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Original Research Article

Cross-Sectional Study of Hairline Shape among the Idoma People of Benue State, Nigeria

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Abstract: *Introduction*: There are certain basic facial features such as the hairline shape, which is a prominent feature on the forehead, that are considered to be morphogenetic and useful anthropologically in identifying individuals, family ties, and differentiating tribes or races from each other. The pattern of the curved hairline is also referred to as the "widow's peak." The hairline shape can be broadly classified as being straight or curved (widow's peak) in shape. People with curved hairlines (widow's peaks) have prominent v-shaped hairlines; this structure can be used as a distinguishing characteristic of a people, or tribe, in anthropology. The dearth of information on the pattern of hairline shape informed the study on the Idoma people of Benue State, Nigeria. *Materials and Methods*: The study was community-based, descriptive, and cross-sectional with a sample size of 401. Data was collected using a closed-ended questionnaire that was administered by an interviewer following an examination of the hairline shape. *Results and Discussion*: The distribution of hairline shape amongst the participants was thus: curved 267 (66.6%), and straight 134 (33.4%). There were no significant socio-demographic characteristics among participants (p > 0.05). *Conclusions*: The study indicated that 2 in 3 people in the population have a curved hairline. While about a third of the sampled population had a straight hairline. The distribution of hairline shape with respect to gender showed the curved hairline shape was predominant over the straight in both genders. The ratio of curved to straight hairlines (2:1) was seen in both genders. The most plausible explanation for the common occurrence of a curved hairline over a straight one could be genetic input.
Keywords: Curved, Straight, Hairline, Idoma, Nigeria.

INTRODUCTION

Three features, two of the skull and one of the scalp, define the forehead. The hairline, or margin of the region where hair on the scalp develops, denotes the top of the forehead. The supraorbital ridge, a bone structure above the eyes on the skull, delineates the bottom of the forehead. The temporal ridge, which connects the supraorbital ridge to the coronal suture line and farther, distinguishes the two sides of the forehead [1, 2]. But the brows are not a component of the forehead. The squamous portion of the frontal bone makes up the forehead bone [3, 4]. The facial nerve's temporal branch regulates the occipitofrontalis, procerus, and corrugator supercilii muscles, which are all overlaying muscles [2]. The sensory nerves of the forehead are located beneath the subcutaneous fat and have connections to the cervical plexus and the ophthalmic branch of the trigeminal nerve. The face nerve is connected to the forehead's motor nerves [2]. At the orbital rim, the supraorbital nerve, the ophthalmic branch of the trigeminal nerve, splits into two segments in the forehead. The occipitofrontalis muscle's surface is enclosed by one section, known as the superficial division. This gives the scalp's front border and the skin on the forehead sensibility. Frontoparietal sensation is provided by the deep

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division, which enters the occipitofrontalis muscle. The superficial temporal artery's left and right superorbital, supertrochealar, and anterior branches provide blood to the forehead [2].

There are certain basic facial features, such as the prominent hairline shape on the forehead, that are considered to be morphogenetic and useful anthropologically in identifying individuals, family ties, and differentiating tribes or races from each other. [4] The pattern of the curved hairline is also referred to as the "widow's peak." The hairline shape can be broadly classified as being straight or curved (widow's peak) in shape. People with curved hairlines (widow's peaks) have a prominent v-shaped hairline [5]. This hairline structure can be used as a distinguishing characteristic of a people or tribe, such as the Idoma in anthropology.

There is a dearth of information on the pattern of hairline distribution among the Idoma people of Benue State, Nigeria. Hence, this study was done to determine the pattern of hairline distribution among the people of the Idoma tribe.

There has already been research done on the pattern of hairline shape among Nigerian populations, ranging from widows' peak scalp-hair anomaly to frontal hairline to the inheritance pattern of hairline shape [6-12].

MATERIALS AND METHODS

Study Design: The study was community-based, descriptive, and cross-sectional.

Study Area: Otukpo is a town in Benue State, Nigeria, located in the Middle Belt Region of Nigeria. The Idoma tribe is the second largest tribe in Benue State. The people are predominantly Christian, and farming is the major occupation. It has a population of 266,411 people, according to the National Population Commission [13].

Sample Size

The calculated sample size was at least 384; a sample size of 401 was considered adequate for the study as it would ensure a normal distribution.

Sampling technique

The sampling technique for the study was multistage sampling. This was done in two stages: simple random sampling at stage 1; and stratified random sampling at stage 2. At stage 1, a list of all communities in Otukpo LGA was compiled and numbered sequentially, which served as the sampling frame for random sampling. The numbers corresponding to the names were written on small pieces of paper, and the papers were folded to conceal the number. The folded papers were then picked randomly and blindly using a table of random numbers. In each community, the research assistants located the centre of the community and spanned a ballpoint pen, following the direction of the pen to determine the street or compound to begin the sampling. In the street or compound, the houses were numbered sequentially, and a table of random numbers was used to select the first house to be sampled. At stage 2, consecutive sampling was employed to select every odd-numbered house for sampling until the sample size was achieved.

Study Instrumentation
Study Questionnaire

The research instrument was a self-created, closed-ended questionnaire that was adapted for use based on previous research on similar studies. Section A explored socio-demographic factors such as age, educational level, marital status, religion, tribe, and place of residence. Section B examined the presence or absence of dimples. The questionnaire was pre-tested among 40 volunteers who share similar characteristics with the study population. The number 40 corresponds with 10% of the desired minimum sample size. Modifications and adjustments were made to the procedure and the study instruments in response to the pre-test.

Procedure for Data Collection

Data for the entire study was collected over a period of two months. Two research assistants (both male) were trained to assist with the collection of data, and a data collection plan was drawn to serve as a guide. All participants in the study were assured of strict confidentiality and were not required to provide their names.

Data Analysis

The information obtained from the structured questionnaire was entered and analysed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics were carried out on socio-demographic data. The frequencies generated were presented using tables and charts. The chi-square test was used to examine the relationship between variables. A p-value of less than 0.05 was considered significant, and 95% confidence intervals were used as measures to determine the strength of the association.

Ethical Approval

Ethical approval was sought from the Research and Ethics committee of the Federal University of Health Sciences, Otukpo, before the commencement of the study. Written permission to conduct the study was obtained from the respective community CDCs and gatekeepers. A consent form was given to all participants, which they signed after reading the information provided about the nature of the study. The content of the consent form was clearly read out to participants who could not read in a language best understood by them. Participants were free to opt out of the study without penalty, and strict confidentiality was assured.

RESULTS

Table 1: Socio-demographic characteristics of participants

Socio-demographic characteristics	Frequency (n)	Per cent (%)
Age category		
18 -32	126	31.2
33 -47	213	53.1
48 -62	59	14.7
63 -77	4	1.0
Total	401	100.0
Gender		
Male	223	55.6
Female	174	43.4
I don't know	4	1.0
Total	401	100.0
Education		
No formal education	81	20.2
Primary education	3	0.7
Secondary education	78	19.5
Tertiary education	239	59.6
Total	401	100.0
Marital status		
Single/Never married	164	40.9
Married/Co-habiting	220	54.9
Divorced/separated	17	4.2
Total	401	100.0
Religion		
Christianity	286	71.3
Islam	73	18.2
Traditional	39	9.7
Others	3	0.7
Total	401	100.0

The most frequent socio-demographic characteristics were age category 33-47yrs with 213(53.1%), male gender with 223(55.6%), Tertiary education with 239(59.6%), Married/Co-habiting 220(54.9%), and Christianity 286(71.3%).

Table 2: Distribution of hairline shape

Pattern of hairline shape	Frequency	Per cent
Curved	267	66.6
Straight	134	33.4
Total	401	100.0

The distribution of hairline shape amongst the participants were thus: curved 267(66.6%), and straight 134(33.4%).

Table 3: Comparison of hairline shape distribution with socio-demographic characteristics

Socio-demographic characteristics	Pattern of hairline shape			X^2(p-value)
	Curved	Straight	Total	
Gender				
Male	146(36.4)	77(19.2)	223(55.6)	2.165(0.339)
Female	121(29.2)	57(14.2)	174(43.4)	
Total	267(66.6)	134(33.4)	401(100.0)	
Age category				
18 -32	84(20.9)	41(10.2)	125(31.2)	
33 -47	139(34.7)	74(18.5)	213(53.1)	2.236(0.525)
48 -62	40(10.0)	19(4.7)	59(14.7)	
63 -77	4(1.0)	0(0.0)	4(1.0)	

Total	267(66.6)	134(33.4)	401(100.0)	
Education				
No formal education	61(15.2)	20(5.0)	81(20.2)	
Primary education	3(0.7)	0(0.0)	3(0.7)	7.150(0.067)
Secondary education	55(13.7)	23(5.7)	78(19.5)	
Tertiary education	148(36.9)	91(22.7)	239(59.6)	
Total	267(66.6)	134(33.4)	401(100.0)	
Marital status				
Single/Never married	117(29.2)	47(11.7)	164(40.9)	2.840(0.242)
Married/Co-habiting	139(34.7)	81(20.2)	220(54.9)	
Divorced/separated	11(2.7)	6(1.5)	17(4.2)	
Total				
Religion				
Christianity	189(47.1)	97(24.2)	286(71.3)	
Islam	48(12.0)	25(6.2)	73(18.2)	1.683(0.641)
Traditional	27(6.7)	12(3.0)	39(9.7)	
Others	3(0.7)	0(0.0)	3(0.7)	
Total	267(66.6)	134(33.4)	401(100.0)	

There was no significant (p>0.05) socio-demographic characteristic among participants.

DISCUSSIONS

Summary of the findings

The most frequent socio-demographic characteristics were age category 33–47 years with 213 (53.1%), male gender with 223 (55.6%), tertiary education with 239 (59.6%), married/cohabiting with 220 (54.9%), and Christianity with 286 (71.3%). There were no significant socio-demographic characteristics among participants (p > 0.05).The distribution of hairline shape amongst the participants was thus: curved 267 (66.6%), and straight 134 (33.4%).

Implications of the findings

The study showed that about 2/3 of the sampled population had a curved hairline. The study also indicated that 2 in 3 people in the population have a curved hairline. While about a third of the sampled population had a straight hairline shape, 1 in 3 people in the population had a straight hairline shape.

The distribution of hairline shape with respect to gender showed the curved hairline shape was predominant over the straight in both genders. The ratio of curved to straight hairlines (2:1) was seen in both genders. The most plausible explanation for the common occurrence of a curved hairline over a straight one could be genetic input.

The study showed a higher prevalence of the curved hairline shape over the straight hairline. This study corroborates the findings of Nwaopara *et al*., [1]; Smith & Cohen [2]; LaDine *et al*., [3]; Anibor *et al*., [5]; Ordu *et al*., [7]; and Naz *et al*., [8], who reported in their study that the curved hairline shape was most frequent. They also attributed the high distribution and dominance of the curved hairline to the genetic makeup of the population.

CONCLUSIONS

The distribution of hairline shape amongst the participants was thus: curved 267 (66.6%), and straight 134 (33.4%). The study showed that about 2/3 of the sampled population had a curved hairline. The study also indicated that 2 in 3 people in the population have a curved hairline. While about a third of the sampled population had a straight hairline shape, 1 in 3 people in the population had a straight hairline shape.

The distribution of hairline shape with respect to gender showed the curved hairline shape was predominant over the straight in both genders. The ratio of curved to straight hairlines (2:1) was seen in both genders. The most plausible explanation for the common occurrence of a curved hairline over a straight one could be genetics.

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