

## Original Article



# Reference Range of Penile Dimensions of the Adult Male and Correlation with Somatometric Parameter in a Tertiary Care Hospital of Bangladesh: A Prospective Study

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### Abstract

**Background:** The penile size has always been a symbol of manliness and pride. Many adult think that their penile length are not adequate and goes to different medical disciplines. There is no study in Bangladesh regarding penile size and somatometric parameter. The results will help in counseling patients afraid of their penile size, also in clinical and research purpose. **Objective:** To assess the penile size in different dimensions such as flaccid, stretch, and girth (circumferential) penile length and its relationship with age, height, weight, and BMI. **Materials and Methods:** The study was conducted on 300 adult males with no penile abnormalities. Length of penises in flaccid, stretch, and circumference were measured. Age, height, weight were measured and BMI (body mass index) was calculated. Correlation of penile dimensions with somatometric parameters were analyzed. **Results:** The average flaccid penile length (FPL) was 7.81 cm, the mean stretch length (SPL) was 11.21 cm, and the mean circumferential length (CPL) was 8.65 cm. The penile length in the three dimensions was significantly different from each other ( $p < 0.05$ ). A significant correlation was found among the three penile dimensions ( $p < 0.05$ ). **Conclusion:** The penile size in different dimensions can be varied with age, height, weight and BMI.

**Key words:** Penile dimensions, Somatometric parameter, BMI

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### Introduction

In history, the penile size of a man denotes masculinity, power, and the visible form of a man's ego. A larger penile size is an indicator of pride and good feeling than a smaller penis. Psychologically some men want their penile size to be bigger to feel superior to others or satisfaction for coitus. There are many cultural examples of these types of penile elongation. The perception of having a large penis is often linked to higher self-esteem.<sup>1</sup> Penis panic is a form of mass hysteria. They believed that their penis is gradually shrinking, which is known as genital retraction syndrome or Koru.<sup>2</sup> In different cultures

perceptions of penile sizes are different.<sup>3</sup> Some prehistoric sculptures depicted male figures with exaggerated erect penises.<sup>4</sup> In Greek mythology, Priapus was a minor rustic fertility god, protector of livestock, fruit plants, gardens had an impossibly large erect penis.<sup>5</sup> The Argonautica is a Greek epic poem written by Apollonius Rhodius stated that, when Priapus mother Aphrodite, the goddess of love and beauty, gave birth to Priapus, she was so horrified by the penile size of her child. Later on, Priapus used his big penis to aid in the growth of plants and others. So, many stories have added in histories regarding the penile size. In the ancient Indian Kama Sutra, they divided men into three classes based on penile size, hare size 5-7 cm

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when erect, bull size when 10-15 cm, and horse size when 18-20 cm. There are many published reports regarding the relationship between penile size, height, weight, and BMI. Some believe that size of a penis is directly proportional to the height of a man.<sup>6,7,8</sup> Because of these, it is necessary to investigate the relationship between BMI, height, and weight in comparison with penile size among Bangladeshi men. There is no study in Bangladesh regarding penile size and correlation of penile size with somatometric parameters. The purpose of this study was to determine the average penile length in 3 dimensions, flaccid, stretched, and circumference penile girth of the subject in the Bangladeshi population and to find out somatometric parameters relationship. The result will help in counseling patients those afraid of their penile size and want penile augmentation.

## Materials and Methods

To achieve the aim of this article we measured flaccid, stretch, and circumferential penile lengths, recorded heights, and weights, calculated BMI and, documented the age of all subjects who came to the Urology out-patients department of Khwaja Yunus Ali Medical College Hospital, Enayetpur, Sirajganj, Bangladesh from April 2016 to January 2019. There were 300 Bangladeshi males aged 17 to 70 years. During clinical examination under sufficient light on the patient examination table with the subjects lying on the bed and with the penis held parallel to the floor. The flaccid Penile length(F-PL) was measured with a measuring tape with millimeter marking along the dorsal side of the penis extending from the pubo-penile skin junction to the tip of the glans, the same way stretched penile length(SPL) was measured holding the penis in

the stretched condition. Circumference penile length (CPL) was measured at the middle of the shaft. If there was a foreskin, the foreskin was retracted back and the measurements were taken as before. Heights and weights were measured by Stadiometer and Weighing Scale respectively. Body Mass Index (BMI) was calculated as the ratio of weight to the square of height( kg/m<sup>2</sup>). All the measurements were taken by the same examiner to reduce inter-observer error. Those excluded from the study include men with a history of penile pathology or penile congenital anomalies. The SPSS was used for statistical analysis. Results were computed using descriptive statistic and Pearson's formula. A p-value less than 0.05 were considered significant. The correlation among penile length and weight, height, age, and BMI were determined by Pearson's correlation formula. (p<0.05). Age of the subjects was categorized into 10-year intervals with number of subjects as shown in table I.

## Results

The FPL, SPL and CPL with range of length were 7.81 +/- 1.23 SD (3.5 – 11.5), 11.21 +/- 1.27 SD (7.5 – 15) and 8.61 +/- 0.82 SD (6 – 11) cm respectively. Mean age(yrs), BMI(kg/cm<sup>2</sup>), height(cm), weight(kg) was 30.54 +/- 9.33SD, 21.45 +/- 3.64 SD, 163 +/- 6.73 SD and 56.79 +/- 10.31 SD respectively. Characteristics of the study subject were shown in table I. Table II shows the descriptive statistics of the penile dimensions of the subject. Table III shows the Pearson's coefficient of measurement of the relationship between age, penile length, height, weight and BMI.

**Table I :** Characteristics of the study subjects

Characteristics	Mean	Range	Variance	CI
Age (yrs)	30.54 +/- 9.33 SD	17 - 70	86.98	30.54
Weight (Kg)	56.79 +/- 10.31 SD	34 - 101	106.30	50.79
Height(cm)	163 +/- 6.73 SD	123 - 183	45.32	45.32
BMI	21.45 +/- 3.64 SD	13 - 36	13.23	21.45

Abbreviations : Min= minimum, Max= maximum, SD= Standard Deviation, CI= Confidence Interval

**Table II:** Descriptive statistics of the penile length of Bangladeshi male

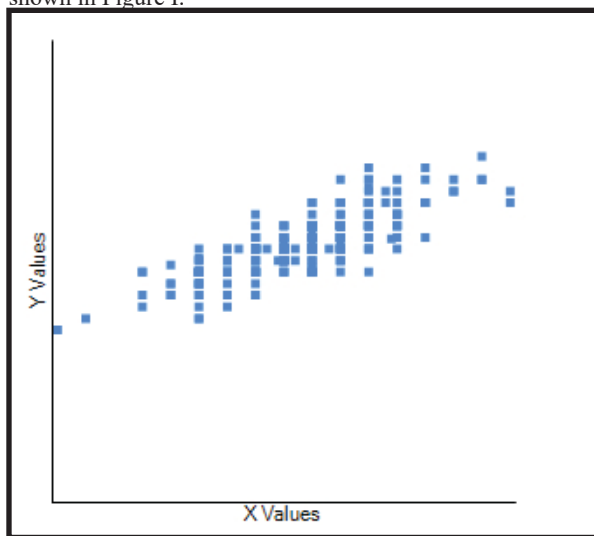
Penile Dimension(cm)	Mean	Range	Variance	CI	% of average height
FPL	7.81 +/- 1.23 SD	3.5 – 11.5	1.51	7.81	4.79 %
SPL	11.21 +/- 1.27 SD	7.5 - 15	1.62	11.21	6.88 %
CPL	8.61 +/- 0.82 SD	6 – 11	0.66	8.61	5.31 %

**Table III:** Pearson’s correlation coefficient(r) of measurement of the relationship between penile length , age, height, weight, and BMI

Penile Dimension(cm)	Age	Height	Weight	BMI	Mean length (cm)
FPL	r=0.1032 P=0.0742	r=0.0415 p=0.4739	r=0.2414 p=0.0000	r=-0.2396 p=0.0000	7.81
SPL	r=0.032 P=0.5808	r=0.0606 p=0.2954	r=-0.1863 p=0.00121	r= -0.2039 p=0.0003	11.21
CPL	r=0.0803 P=0.1653	r=0.1687 p=0.0033	r=0.2764 p= <0.0000	r= -0.2039 p=0.0003	8.65

\*If the Pearson’s coefficient value lies between +/- 0.50 and +/-1, then it is said to be a strong correlated.

FPL is smaller than SPL, and CPL with significant difference (p<0.05) . FPL and SPL were strongly positive correlated shown in Figure I.



**Figure I :** Flaccid and stretch length are strongly positive co-related X=Flaccid length, Y= stretch length. R=0.7995, p<0.005.

We calculated Pearson’s correlation of height, weight, BMI, and age with three penile dimensions. Weight with FPL and SPL was weak negative correlated but the result was significant at p<0.05 ( R= - 0.2414, R= - 0.1863 respectively). Weight and CPL were weak positive correlated and the result is significant (R=0.2764, p<0.00001). Height was weak positive correlated with FPL, SPL, and CPL but result was not significant (p<0.05, R=0. 0415, 0.0606, 0.1687 respectively) except CPL, which was significant at p<0.05. (R=0.1687). BMI was negatively weak correlated with FPL, and SPL with significant result (R= -0.2396, -0.2039, <0.05). BMI was weakly positive correlated with CPL with a significant result (R= 0.1032, p< 0.05 ). Age was weakly positive correlated with all penile dimension

(R=0.1032, 0.032, 0.0803 respectively) without significant result. The average penile dimension in each age-wise group of subjects is shown in table IV, V, VI,VII,VIII, IX.

**Table IV:** Age (17 to 20 yrs.) wise penile dimension (41 subjects).

Variables	Mean(cm)	Range(cm)	Variance	CI
FPL	7.77 +/- 1.07 SD	6-9.5		7.77
SPL	11.40 +/- 1.40 SD	9.5-14.5	1.95	11.40
CPL	8.37 +/- 0.82 SD	6.4- 10	0.68	8.37

**Table V:** Age (21 to 30 yrs.) wise penile size (162 subjects)

Variables	Mean(cm)	Range (cm)	Variance	CI
FPL	7.79 +/- 1.24 SD	4-11.5	1.54	7.79
SPL	11.24 +/- 1.27 SD	8-15	1.63	11.24
CPL	8.68 +/- 0.84 SD	6-11	0.71	8.69

**Table VI:** Age (31 – 40 yrs) wise penile size (87 subjects)

Variables	Mean(cm)	Range	variance	CI
FPL	7.74 +/- 1.25 SD	3.5-10.5	1.56	7.74
SPL	11.17 +/- 1.30 SD	7.5- 15	1.68	11.17
CPL	8.69 +/- 0.77 SD	7.5-11	0.59	8.69

**Table VII:** Age (41 – 50 yrs) wise penile size (26 subjects)

Variables	Mean(cm)	Range	Variance	CI
FPL	8.29 +/- 1.50 SD	5.5-11.5	2.25	8.29
SPL	11.41 +/- 1.25 SD	8.5-14	1.59	11.41
CPL	8.70 +/- 0.66 SD	7.5 - 10.5	0.44	8.70

**Table VIII:** Age (51 – 70 yrs) wise penile size (11 subjects)

Variables	Mean (cm)	Range	Variance	CI
FPL	8 +/-1.08 SD	6 – 10	1.18	8
SPL	11.45 +/- 1.03 SD	6 - 10	1.07	11.45
CPL	8.8 +/- 0.87 SD	7– 10	0.75	8.8

## Discussion

The percentage of men worried about having short penile size may increase soon as a result of messages coming from the facebook era, where many herbal medicine companies and many devices marketed by them claiming to be able to increase penile size.<sup>7</sup> In a study with 250 patients complaining of a small penis, 36% said that their concerns regarding penile size began after seeing pornography.<sup>9</sup> In 1948, Kinsey published an article where he found that the average FPL and SPL was 9.7 cm and 16.74 cm respectively.<sup>10</sup> This article found a result, that examines the average length of the penis in different penile dimensions ( FPL-7.81+/-1.23 SD, SPL- 11.21+/-1.27 SD, and CPL-8.65+/-0.82 SD). Penile length should be taken in 3 dimensions: flaccid, stretched, and girth (circumference). These measurements should be made by a single health professional, not with self-reported data. We took our measurement with one person. Few research articles suggested that measurements of a stretched and flaccid penile length provide a reliable erect size, so no need to measure penile length during erection.<sup>11,12</sup> All the above studies tried to determine the normal penile length. The different penile lengths to their studies reflects in different populations and with different techniques of measurement. In our study, height was positively correlated with penile dimensions in all age groups, although the relation was weak and result was not significant. The average height of Bangladeshi populations is less than the height of Middle East or European population. The current study is on the Bangladeshi population, that's why the average penile length was found to be different from the above studies due to different populations and different heights. Some studies have investigated the relationship between the different penile dimensions and somatometric parameters. In one study they found a positive correlation between somatometric parameters ( height, weight, BMI, and age) and penile length.<sup>13</sup> We found height and CPL correlation was weakly positive with a significant result ( $p < 0.05$ ), which means if the height increases the CPL will increase. In the above study, they found a positive correlation with BMI, but our study revealed BMI was negatively correlated with FPL and SPL that means when BMI increase FPL and SPL will decrease and CPL will increase. In one study authors found a significant correlation among age, height, index finger length, and penile dimensions, but no significant effect of waist/hip ratio or weight.<sup>14</sup> In our study, weak positive correlations were found among age and weight with CPL, but weak negative correlations with FPL, and SPL. There was a weak positive correlation between penile dimensions versus height and age but a negative correlation among BMI with FPL and SPL and positive correlation with CPL. Kinsey et al. studied about penile length.<sup>15</sup> While another large study published about penile length.<sup>10</sup> No study has been done previously in

Bangladesh. All the studies tried to determine normal penile length. Different studies had different penile length. These variability among penile length reflects the diversity of populations and different measurement techniques. Many men go to different medical disciplines for confusing their penile size, and the number is increasing. As a result, more studies need to focus on this topic, regarding the penile size. Why do different subjects have different penile lengths? The answer to this question cannot be explained fully without investigations of serum androgen levels. We believe that our results concerning different age groups may open a new door for new studies. This result will help in counseling the patients afraid of their penile size. Concerning consultants must know the normal penile length for counseling with their patients. In this study, the sample size is sufficient to be considered reasonable for an equivalent Bangladeshi population. Our results suggest that somatometric parameters such as height, weight, BMI, and age are related to the penile size, even that this relationship is not of statistical significance. Further study should do with a large population to provide more information.

## Conclusion

Most men have no real idea regarding normal penile length, so they become worried and ultimately go to different medical specialties for enlargement of their penis. During our study we have seen that those complaining about their small penile size, usually have a normal size penis. In this study there was positive correlation with height, weight (only with CPL) and age, negative correlation with BMI (only with FPL, and SPL), positive correlation with CPL. Perception of a small penis can negatively influence mental satisfaction and sexual quality of life. It may be useful in clinical and therapeutic settings to counsel men and for academic research. We believe that further studies would provide more information about this relationship.

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