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Hair Distribution on the Phalanges of the Hand in Ogba Tribe Rivers State, Niger Delta Region of Nigeria

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ABSTRACT

The hair distribution pattern on the phalanges of the hand was studied in the Ogba ethnic group of Southern Nigeria. One hundred subjects comprising of 43 females and 57 males, aged 16-35 years were randomly selected between 2009 and 2010. The dorsum of the hands of subjects was physically inspected for phalangeal hair distribution. Observations were categorized into gender and phalangeal hair patterns. Relationship between gender and patterns was assessed by Fisher's exact test. Result shows hair distribution patterns 1-2-3-4-5 (10%), 2-3-4-5 (65%), 2-3-4 (7%), 3-4-5 (9%), 3-4 (6%). One percent were without hair in there proximal phalanges. Result also shows that 12% of subjects had hair in their middle phalanges and a 0% occurrence of hair in the distal phalanges. The pattern 3-4-5 show a significance female preponderance, $p<0.005$ (fisher's exact test). This study also established that interethnic and racial variations exist in phalangeal hair distribution. Hence, confirming that biological anthropologic trait varies amongst various human populations.

Key words: Hair, distribution, phalanges, Ogba, Nigeria

INTRODUCTION

In humans, hairs are common, in man it is a special and cherished feature especially in females. Hair is a filamentous keratinized structure present over almost the entire body surface (Jungueira and Carneiro, 2005). It is a derivative of the epidermis which assists in thermoregulation and provides some protection against injury (Harrison and Davis, 1999). It has sensory functions and subserves various roles in social communication. It is used for diagnostic purposes (Szalai *et al*., 1999). Hairs are absent from few areas of the body, for example sole of foot, palm of hand, buccal surface of the lip etc.

Hairs are commonly present on the dorsal surfaces of basal segments of all the fingers. Invariably absent on the dorsal surfaces of distal segments of fingers. Hair show wide variations with apparent familial and racial tendencies in their distribution on the dorsal surfaces of middle segments of fingers (Nasir *et al*., 1995).

Distribution of hair has always been an important field of anthropological interest. The first study on the distribution of the phalangeal hair of the hands was carried out in 1921 (Hatiboglu, 1983). Since, then many investigators have shown their interest to investigate the racial differences seen in distribution of hair on the dorsum of fingers (Saldanha and Guinsburg, 1961; Dutta, 1963; Brothwell and Molleson, 1965; Singh, 1982; Hatiboglu, 1983).

Presence of hair on greater number of fingers is dominant over presence of hair over lesser number of fingers and this trait follows the Mendelian Law in its mode of inheritance. It is suggested that the distribution of middle segmental hair is governed by a set of five alleles, having increasing dominance in phantasies A_0, A_1, A_2, A_3 and A_4 (Bernstein and Burks, 1942; Bernstein, 1949). The subscripts correspond to the number of fingers the alleles cause to be affected. Thus, a person without middle segmental hair would be known as having A_0 phenotype, having A_0 A_0 genotype.

The distribution of phalangeal hair has been studied in various tribes in the world, but yet to be studied in most tribe of the oil producing area of Nigeria, the Niger delta. The purpose of this study therefore is to evaluate the different patterns and frequency of hair distribution on the phalanges of the Ogba tribe in Rivers State.

MATERIALS AND METHODS

One hundred subjects aged between 16-35 years were used for the study, among which 57 were males and 43 females. The subjects were from Ogba in Ogba-Egbema-Ndoni local government area of Rivers State resident in Port Harcourt, in Niger Delta region of Nigeria, from 2009 to 2010. All cases considered were subjects in which both parents are from the same place. Sex status of the subjects was also considered. Those with skin diseases were excluded from the study. Informed consent was granted by individual subjects. With hand-lens, hairs were viewed and being magnified, counting of hairs was made easy. The hairs were counted for the proximal, middle and distal phalanges for all fingers and recorded. Data were analyzed using Fisher's Exact Test using Graph Pad Instat 3 ® software. The p values <0.05 were considered significant.

Patterns of hair distribution were divided into 8 groups as shown below for easy analysis.

- Proximal phalangeal hairs
  - Those with hairs on 1st, 2nd, 3rd, 4th, 5th, fingers
  - Those with hairs on 2nd, 3rd, 4th, 5th fingers
  - Those with hairs on 2nd, 3rd, 4th fingers
  - Those with hairs on 3rd, 4th, 5th fingers
  - Those with hairs on 3rd and 4th fingers
  - Those without hairs
- Middle phalanx
  - 3rd, 4th and 5th fingers
  - 4th finger only
- Distal phalangeal hair

RESULTS

There were observable variations in the distribution of hair on the phalanges of males and females of Ogba ethnicity. The tables below show the results. The groups with hairs on digits 3-4 (5.4%), while digits 2-3-4-5 had the highest (59%). The 0.9% of the population have no hair on the proximal phalanges while 10.9% had hair on the middle phalanges. Hair was absent on the distal phalanges of all subjects (Table 1).

Statistically pattern 3-4-5 showed significant difference in relation to sex. There was no significant difference in all the other patterns (Table 2).

Table 1: Hair distribution pattern of Ogba

Finger pattern	Total	Percentage	No. of male	No. of female
1-2-3-4-5	10	9.0	5	5
2-3-4-5	65	59.0	42	23
2-3-4	7	6.3	3	4
3-4-5	9	8.1	1	8
3-4	6	5.4	4	2
Without hair	1	0.9	1	0
Middle phalanges	12	10.9	8	4
Distal phalanges	0	0.0	0	0
Total	110	100.0	64	46

Table 2: Frequency of hair distribution pattern of Ogba subjects in relation to sex

Sex	Total	1-2-3-4-5	2-3-4-5	2.3.4	3.4.5	3.4.	Total with hair	Without hair
Male	66	5	42	3	1*	4	65 (98.4%)	1 (1.5%)
Female	42	5	23	4	8*	2	42 (100%)	0 (0%)

*p<0.005 (Fisher's exact test)

DISCUSSION

In most of the populations, hair have always been present on proximal and absent on distal segments of fingers. Previous researches shows that individuals tend to have more hair on the proximal phalanges in both sexes than the middle and none in the distal phalanges. In the present findings the highest percentage of hair distribution was observed in the proximal phalanges, males 98.4% and females 100% (Table 2). This finding is consistent with observation in previous studies in Calabar Nigeria (Singh 1982) and Punjabis in Pakistan (Nasir *et al*., 1995).

The absence of hair on the proximal phalanges of 1.5% of males is in line with what have been recorded in previous populations South of spain (Luna, 1989), Sardinian, Italy (Vona and Porcella, 1989), South India (Sethuraman *et al*., 1982), Calabar Nigeria (Singh, 1982) Indians (Dutta, 1965) and Yoruba Nigeria (Olabiyi *et al*., 2008). Mean while 0% for females have not been reported in any population.

Statistically pattern 3-4-5 showed significant (<0.005) difference in relation to sex. There was no significant difference in all the other patterns (Table 2).

The presence of hair on the middle phalanx showed no significant difference (10.9%), when compared to 21% Calabar-Nigeria (Singh, 1982). Other parts of the world such as Britain and America (white) have as high as 70% (Danforth, 1921; Brothwell and Molleson, 1965) (Table 3). On the other hand the lowest ever recorded is 0.2% of Yoruba-Nigeria (Olabiyi *et al*., 2008).

The commonest type of hair pattern for this ethnic group was the 2nd, 3rd, 4th, 5th, finger pattern which was also observe in a previous work Yoruba ethnicity Nigeria (Olabiyi *et al*., 2008), while the least was 3rd, 4th, finger pattern corresponding to Punjabis in Pakistan (Nasir *et al*., 1995).

Hair variants are genetically determined and the complete absence of mid-phalangeal hair is a recessive trait (Dutta, 1965) and varies from different ethnic groups, race and nationality. Nigeria is the most populous country in Africa, Nigeria accounts for approximately one-sixth of Africa's people, a multi-ethnic nation with over 350 ethnic groups. Therefore it may not be appropriate to use the data of a particular ethnic group, in determining the distribution of hair in Nigeria. As such

Table 3: Comparison of distribution of middle phalangeal hair of the hand in different populations in the world

Population	Percentage with hair	References
Yoruba (Nigeria)	0.2	Olabiyi *et al*. (2008)
Ogba (Nigeria)	10.9	Present study
Calabar (Nigeria)	21.0	Singh (1982)
Kanuris and Baburs/Buras (Nigeria)	25.2	Mbajiorgu *et al*. (1996)
Ethiopia	25.6	Batmiriam (1962)
Japan	36.8	Matsunaga (1956)
Tibet	44.3	Tiwari and Bhasin (1969)
Bengal (India)	49.0	Dutta (1963)
Turkey	49.0	Hatiboglu (1983)
Britain	70.2	Brothwell and Molleson (1965)
America (white)	70.4	Danforth (1921)

research should be done on ethnic groups that have not been reported. In view of establishing a general hair distribution pattern for Nigerians.

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