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Anthropological characteristics of young Nigerian adults

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ABSTRACT: Anthropological analyses of Nigerian adult in the age bracket 25-30 years were conducted. The investigation considered height, weight, waist circumference, auricular morphology and carrying angle in both sexes. The aim was to characterize these parameters and establish any correlation among them.

Eight hundred and twenty subjects were considered. These comprised 420 males and 400 females. Average values of 174 ± 0.1 cm, 64.0 ± 0.2 kg, 31.0 ± 0.1 cm and $169 \pm 2.67^\circ$ for height, weight, waist circumference and carrying angle respectively, were recorded for males. Means values of 165 ± 0.2 cm, 55.0 ± 0.1 kg, 30.0 ± 0.1 cm and $164 \pm 4.00^\circ$ respectively were obtained for females. Statistical analysis for correlation coefficient, showed no correlation among the parameters taken, for males. However, some degree of correlation existed for females, indicating that height, weight and waist size may have some bearing on carrying angle.

Gross examination of the auricle showed that 42% of the males had free lobules, compared to 47% in females. Attached lobules occurred in 58% and 53% of males and females respectively, while depressed and protruded antihelices were presented in 8% and 92% of males respectively and 12% and 88% respectively of females. The palpebral line corresponded to the apex of helix in 69% of males and 76% of females. The remainder either lies a little above or below this line.

We therefore conclude that Nigerian males have higher percentages of attached lobules, protruded antihelix and curved helix compared to the females. Conversely, more females have helical apices located in line with the palpebral fissure. The auricular features reported for females probably help to enhance their feminine and cosmetic values.

Introduction

Variation is the basic law of biology. Anatomical and anthropological features of a population of living entities always vary. Such features include height, weight, waist circumference, hip circumference, carrying angles, interpupillary distance, morphology of the pinna, and mid-upper arm circumference. The features presented in an individual depend on factors which may be genetic, chemical (including drugs) cosmetic, environmental, occupational and accidental [1,2,3,4,5,6]. The present studies focused mainly on the anthropological features of the auricle (pinna), and the carrying angle of the study population. Height, weight and waist size were also taken into consideration, and correlated with the carrying angle. Reports of investigations on the above parameters had been given on populations in Eastern Nigeria, Western Nigeria, Malawi and South Africa [7, 8, 9, 11, 12, 13].

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The carrying angle differs in individuals. It is produced by the medial edge of the trochlea of humerus which projects beyond the lateral edge. Similarly, close observations show variations in the anatomical parts of the pinna in different individuals of a given population. Very few detailed reports are available on the anthropometric analyses of the auricle and carrying angle among Nigerians. We therefore conducted the present investigations to characterize the anthropological features of auricle and carrying angle of elbow among Nigerian young adults.

Subjects and Method

The study population included eight hundred and twenty (820) students of the University of Ilorin, Nigeria. Their ages ranged between 25 and 30 years. The population represented different ethnic groups distributed across Nigeria. It comprised 420 males and 400 females. The subjects were chosen at random and excluded those with physical deformities.

Morphology of the auricles

Photographs of the auricle were taken using the conventional camera. Shots were taken at close range to allow for proper identification of the basic anatomical features of the auricle. Both the medial and lateral auricular surfaces were considered. Printing of the films was done to a size of 5 x 7 inches. The lobules, helix and antihelix were analysed accordingly. The positions of the auricles relative to the palpebral line, eyebrow level and a level just below palpebral line were likewise taken into consideration. The parts of the auricle used for this purpose were the highest points of the helix. This was projected to the palpebral line, the eyebrow level or level just inferior to the palpebral line.

Estimation of carrying angle

The carrying angle was measured using the goniometer. It was taken to be the obtuse angle (directed laterally) between the arm and forearm when the elbow joint was fully extended and the forearm supinated (Fig. 1).

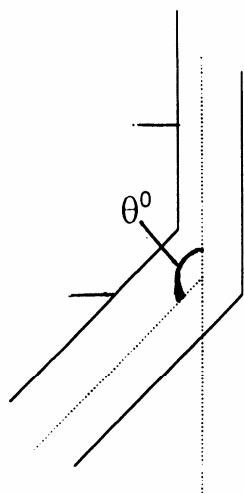


Fig. 1: the carrying angle between the arm and forearm (elbow fully extended and forearm supinated)

Height, weight and waist circumference

The waist circumference, height and weight were estimated as described by Msamati and Igbigbi (9).

Statistical analysis of data

Data obtained were analysed using the Analysis of Variance (ANOVA) to test the significance of the results. Correlation coefficient was equally estimated for the values of the parameters measured.

Results

Table 1: Prevalence of the variants of the anatomical features of the auricles.

Anatomical features	MALE			FEMALE		
	n	N	%	n	N	%
Everted helix	38	420	9	28	400	7
Curved helix	382	420	91	372	400	400
93depressed antihelix	34	420	8	48	400	12
Protruded antihelix	386	420	42	352	400	88
Free lobule	176	420	42	188	400	47
Attached lobule	244	420	58	212	400	53

Table 2: Positions of the auricle relative to the eyebrow, palpebral fissure and level below the palpebral fissure.

Relative Position	MALE			FEMALE		
	n	N	%	n	N	%
Level of Palpebral	290	420	69	304	400	76
Level of eyebrow	34	420	8	48	400	12
Level below palpebral fissure	96	420	23	48	400	12

Discussion

Unlike most anthropological features, very few reports are available on the anthropological studies of the pinna among Nigerians. The anatomical parts of the pinna tend to vary in a population. The parts considered in the present investigation included the lobule, helix, antihelix and the position of the helical

apex relative to the palpebral line, eyebrow and a level below the palpebral fissure. The results indicated that males have more attached labules compared to females. The relatively higher percentage of free labules in females may be of cosmetic importance, as the lobule provided attachment for jewels. Mian et al (1994) studied the frequency distribution of adherent lobules among the Pakistans. They reported no significant difference in the values obtained for the study population [10]. Our findings indicated that the auricular helices appear curved in most Nigerians, with a higher incidence in females (93%) compared to males (91%). The curved appearance of the helix in higher percentage of females equally enhances their natural feminine features. The morphology of the antihelix is more of the protruded rather than the depressed type. Higher percentage of males present this feature. This form of antihelix (protruded form) is the commonly described anatomical feature for most subjects. The depressed form of antihelix (which occurs in lesser percentage of Nigerians) may arise from a deviation from the normal process of auricular moulding in intrauterine live. However the exact factor responsible is not yet established.

Table 3: Height, weight, waist size, carrying angle and correlation coefficient.

	MALE				FEMALE			
	Height (cm)	Weight (kg)	Waist size (cm)	Waist size (cm)	Height (cm)	Weight (kg)	Waist size (cm)	Waist size (cm)
Sample size	420	420	420	420	400	400	400	400
Mean	174.0	64	74	169.0	165	55.4	76.0	164
Mode	173.0	63	75	168	167	54.5	77.0	163
Median	173.0	63	74	169	165	54.8	76.0	163
Standard deviation	01	7.60	1.80	4.001	0.06	4.74	2.9	2.67
Correlation coefficient between carrying angle and other parameters	-0.270	0.009	-0.086		0.250	0.390	0.280	

With respect to the position of the helical apex relative to the palpebral fissure, Adeyemo et al (1998) reported that 3% of neonates studied had their helical apices located at level below the palpebral fissure. The average length of the auricle was given to be 3.2 (± 0.3)cm [14]. The present study indicated that 23% and 12% of Nigerian males and females respectively have their helical apices located below the level of palpebral fissure. The reason for the higher incidence of low set ear in adult is not fully understood. However, genetic and chemical factors (drugs) may predispose an individual to the occurrence of low set ear; in most individuals the helical apex corresponds to the level of the angle of the eye [15].

The mean carrying angle in the present study was estimated to be $164^\circ (\pm 4.00)$ and 169.62° for females and males respectively. The results compare favourably with those of Igbigbi (1990) [7]. They reported mean values of 164.55° and 169.62° for females and males respectively. In Caucasian males, the value was reported to be 163° [16]. This is lower than the values obtained for Nigerian males. Moore (1999) however reported a value of 170° for Canadian males, similar to the value for Nigerian male, as reported in the present study; this value was equally reported to be less in females when measured from the lateral aspect of the elbow [17].

The difference in the carrying angle between the sexes is due partly to the varying degree of prominence of the medial edge of the trochlea of the humerus which normally projects beyond the lateral edge. An additional factor is the obliquity of the superior articular facet of the coronoid process of ulna. Some other factors however would definitely contribute as discussed below.

The height, weight and waist circumference of the study population accorded well with previous reports. Adekolu-John reported mean height and weight of 169.0 cm and 58.3 kg respectively for males, and 158.0cm and 56.0kg respectively for females in the Kainji area of Nigeria (ages between 25-30 years [18]. These values compare favourably with those of the present studies, except for the weight of males which is lower in the Kainji Lake area. In the Lagos Metropolis, Johnson reported values of 167.6cm and

157.7cm for the mean height of males and females respectively and 58.5kg and 56.3kg respectively for weight (in the age bracket 15-44 years). These values are generally lower than the Ilorin value, except for the mean weight of the females. The reasons for these differences are not readily available, but geographical and nutritional differences may contribute [19].

Msamati and Igbigbi [9] studied the Malawian black population and reported average height of 168.25 \pm (5.98cm) and 154.78 (\pm 3.40)cm for the males and females respectively (ages between 25-30 years). Average weights of their subjects were reported to be 60.17 (\pm 5.87) for males and 59.38 (\pm 6.95)kg for females. These show that young black Malawian adults are shorter and of lesser weight than young Nigerian adults. These differences may be due to genetic and nutritional factors. Besides, the average waist circumference in young Nigerian females (76 \pm 2.9cm) exceeds that of the males (74 \pm 1.8) of the same age bracket (25-30 years). These are similar to the values obtained for the young black Malawian adults of similar age bracket.

Values obtained for the correlation coefficient between carrying angle and other parameters (height, weight and waist circumference) indicated little or no correlation. In males, no correlation existed between carrying angle and other parameters. However, some degree of correlation existed between carrying angle and height (0.25), weight (0.39) and waist circumference (0.28) in females. These values, though almost negligible, may indicate that height, weight and waist circumference have some influence on carrying angle and may partly be responsible for the smaller value in females and the differences in these values between the two sexes.

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