

## ORIGINAL ARTICLE

# Penis Length of Elementary School Students in Karawang Regency West Java

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## ABSTRACT

**Introduction:** Penile length is defined as a length from base of penile until the tip of the glans. If the length of penile less than 2.5 standard deviations (SD) on average of its age it characterized as a micropenis. The aim of this study is to describe the penile length and micropenis condition in elementary school student. Method: This is a descriptive study to find out the penile length in elementary school boys. Penile length was measured from symphysis pubic to tip of the glans using a rigid ruler by stretching the penile or stretching penile length (SPL) and identified the micropenis condition. Results: There were 203 boys with age ranging from 6 until 13 years old. Mean penile length on all age groups are slightly above mean - 2.5 SD. Micropenis was found in 52 boys (22.6%), half of them are in 9 to 11 years old groups. Most subjects are Sundanese. Conclusions: The mean penile length in all age groups were shorter than the reference that we used. Majority of the subjects in our study were Sundanese, this finding suggest that Sundanese children has a shorter penile length than a subject used in our reference study. Micropenis case findings in this study turned out to be quite large and surprising.

**Keywords:** Penile Length, Micropenis, Elementary school boys

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## INTRODUCTION

The importance of penile length-for-age is very important in early recognition of disorders underlying abnormal penile size such as micropenis, disorder of sexual development and others. Micropenis is a very common condition that expressed parents worry during child's medical checkup, they are concerned that this condition may affect their child's fertility and may cause sexual problems in the future. Micropenis is defined as significantly small penile, as compared with penile lengths of age-matched normal males or the stretched penile length (SPL) less than 2.5 standard deviation mean for age group without any presence of any other penile anomalies (1-4). In order, to assess penile length in children, measurement should be made using a rigid ruler, gripping the glans firmly to stretched the penile to its full length, the distance from symphysis pubis to the tip of the glans disregarding the prepuce in the proper penile length (4). Stretched penile length (SPL) was first introduce by Schonfeld and Beebe in their seminal work determining standard penile length according to age (5). Gabrich et al in their study used real fully stretched flaccid length (RSLmax) from the pubopenile skin vertex, depressing the pubic fat, to the extrimity of the

glans with the ruler or pachymeter placed against the dorsal part of the penile as a recommendation for penile anthropometric measurement (6).

The etiology of true micropenis is a hormonal abnormality occurring after 12 weeks of gestation. the causes can be divided into three broad groups: hypogonadotropic hypogonadism (pituitary/hypothalamic failure), hypergonadotropic hypogonadism (primary testicular failure) and idiopathic (2,7). In our society, the awareness of micropenis condition is very low because of social-cultural factor, religion and others. It's difficult to gain data about the incidence of micropenis especially in elementary school boys. So, we started to collect the data about penile length in these age group (6 to 14 years old boys).

## MATERIALS AND METHODS

This is a descriptive study to find out the penile length in elementary school boys. The data was collected at 2 elementary school (Tempuran 1 and 2) in Karawang Regency West Java province Indonesia, with a permission and consent to parents and the boy. Penile length was measured from symphysis pubic to tip of the glans using a rigid ruler by stretching the penile or SPL disregarding the prepuce in the proper penile length (4,5). Descriptive data for mean penile length are shown by the following age groupings: 6-7 years, 7-8 years, 8-9 years, 9-10 years, 10-11 years, 11-12 years, 12-13 years

and 13-14 years. All measurement was performed by a 10 standardized medical doctor in a private room. Final penile length in each subject obtain from an average of 3 measurements. We excluded the boy with other anomaly in genitalia and who disagree to join this study (parents and/or the boy). This study has been approved by ethical committee of Hasan Sadikin Hospital as a part of research grant from Padjadjaran University.

**RESULTS**

There were 203 boys included in this study, ranging from 6 until 14 years old. The characteristics of the subject are described in Table I. Most subject came from 10-11 years old groups 54 (26,6%) and we have only 1 subject from 6-7 years old group as a smallest subject. In Table II shows the overall normal range of stretched penile length (cm) in male subjects that we use as a standard in this study (5,8).

**Table I: Characteristics of subjects**

Characteristics	n=203(%)	Race, sundanese (n)
Age groups, n(%)		
6-7 years old	1 (0.4)	1
7-8 years old	14 (6.8)	12
8-9 years old	18 (8.8)	14
9-10 years old	39 (19.2)	30
10-11 years old	54 (26.6)	48
11-12 years old	32 (15.7)	29
12 - 13 years old	27 (13.3)	20
13 - 14 years old	18 (8.8)	17

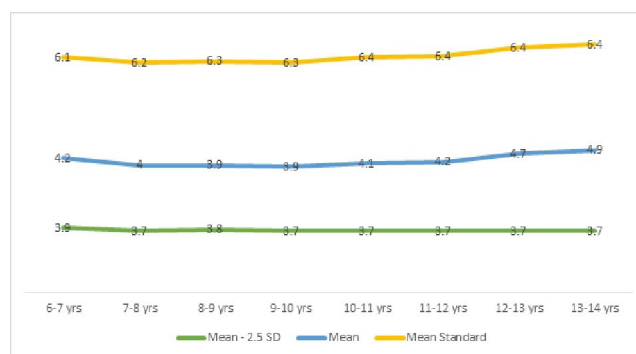
**Table II: Normal range of stretched penile length**

Age	Mean ± SD (cm)	Mean - 2.5 SD (cm)
Newborns		
Neonate, 30-wk gestation	2.5 ± 0.4	1.5
Neonate, 34-wk gestation	3.0 ± 0.4	2.0
Children		
0-5 months	3.9 ± 0.8	1.9
6-12 months	4.3 ± 0.8	2.3
1-2 yrs	4.7 ± 0.8	2.6
2-3 yrs	5.1 ± 0.9	2.9
3-4 yrs	5.5 ± 0.9	3.3
4-5 yrs	5.7 ± 0.9	3.5
5-6 yrs	6.0 ± 0.9	3.8
6-7 yrs	6.1 ± 0.9	3.9
7-8 yrs	6.2 ± 1.0	3.7
8-9 yrs	6.3 ± 1.0	3.8
9-10 yrs	6.3 ± 1.0	3.8
10-11 yrs	6.4 ± 1.1	3.7
Adult	13.3 ± 1.6	9.3

Overall penile length in all age group are described in Table III. In total we found 52 (25.6%) boys with micropenis, a half of micropenis subjects was found on 2 age groups (9-10 and 10-11 years old). Minimum penile length in this age groups is 2 cm and 3 cm. Mean penile length in all subject as shown in Figure 1, in between mean standard and mean - 2.5 SD.

**Table III: Overall penile length**

Age	Mean (cm)	Minimum (cm)	Maximum (cm)	Micropenis, n (%)
6-7 yrs	4.2	-	-	-
7-8 yrs	4	2.5	5	3 (5)
8-9 yrs	3.9	3	6	9 (17)
9-10 yrs	3.9	2	6	13 (25)
10-11 yrs	4.1	3	6	13 (25)
11-12 yrs	4.2	2.5	5.8	9 (17)
12 - 13 yrs	4.7	2.8	7.5	3 (5)
13 - 14 yrs	4.9	3.2	7	2 (4)



**Figure 1: Mean penile length in this study (blue line) compare to mean standard and mean -2.5 SD value**

**DISCUSSION**

Until now, this is the only study on penile length in elementary school boy from West Java Indonesia. We found that the mean penile length in all age groups were shorter than the reference that we used. Majority of the subjects in our study were Sundanese, this finding suggest that Sundanese children has a shorter penile length than a subject used in Schonfeld study (5).

The mean penile length curve is started to slightly increase in an age groups older than 8 years old, the gap between it is only 1 cm. Teckchandani et al in their study in asian indian prepubertal boys found that the growth of a penile length is much slower in children older than 4 years old (9). Jaiswal et al had a same curve of penile length with our study, they found that penile length curve increasing significantly after 9 years old (10). One study in Egypt reveal that the mean SPL increased with age from newborn to 5 years, from 5 years old until 10 years old showed slower growth rate and then increase significantly after 10 years old (11).

A study in Korea shown that current penile length has increased compared with those from 25 years ago in

line with increasing of an average height, body weight and testicular size in Korean boys (12). An Iranian study showed that penile length was correlated with height, but not with weight (13). In contrast with a Turkish study that showed a weak correlation between them (14). In this study we did not include weight and height of the subjects. Fifty-two subjects (22.6%) boys had a micropenis. The incidence of micropenis in Indonesia does not yet exist, but Nelson in their study in United States of America found that incidence of micropenis known to be 1.5 of 10.000 male newborns (15).

Penile length in children is differs among age dan race/ethnic groups. Many studies from various countries have attempted to construct penile length reference, for example Wang has conduct a large study sample including 2974 China children and adolescent to develop the first age-specific smoothed percentile curves for penile length, penile diameter and testicular volume for Chinese boys (16). In our study, we did not divided the subject based on race or ethnic, since Indonesia is comprised of many ethnic populations, although majority of the subjects is Sundanese. A relatively small sample size compare to other studies is a limitation of our study. And also, we did not measure height, weight and stage of puberty that may affect penile length. The data from this study could be the beginning of other studies on penis length and micropenis especially in Sundanese or Indonesian children in general.

## CONCLUSION

In this study, we found mean penile length in elementary school boys in Karawang Regency, West Java Province Indonesia is between mean standard and mean - 2.5 SD value. There were 52 (22.6%) boys had a micropenis, half of them are in 9-11 years old groups. The mean penile length in all age groups were shorter than the reference that we used. Majority of the subjects in our study were Sundanese, this finding suggest that Sundanese children has a shorter penile length than a subject used in our reference study.

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