

## Descriptive Study of Hairline Patterns amongst Etche People of Rivers State, Nigeria

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### Abstract

**Background:** This study investigates hairline patterns among the Etche people in Rivers State, Nigeria, with a focus on the distribution and variation in hairline shapes, lengths, and widths. **Materials and Methods:** Using a descriptive research design, data were collected from 227 participants through anthropometric measurements using a digital vernier caliper and measuring tape, assessing patterns by gender, age, and marital status. **Results and Discussion:** The results revealed that the most common hairline type was straight-lined (34.4%), followed by bell-shaped (30.8%) and widow's peak (30%). The least common hairline patterns were low and high hairlines, each observed in only 0.4% of participants. The average hairline length and width were 61.98 mm and 293.89 mm, respectively, with males displaying longer and wider hairlines compared to females. Singles also showed greater hairline dimensions compared to married individuals. **Conclusion:** No significant variation was found in hairline characteristics by religious affiliation. These findings contribute valuable anthropometric data on the Etche population and highlight the role of genetic and environmental factors in shaping craniofacial features. The study fills a gap in anthropometric literature and provides a foundation for further genetic, medical, and cultural studies on Nigerian ethnic groups.

**Keywords:** Descriptive Study, Hairline Patterns, Etche Population.

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### 1. INTRODUCTION

Hairline patterns are a distinctive craniofacial feature that varies widely across individuals and ethnic groups. These patterns—ranging from straight and bell-shaped to widow's peaks—are often inherited, making them valuable markers for genetic studies and population identification. In anthropological research, hairline patterns have proven useful in identifying familial connections and distinguishing cultural or ethnic identities [1]. The shape and positioning of the

hairline can provide genetic clues that connect populations, showing evolutionary adaptations to different environmental conditions and indicating ancestry [2].

However, there is a scarcity of research on hairline patterns among the Etche people, an Igbo subgroup primarily found in Rivers State, Nigeria. As the Etche community is distinct in culture and language, studying their unique physical characteristics could add significant value to Nigerian and African

anthropometric literature. By documenting the prevalence of specific hairline patterns, as well as hairline lengths and widths within this group, the current study aims to establish reference data that can support future medical, genetic, and cultural research on Nigerian ethnic groups.

### ***Variations in Hairline Pattern***

There isn't one type of hairline that can be considered "normal." A hairline, the area where the hair grows out of the head, can look very different from person to person. Some hairlines may be low or high, others have a widow's peak, but all hairlines are normal. As people age, it's common, especially in men,

for the hairline to recede, usually beginning around the temples. This process is gradual, and while an individual may be quick to notice it, it's typically not immediately noticeable to others [3].

Hairline patterns vary widely and are influenced by genetics, hormonal changes, age, and environmental factors [4].

Common types hairline patterns include:

1. **Low Hairline:** Hairlines that are closer to the eyebrows are considered low, and they can give the illusion of a smaller face and forehead.



**Fig. 1: Image portraying low hairline adapted from [www.instagram.com](http://www.instagram.com)**

2. **Middle Hairline:** A middle hairline may be what comes to mind when people say

"normal" hairline; they set toward the upper middle of the forehead.



**Fig. 2: Image portraying middle hairline, adapted from [www.Reddit.com](http://www.Reddit.com)**

3. **High Hairline:** A high hairline begins at the crown of the head, and both men and women with high hairlines may look like they have large foreheads.



Fig. 3: Image of high hairline adapted from [www.Reddit.com](http://www.Reddit.com)

4. **Straight-Lined:** A straight-lined hairline does not follow the natural curve of the head, but instead is a straight line in front with 90-degree angles on the sides.



Fig. 4: Image portraying straight lined hairline

5. **Bell-Shaped:** Bell-shaped hairlines, sometimes called rounded or oval, form an upside down U-shape with the lowest part by the temples and the crest of the bell in the middle of the forehead.

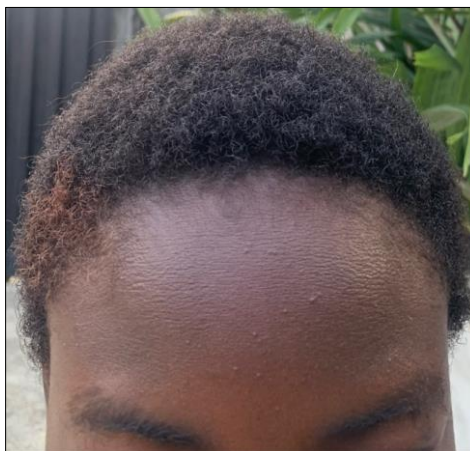


Fig. 5: Image portraying bell shaped hairline

6. **Triangular Hairline:** Similar to a bell-shaped except more angular than curved, a triangular

hairline starts lower on the temples and rises to a point in the center of the head.



Fig. 6: Image portraying triangular hairline adapted from [www.Gettyimages.com](http://www.Gettyimages.com)

7. **Uneven Hairline:** It's not uncommon to have an uneven hairline where one side is higher than the other or appears jagged or zig-zaggy.

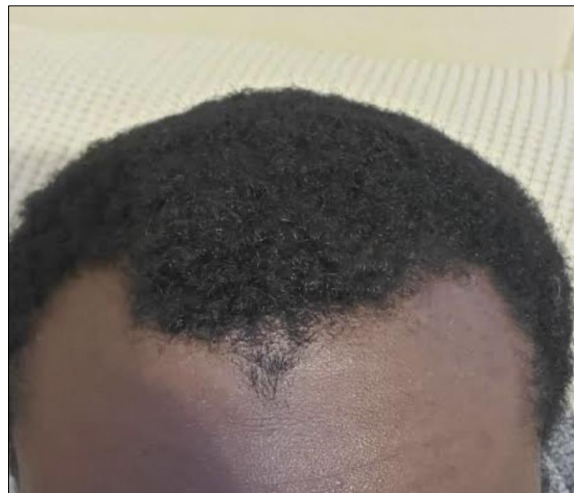


Fig. 7: Image portraying uneven hairline adapted from [www.Reddit.com](http://www.Reddit.com)

8. **Widow's Peak:** A widow's peak is a distinct point in the hairline in the center of the forehead; there are varying degrees of the peak. Widow's peaks are

slightly more common among males, although in recent studies the difference has been found to not be statistically significant.



**Fig. 8: Image portraying widow's peak**

## 2. MATERIALS AND METHODS

### 2.1: Research Area

The study was carried out in Etche local government of Rivers State. Etche is an indigenous Igbo group mostly found in the Niger Delta region of Nigeria. Okehi is the LGA Council Headquarters and political capital of Etche.

### 2.2: Research Design

This is a descriptive study of hairline pattern among Etchepeople in Rivers State. The study is meant to describe the distribution of hairline pattern of some subjects in as well as to determine the prevalent that exist among the population study.

### 2.3: Research Population Determination

Sample size for this study will be calculated by using the formula:

$$n = p(1-p) / e$$

Where,

$n$  = minimum required sample size

$z = 1.96$  at 95% confidence interval (standard normal deviation constant)

$p$  = prevalence of the research study in the population at 50%

$q = 1-p$

$e$  = margin of error, 5% (0.05)

Population = 359,500 people

Sample size = 384 people

### 2.4: Sample and Sampling Techniques

The study used a sample of 227 participants from the Etche local government area in Rivers State, Nigeria. The sample size was determined to achieve accurate representation.

The sampling technique used was convenience sampling as only individuals who were readily available and willing to partake in the research could participate.

### 2.5: Criteria for Subject Selection

#### *Inclusion Criteria*

- i. The subjects must come from Etche Local Government Area.
- ii. The subjects must be between the ages of 16 and above.

#### *Exclusion Criteria*

- i. Subjects with any form of physical deformity, suffering from alopecia (hair loss)
- ii. Subjects that underwent surgery due to hair loss or accidents.

### 2.6: Method of Data Collection

The aim of this study and procedure was explained carefully to each subject and consent was obtained. The hairline pattern was observed. Repeated measurements were taken to ensure accuracy. All variables were measured in millimeters (mm).

To calculate hairline length, the following steps were implemented:

1. **Glabella to Hairline Midpoint:** Place the measuring tape on the glabella and extend it upward to the midpoint of the hairline. Record the measurement (e.g., 60 mm).
2. **Sideburn to sideburn:** Place the measuring tape horizontally from the anterior edge of one sideburn across the forehead, aligning it with the frontotemporal recesses, to the opposite sideburn. (e.g., 280 mm).

### 2.7: Method of Data Analysis

The statistical analysis was done using statistical product and service solutions (SPSS) version 28. The descriptive statistics tool was used for descriptive statistics while Chi-square and independent T-tests were used to test for association between the variables. P-value set 0.05 with 95% confidence interval.

### 2.8: Ethical Consideration

Informed consent was gotten from all subjects that took part in the project. There was subject confidentiality whereby names & identity of the subjects was not to be disclosed. Ethical approval was sorted from the department of Human Anatomy at the Faculty of Basic Medical Sciences before commencement of the study. Also, a consent

form was given to all subjects to be read after which they signed the information provided on the basis of this research to be carried out.

### 3. RESULTS

**Table 1: sociodemographic characteristics of participants**

Sociodemographic characteristics	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	42	18.5
Female	185	81.5
Total	227	100.0
<b>Religion</b>		
Christianity	214	94.3
Islam	13	5.7
Total	227	100.0
<b>Marital status</b>		
Single	168	74.0
Married	59	26.0
Total	227	100.0

The female participants were the most prevalent with 81.5%, 94.3% were Christian, and the singles were 74.0%.

**Table 2: Descriptive statistics of hairline patterns, hairline length, and width among participants**

Variables	Frequency (n)	Percentage (%)
<b>Hairline pattern</b>		
Low hairline	1	0.4
Middle hairline	4	1.8
High hairline	1	0.4
Straight lined hairline	78	34.4
Bell shaped hairline	70	30.8
Triangular hairline	5	2.2
Widow's peak hairline	68	30.0
Total	227	100.0
<b>Hairline length</b>		
Mean	61.98mm	
Standard Error	0.475mm	
<b>Hairline width</b>		
Mean	293.89mm	
Standard Error	1.405mm	

The results showed that the straight-lined hairline was the most prevalent with 78(34.4%), while the least was the low hairline with 1(0.4%). The

average hairline length and width were 61.980.47mm and 293.41.40mm.

**Table 3a: Descriptive statistic of association between hairline length and gender**

Variable	N	Mean (mm)	Standard Deviation(mm)	Standard Error (mm)
<b>Gender</b>				
Male	42	65.63	6.566	1.013
Female	185	61.15	7.044	0.518

The results showed that the males had a higher average hairline length of 65.631.013mm, while the females had 61.150.518mm.

**Table 3b: Independent t-test of the association between hairline length and gender of participants**

Variable	F	Sig	t	df	p-value	Mean diff	95% Confidence Interval
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							Lower	Upper
<b>Hairline length</b>								
Equal variances assumed	2.282	0.132	3.762	225	0.0001	4.475	2.131	6.819
Equal variances not assumed			3.933	64.2	0.0001	4.475	2.202	6.748

The mean of hairline length of males (n=42) and females (n=185) were  $65.63 \pm 1.013$ mm and  $61.15 \pm 0.518$ mm, respectively. Levene's test (p=0.132) indicated that variances between the groups were

statistically equal. At equal variances assumed, independent samples t test (p=0.0001) indicated that the mean inter-canine tongue width of college and non-college students were statistically not equal.

**Table 4a: Descriptive statistic of association between hairline length and religion**

Variable	N	Mean (mm)	Standard Deviation (mm)	Standard Error (mm)
<b>Religion</b>				
Christians	214	62.06	6.950	0.475
Muslim	13	60.61	10.279	2.851

The results indicated that the Christians had a higher mean value of 62.060.47mm, while the Muslims had 60.612.85mm.

**Table 4b: Independent t-test of the association between hairline length and religion of participants**

Variable	F	Sig	t	df	p-value	Mean diff	95% Confidence interval	
							Lower	Upper
<b>Hairline length</b>								
Equal variances assumed	0.716	0.398	0.711	225	0.478	1.455	-2.579	5.490
Equal variances not assumed			0.504	12.6	0.623	1.455	-4.805	7.716

The mean of hairline length of Christians (n=214) and Muslim (n=13) were  $62.06 \pm 0.475$ mm and  $60.61 \pm 2.851$ mm, respectively. Levene's test (p=0.716) indicated that variances between the groups were

statistically equal. At equal variances assumed, independent samples t test (p=0.0001) indicated that the mean hairline length of Christians and Muslims were statistically equal.

**Table 5a: Descriptive statistic of association between hairline length and marital status**

Variable	N	Mean (mm)	Standard Deviation (mm)	Standard Error (mm)
<b>Religion</b>				
Singles	168	62.64	6.725	0.519
Married	59	60.10	8.039	1.047

The result of the study showed that the singles had a higher mean value of 62.640.51mm, while the married had 60.101.04mm.

**Table 5b: Independent t-test of the association between hairline length and marital status of participants**

Variable	F	Sig	t	df	p-value	Mean diff	95% Confidence interval	
							Lower	Upper
<b>Hairline length</b>								
Equal variances assumed	0.063	0.802	2.366	225	0.019	2.538	0.425	4.652
Equal variances not assumed			2.173	88.1	0.032	2.538	0.217	4.860

The mean of hairline length of the singles (n=168) and married (n=59) were  $62.64 \pm 0.519$ mm and  $60.10 \pm 1.047$ mm, respectively. Levene's test (p=0.802) indicated that variances between the groups were

statistically equal. At equal variances assumed, independent samples t test (p=0.019) indicated that the mean hairline length of the singles and married were not statistically equal.

**Table 6a: Descriptive statistic of association between hairline width and gender**

Variable	N	Mean (mm)	Standard Deviation (mm)	Standard Error (mm)
<b>Gender</b>				
Male	42	307.67	9.044	1.395
Female	185	290.77	21.891	1.609

Males had a higher mean value of 307.671.39mm, while the females had 290.771.60mm.

**Table 6b: Independent t-test of the association between hairline width and gender of participants**

Variable	F	Sig	t	Df	p-value	Mean diff	95% Confidence interval	
							Lower	Upper
<b>Hairline length</b>								
Equal variances assumed	0.404	0.526	4.902	225	0.0001	16.899	10.106	23.693
Equal variances not assumed			7.933	159.6	0.0001	16.899	12.692	21.106

The mean of hairline width of males (n=42) and females (n=185) were 307.67±1.395mm and 290.77±1.609mm, respectively. Levene’s test (p=0.526) indicated that variances between the groups were

statistically equal. At equal variances assumed, independent samples t test (p=0.0001) indicated that the mean hairline width of the males and females were not statistically equal.

**Table 7a: Descriptive statistic of association between hairline width and religion**

Variable	N	Mean (mm)	Standard Deviation (mm)	Standard Error (mm)
<b>Religion</b>				
Christians	214	293.89	21.759	1.487
Muslims	13	294.00	6.232	1.728

The results indicated that the Christians had 293.89±1.48mm, while the Muslims had a higher mean value of 294.00±1.72mm.

**Table 7b: Independent t-test of the association between hairline width and religion of participants**

Variable	F	Sig	T	Df	p-value	Mean diff	95% Confidence interval	
							Lower	Upper
<b>Hairline width</b>								
Equal variances assumed	1.528	0.218	-0.019	225	0.985	-0.112	-12.056	11.832
Equal variances not assumed			-0.049	35.2	0.961	-0.112	-4.740	4.516

The mean of hairline width of Christians (n=214) and Muslim (n=13) were 293.89±1.487 and 294.0±1.728, respectively. Levene’s test (p=0.218) indicated that variances between the groups were

statistically equal. At equal variances assumed, independent samples t test (p=0.985) indicated that the mean hairline length of Christians and Muslims were statistically equal.

**Table 8a: Descriptive statistic of association between hairline width and marital status**

Variable	N	Mean (mm)	Standard Deviation (mm)	Standard Error (mm)
<b>Marital status</b>				
Singles	168	297.60	11.668	0.900
Married	59	283.36	34.671	4.514

The result of the study showed that the singles had a higher mean value of 297.60±0.90mm, while the married had 283.36±4.51mm.

**Table 8b: Independent t-test of the association between hairline width and marital status of participants**

Variable	F	Sig	T	df	p-value	Mean diff	95% Confidence interval	
							Lower	Upper
<b>Hairline width</b>								
Equal variances assumed	1.325	0.251	4.642	225	0.0001	14.239	8.194	20.284
Equal variances not assumed			3.094	62.6	0.003	14.239	5.041	23.438

The mean of hairline length of the singles (n=168) and married (n=59) were 297.60±0.900 and 283.36±4.524, respectively. Levene’s test (p=0.251) indicated that variances between the groups were statistically equal. At equal variances assumed, independent samples t test (p=0.001) indicated that the

mean hairline length of the singles and married were not statistically equal.

**4. DISCUSSIONS**

The results of the study showed that among the participants, the most common hairline pattern was straight-lined at 34.4%, followed closely by bell-shaped



at 30.8% and widow's peak at 30%. Less common hairline patterns included the low and high hairlines, each observed in only 0.4% of participants. The average hairline length and width were 61.98 mm and 293.89 mm, respectively. Males had longer (65.63 mm) and wider (307.67 mm) hairlines than females, who averaged 61.15 mm in length and 290.77 mm in width. Single participants also showed greater hairline length (62.64 mm) and width (297.60 mm) compared to married individuals. However, there was no statistically significant variation in hairline characteristics by religious affiliation.

First, assessing the result reveals that the straight-lined hairline pattern was the most prevalent among participants, observed in 34.4% of cases. The least common hairline patterns were the low and high hairlines, each found in only 0.4% of participants [5, 6]. However, while these previous studies show that the widow's peak is common, this study found that it was slightly less prevalent among the Etche, appearing in 30% of participants.

The differences in findings could be due to ethnic diversity within Nigerian groups, where certain genetic factors influence specific traits. Additionally, this study is focused solely on the Etche people, whose genetic background may be slightly different from other groups. Such differences may also arise from environmental influences or sampling variations i.e. The age range of the participants etc. This suggests that while there are common patterns in Nigerian populations, the prevalence rates may shift among ethnicities.

The average hairline length was 61.98 mm, while the average width was 293.89 mm. Males had longer (65.63 mm) and wider (307.67 mm) hairlines as compared to females, who averaged 61.15 mm in length and 290.77 mm in width. No previous studies report exact measurements for these dimensions among the Etche or other Nigerian populations as at the time of this study. Thus, this study fills a gap by providing specific anthropometric data for the people of Etche, which may serve as reference points for further studies.

The observed gender differences in hairline dimensions might be explained by genetic and hormonal influences, as supported by anthropometric research on cranial measurements, which often shows larger values among males. The lack of comparative studies on the Etche people's hairline width and length limits further analysis, suggesting a need for expanded research to explore possible environmental or lifestyle factors that might affect these dimensions.

The distribution of sociodemographic characteristics in Table 1 indicates that females, singles, and Christians were the most prevalent groups among

participants. This prevalence was largely influenced by the setting of data collection. In the Etcheregion, females dominate the marketplace, with most vendors and shop owners being women [7]. Additionally, the female coordinator of the data collection likely contributed to greater comfort and willingness among female participants.

The study also showed a higher proportion of singles compared to married individuals. This difference may be due to cultural roles within the Etche community, where married women traditionally focus on family care, which may limit their availability for study participation [8].

Furthermore, the religious distribution aligns with the demographics of the study area. Christianity is the most widespread religion in Etche, Rivers State, reflecting the high representation of Christians among participants [9, 10].

The participants with a low or middle hairline were mainly elderly males of age 40 and above. Some elderly females also had receding hairlines but it was not severe enough to classify them under low hairline or middle hairline. Receding hairline in older men is also called androgenic alopecia and it has several causes which include: dihydrotestosterone which is a hormone that affects hair follicles over time and causes them to shrink. Genetics is also a factor as male pattern baldness can be hereditary [11].

Participants who are single having a higher mean hairline value than married ones may be attributed to lifestyle differences. Singles often experience less physiological stress related to family responsibilities, which may influence hormonal balance and hair growth. Stress can impact hair health by elevating cortisol levels, leading to thinning hair or hairline recession [12, 13] noted variability in hairline patterns due to environmental and lifestyle factors. However, Some studies [14] report no significant correlation between marital status and hairline patterns, suggesting individual genetic predisposition as a more significant factor. These observations are consistent with findings from prior studies, which suggest that the distribution of sociodemographic characteristics is often influenced by the study setting and local demographics.

## 5. CONCLUSIONS

The study revealed that the straight-lined pattern was most common with a proportion of 34.4%, low hairline was the least common with a proportion of 0.4%.

Measurements of hairline length and width provided mean values of 61.98 mm and 293.89 mm,

respectively, highlighting gender-based differences where males exhibited longer and wider hairlines.

The comparison of hairline length, shape, and width with sociodemographic characteristics revealed that males generally exhibited longer and wider hairlines than females. Singles also showed greater hairline dimensions compared to married individuals, reflecting lifestyle and cultural influences within the Etche community. Additionally, no significant differences were found in hairline characteristics across religious affiliations.

## 6. RECOMMENDATIONS

1. Future studies should include a larger and more diverse sample from different regions within Etche to enhance the generalizability of the findings.
2. Genetic testing could provide deeper insights into the hereditary factors affecting hairline patterns, especially within specific ethnic groups.

## 7. CONTRIBUTIONS TO KNOWLEDGE

This study adds valuable data on hairline distribution within an underrepresented ethnic group, the Etche people. By documenting and analyzing specific hairline patterns, this research enhances the understanding of anthropometric variation in Nigeria. The findings may also support the identification of hereditary and environmental factors influencing physical traits, aiding further studies on genetic diversity and population genetics in West Africa.

- This study identifies the straight-lined hairline as the most prevalent pattern among the Etche people.
- It provides average values for hairline length (61.98 mm) and width (293.89 mm), adding reference data to the field of anthropometry.
- This study highlights that males among the Etche have wider and longer hairlines compared to females.
- This study noted significant differences in hairline length and width between singles and married individuals, suggesting potential

lifestyle or environmental impacts on these traits.

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