual maturation.

- Girls: — age of onset of menarche,
 — age of appearance of axillary hair,
 — age of appearance of pubic hair,

- Boys: — age of change in the voice,
 — age of appearance of axillary hair,
 — age of appearance of pubic hair.

This method is called the retrospective method (Dann and Roberts, 1973; Indra and Vijayalakshmi, 1973; Marshall, & Tanner, 1969; de Wijn, 1965).

Results

- Girls: — onset of menarche 14.75 years.
 Range 12 - 18 years,

— appearance of pubic hair
15.21 years. Range 12 - 18
years,

— appearance of axillary hair
15.57 years. Range 12 - 18
years.

Boys: — change of voice 15.96 years.
Range 11 - 20 years,

— appearance of pubic hair
15.40 years. Range 11 - 19
years,

— appearance of axillary hair
16.51 years. Range 11 - 20
years.

In table 1 we can see the result of the questionnaire for the onset of puberty among 266 girl students while in table 2 the onset of puberty among 205 boy students.

Discussion

Marshall and Tanner (1969b) studied the onset of puberty among British children consisting of 1912 girls. These children came from the low socio-economic class. Serial fotos of the breast and genital were taken from the time they approached puberty until they were grown up with interval of 3 months.

Marshall and Tanner (1969b) divided the growth of the breast and pubic hair in girls into 5 stages, and found that the first sign of the breast development or appearance of pubic hair was between 8.5—13 years. Marshall and Tanner (1969) also divided the growth of genital and pubic hair in boys into 5 stages with the result that 95% of the

boy's genital started to grow between the age of 9.5—13.5 years with a mean of 11.6 ± 0.09 and reached the adult shape at the age of 13—19 years (mean $14 - 9 = 1.10$). pubic hair appeared at the age of 15.2 years (mean ± 0.01).

Indra and Vijayalakshmi (1973), in Tirupati, Andra Pradesh, South India made a study on 1304 girls using the rating of Marshall and Tanner (1969b). Their results can be seen in Table 3.

Unfortunately in our study we were not able to use the rating of Marshall and Tanner (1969a, 1969b). We only could use the retrospective method.

Countries in the Northern parts of Europe like Sweden, Denmark, Finland and Norway started studies like this since 1919 using the status quo method (Brundtland and Welloe, 1973).

From this continuous study it came out that there was a tendency to earlier appearance of the menarche, see table 4 and 5.

In the United States the average of menarche is now 1 year earlier (just under 13 years) than it was 50 years ago.

Summary

Using the retrospective study on 971 freshmen consisting of 705 boys and 266 girls we made a survey on the onset of puberty in Medan, North Sumatera. Comparing the results of our study with those of Marshall and Tanner (1969a 1969b) and of Indra and Vijayalakshmi (1973) and the findings in Sweden, Denmark, Finlandia and Norway and also

with the findings in the United States (years). In accordance with what was published in the literature puberty started earlier among girls than boys.

TABLE 1 : *Onset of puberty among 266 girl students*

Onset of	N	Mean (Years)	SE	SD	P 3	P 97	Range (Years)
Menarche	266	14.75	0.07	1.25	12.37	17.73	12 — 18
Pubic hair	266	15.21	0.07	1.18	12.72	17.62	12 — 18
Axillary hair	266	15.27	0.08	1.34	13.08	10.45	12 — 19

TABLE 2 : *Onset of puberty among 266 girl students*

Onset of	N	Mean (Years)	SE	SD	P 3	P 97	Range (Years)
Pubic hair	705	15.40	0.04	1.27	12.39	17.20	11 — 19
Change of voice	705	15.96	1.05	1.53	12.83	18.85	11 — 20
Axillary hair	705	16.57	0.06	1.52	13.31	19.11	11 — 20

TABLE 3 : *Onset of puberty in Tirupaty India*

Onset of	Socio — Economic level		
	High	Medium	Low
Mammac development	10.25 years	10.80 years	10.00 years
Pubic hair	10.50 years	11.17 years	10.28 years
Menarche	13.11 years	13.27 years	13.35 years
Axillary hair	13.23 years	13.60 years	13.78 years

TABLE 4 : *Menarchal age in Denmark and Finland.*

A u t h o r s	Years of study	Denmark		Finland		Norway	
		No of girls	Age of Menarche	No of girls	Age of Menarche	No of girls	Age of Menarche
Bojlen et al, 1954	1948 - 50	17985	13.8				
Simell, 1952	1950			1713	14.08		
Letting, 1956	1952					11618	13.27
Andersen, 1968	1965	532	13.25				
Kentero & Widholm 1971	1969			4104	13.10		
Brundtland & Welloc 1973	1970					7155	13.24

TABLE 5 : *Menarchal age Oslo*

A u t h o r s	Years of study	Number of girls	Age of Menarche
Schiotz, 1919	1918	177	14.57
Schiotz, 1930	1928	9169	14.18
Letting, 1956	1952	11618	13.27
Brundtland & Welloe 1973	1970	1755	13.24

Recalculated from original tables, using the same numerical method as in 1970

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