



AN ANTHROPOMETRIC STUDY OF SEXUAL DIMORPHISM FROM MORPHOLOGICAL LENGTH OF HUMERUS IN THE POPULATION OF WEST BENGAL

Anatomy

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ABSTRACT

Qualitative and quantitative studies of various bones has had been the pivot of sex-determining tools in the human skeleton. The present study tries to shed light on the potential efficiency of improving sex estimation using the humerus. The study was carried out in Department of Anatomy, Medical College, Kolkata upon 100 dry Humeri of unknown age and stature, according to the side and sex obtained from the population of West Bengal. 50 humeri from right side (25 male+25 female) and 50 from left side (25 male+25 female) were taken into account. Humeral length was estimated by following the morphological length using standard technique with the help of osteometric board. The morphological length was read off on the scale. Analysing the results it is seen that significant sexual dimorphism exists in morphological length in both left and right sided Humeri.

KEYWORDS

Morphological Length of Humerus, Sexual Dimorphism, Sex estimation from human skeleton

INTRODUCTION

Traditional methods of sex determination in the human skeleton include qualitative and quantitative analysis of the cranium, pelvis, and long bones. Qualitatively, sexual dimorphism is reflected by larger size in males than in females. Quantitatively, previous research has shown to varying degrees the effectiveness of long bones in determining the sex of an unknown individual. These studies have demonstrated the utility of estimating sex from the morphological length of humerus. Rather than examining the individual bone, the present study explores the potential efficiency of improving sex estimation using the humerus, a bone of upper extremity.

MATERIALS AND METHODS

The study was carried out in Department of Anatomy, Medical College, Kolkata on 100 dry Humerus of unknown age and stature, obtained from population of West Bengal, according to the side and sex (determined on the basis of sex determining reference values of range of morphological length, epicondylar width and others according to Krogman¹. The samples were obtained by simple random method and a qualitative study has been performed over a period of 1 year. 50 humeri from right side ((25 male+25 female) and 50 from left side (25 male+25 female).

Instrument used:

- Osteometric board.

Following parameter has been studied:-

- Morphological length of humerus

Length of the humerus was determined by following morphological length using standard technique with the help of osteometric board. In the board there is an inlaid metric scale with a cross-piece attached at one end and a second cross-piece parallel to the first slides back and forth along the main board, and the bone to be measured is shut in between the two. The morphological length was read off on the scale.

All measurements are repeated by two independent observers to identify any intra or inter observer variability. Data collected by this method has been tabulated according to side and sex and has been statistically analysed.



Figure-1: Morphological Length of Humerus being measured on the Osteometric board

RESULTS AND ANALYSIS

TABLE 1: Mean and Standard deviation (S.D.) of Morphological length (Humeri) in Male and Female

VARIABLES	LEFT (MALE)		RIGHT (MALE)		LEFT (FEMALE)		RIGHT (FEMALE)	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
LENGTH (in cm)	31.57	0.97	31.24	1.22	29.42	1.15	29.26	1.15

Table 2: Sexual dimorphism in humerus

Variables	T value	P value	Comment
Length of left humerus	5.75	< 0.5	Significant
Length of right humerus	3.14	< 0.5	Significant

Analysing the results using the Student T-test it is seen that significant sexual dimorphism exists in morphological length in both left and right sided Humeri (t-value in left humeri in respect to morphological length is 5.75 and p-value is <0.05- significant-value in right side in morphological length is 3.14 and p value is <0.05.)

Table 3: Distribution showing sexual dimorphism of morphological length of left and right side in female humeri

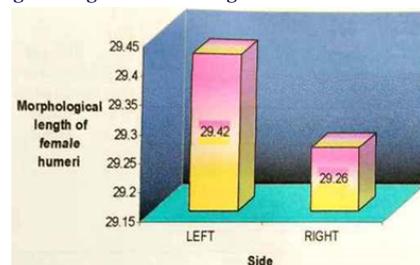
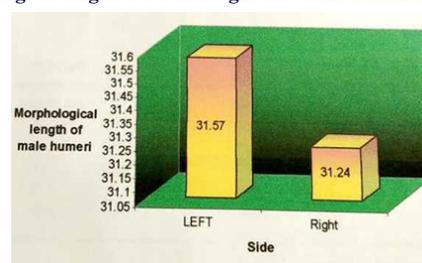


Table 4: Distribution showing sexual dimorphism of morphological length of left and right side in male humeri



DISCUSSION:

In the study it was observed that significant sexual dimorphism exists regarding morphological length in both right and left sided humerus.

Many researchers like Campbell. L et al² and Iscan Yasar M. et al³ have found similar results in different parts of the world. However, the present research explores the potential efficiency of improving sex estimation using humerus, an upper extremity bone.

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