

Full Length Research Paper

A study of the distribution of phalangeal hair on the hands and toes of bowen university students

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123 male subjects, who are students of Bowen University, within the age range of 15-30 years, were chosen randomly for the study of the pattern of phalangeal hair distribution on the proximal, middle and distal phalanges of the hands, with 150 male subjects selected to study the pattern on the foot. For the females, 148 subjects, who are students of Bowen University, within the age range of 15-30 years, were chosen randomly for the study on the hands, while 150 subjects were studied for the phalangeal hair patterns on the foot. All subjects were from various tribes in Nigeria. It was discovered through the study that in males, the most prominent pattern on the proximal phalanges of the hand was 2-3-4-5, with hair present on 98% of the subjects. In females, the most prominent pattern on the proximal phalanges of the hand was 2-3-4-5, with hair present on 92.2% of the subjects. For the pattern of phalangeal hair on the middle phalanges of the hand, the most prominent pattern in males were those without hair, and for those with hair, the most prominent pattern was the 4 pattern, while in females, the most prominent pattern were those without hair, and those with hair had their most prominent pattern as the 4 pattern. For the pattern of phalangeal hair on the distal phalanges of the hand, in males, the most prominent pattern were those without hair (100%) and in females, they were also those without hair (95.5%) but 4.5% of the female subjects had hair with the 1 pattern. For the foot, in males, the most prominent pattern on the proximal phalanges was 2-3-4-5, with hair present on 81.3% of the subjects. In females, the most prominent pattern on the proximal phalanges was those without hair (31.3%), with those with hair having the prominent pattern as 1-2-3-4-5 (17.3%). For the pattern of phalangeal hair on the middle phalanges, the most prominent pattern in males were those without hair (98.6%), and for those with hair, the most prominent pattern was the 2 pattern (1%), while in females, the most prominent pattern were those without hair (94%), and those with hair had their most prominent pattern as the 1 pattern (3.6%). For the pattern of phalangeal hair on the distal phalanges, in males, the most prominent pattern were those without hair (99.6%), those with hair had the most prominent pattern as the 1 pattern (0.8%) and in females, the most prominent were those without hair (95.5%) but 4.3% of the subjects had hair with the 1 pattern. The patterns were recorded and analysed using descriptive statistics and the data were group based on the hand observed (left or right), the sex (male or female) and the major tribes which the subjects belonged to. The patterns of phalangeal hair distribution from the study indicate regional and sexual variations and also show similarities within and among various race, language and nationality.

Keywords: phalangeal hair, hands, toes.

INTRODUCTION

The study of body hair distribution has beckoned on the interest of anthropologists for ages, particularly phalangeal hair distribution (Aboagye et al., 2013). This is because it shows wide variation in relation to race, nationality and ethnic groups (Ali et al., 2012). Scientists have pondered on the uniqueness of humans in having nearly naked skin. Many members of our extended family has a dense covering of fur- from the pelage of the howler monkey to the flowing copper coat of the orangutan- as do some other mammals (Jablonski, 2010). Though hairs are present and well distributed on our heads and other body regions, but in comparison with other primates, even the hairiest person is basically bare (Jablonski, 2010). Hair distribution on phalanges is genetically determined and follows the Mendelian law of inheritance. The presence of hair on greater number of fingers is considered as a dominant character (Ali et al., 2012). Complete absence of phalangeal hair is a recessive trait (Dutta, 1965). These and other characteristics have been nurtured as points of interest by clinicians and biomedical researchers in the study of hair distribution on the human body.

Hairs are elongated keratinized structures, derived from the invagination of epidermal epithelium (Junqueira and Carneiro, 2005).

The hair thread is a natural fibre formed by keratin, a protein containing high concentration of sulphur coming from the amino acid cysteine (Maria et al., 2009).

It has accompanied human development since antiquity as a symbol of power, dominance and strength and has been a thing of beauty and sexual communication (Aboagye et al., 2013).

Beyond its aesthetic values, the hair serves the biological function of thermoregulation, protection of the body from mechanical injury, forensic investigation, and sensory reception and serves various subtle roles in social communication including diagnostic purposes (Oyerinde and Olaitan, 2002). The hairs colour, size, and disposition vary according to race, age, sex, and region of the body.

Hairs are basically found everywhere on the body, with the exception of the palms, soles, lips, glans penis, clitoris and labia minora. About 600 hairs/cm² are present on the face and the remainder of the body has about 60 hairs/cm² (Junqueira and Carneiro, 2005).

Hairs grow discontinuously and have periods of growth followed by period of rest. This growth does not occur synchronously in all regions of the body or even in the same area; rather, it tends to occur in patches (Junqueira and Carneiro, 2005).

The duration of the growth and rest period also varies according to the region of the body. Thus, in the scalp, the

growth periods (anagen) may last for several years, whereas the rest periods (catagen and telogen) average 3 months. Hair growth in such regions of the body as the scalp, face, and pubis is strongly influenced not only by sex hormones- especially androgens-but also by adrenal and thyroid hormones (Junqueira and Carneiro, 2005).

Phalanges, which are the bones of the fingers and toes (digits) are 14 in number; 3 for each digit and 2 for the thumb and big toe. Each phalanx has a base proximally, a shaft (body) and a head distally. The proximal phalanges are the largest, the middle ones are intermediate in size and the distal ones are the smallest. The shafts of the phalanges taper distally. The distal phalanges are flattened and expanded at their tail ends, which underlie the nail bed. The phalanges of the first digit are stouter, short and broad than those in other fingers (Moore et al., 2010).

Interphalangeal hairs are concentrated on particular areas of the phalanx and may be influenced by certain factors such as gene and environment (William et al., 2005).

Nasir, Zafar and Naseem (1995), Utter (1999) and Parmar (2009) revealed in their different works that there are variations in the distribution of hair on the phalanges which can be attributed to race, sex and genetic factors (Oyerinde and Olaitan, 2002).

Bernstein & Burks described that the distribution of phalangeal hair is controlled by a set of five Alleles, which has an increasing dominance in phantasies A0, A1, A2, A3, and A4. People without Phalangeal hair will have A0 phenotype and A0A0 genotype. Thus, we conclude that this is genetically determined factor and shows racial variation (Bernstein and Burks, 1942).

This study is however, aimed at evaluating various patterns in the distribution of hair on the phalanges of hands and toes in Bowen University Students and to indicate locality, sexual and tribal relations within the region studied.

MATERIALS AND METHODS

The study was carried out in Bowen University, from January 2014 to May 2014. 123 male subjects, who are students of Bowen University, within the age range of 15-30 years, were chosen randomly for the study of the pattern of phalangeal hair distribution on the proximal, middle and distal phalanges of the hands, while 150 male subjects were studied for the pattern of phalangeal hair distribution on the proximal, middle and distal phalanges of the foot.

For the female subjects, 148 subjects, who are also students of Bowen University, within the age range of 15-30 years, were chosen randomly for the study of the pattern of phalangeal hair distribution on the proximal,

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middle and distal phalanges of the hands, while 150 subjects were studied for the pattern of phalangeal hair distribution on the proximal, middle and distal phalanges of the foot.

All the subjects used were from various tribes in Nigeria.

It was ensured during the study that individuals with skin inflammation, visible skin diseases and hand or foot injuries were not part of the selected subjects for the study.

The subject's phalanges, the proximal, middle and distal phalanx, were observed with the use of a hand lens in the day light. The various patterns were observed and recorded based on sex and ethnicity.

For analysis, the name, sex, age, nationality, ethnicity, state of origin, father and mother's name were obtained with the use of a questionnaire.

The presence or absence of hairs on any of the phalanx were noted and carefully analyzed. The analyzed data was done using descriptive statistics.

DISCUSSION

Various patterns were observed on the proximal, middle and distal phalanges of the male and female subjects studied and the results obtained shows correlations with previously conducted works in other populations of the world.

The present study revealed that in males, the most prominent pattern on the **proximal phalanges** of the hand was 2-3-4-5, with more males having more hair on the left (57.7%) than on the right (50.4%). This is not in line with the work done by (Ali *et al.*, 2012; Jung, 2001 and Muralidhar, 2012) in which the most prominent pattern in North India is 1-2-3-4-5. It is though in line with Onyije, 2011 and Nassir, 1995. The subject with hair on the proximal phalanges of the right hand was averagely 98%. This is in line with the work done by Ali *et al.*, Jung, Muralidhar and Onyije, in which the value obtained, was averagely 98% for subject with hair in North India, Koreans, Andra Pradesh in India and the Niger Delta Region of Nigeria. In females, the most prominent pattern on the **proximal phalanges** of the hand was 2-3-4-5, with more females having this pattern more on their left (64.2%) than on their right (62.2%). This is not in line with the work done by Ali *et al.* in which the most prominent pattern in North India is 1-2-3-4-5.

It can be inferred from the present study that the left hand is more likely to retain the pattern of proximal phalangeal hair distribution than the right hand.

In females, the subjects with hair on the **proximal phalanges** of the right hand was 91.9% and those without hair was 8.1%, while on the left it was 92.6% and those without was 7.4%. This was not exactly similar to the values obtained by Ali *et al.* whose average value was 98%. It is in line though with the value of M Bajiorgu. Females have more hair with the 2-3-4-5 pattern on the

proximal phalanges of the hand than males, for both the right and the left hand.

In males, the most prominent pattern on the **middle phalanges** of the hand were those WITHOUT HAIR, with more males having this pattern more on the right (93.5%) than on the left (91.1%). For the most prominent pattern with hair, it was the 4 pattern. This is not in accordance with the work of Ali *et al.* whose work indicated the most prominent pattern with hair in North Indian males as 3-4. Though, they both attested to the highest prominence of the subjects WITHOUT HAIR. The subjects with hair on the **middle phalanges** of the right hand was 6.5% and those without hair was 93.5%, while on the left it was 8.9% and those without was 91.1%. This is not in line with the work of Ali *et al.* whose work indicated absence of hair in North Indian males as 56.3%. It is also the least when compared with countries like America, Japan, Ethiopia, Britain, Turkey and even the Kanuris. In females, the most prominent pattern on the **middle phalanges** of the hand was WITHOUT HAIR, with more females having this pattern more on their right (91.2%) than on their left (89.3%). For the most prominent pattern with hair, it is the 4 pattern. This is not in accordance with the work of Ali *et al.* whose work indicated the most prominent pattern with hair in North Indian males as 3-4. Though, they both attested to the highest prominence of the subjects WITHOUT HAIR.

It can be inferred according to the study that the left hand is more likely to retain the pattern of middle phalangeal hair distribution than the right hand. Also, for both males and females, the most prominent pattern of middle phalangeal hair distribution is the 4 pattern present more on the males than the females.

In females, the subjects with hair on the **middle phalanges** of the right hand was 8.8% and those without hair was 92.2%, while on the left it was 10.8% and those without was 89.2%. This is not in line with the work of Ali *et al.* whose work indicated absence of hair in North Indian females as 64.8%. Males however, have more hair with the 4 pattern on the **middle phalanges** of the hand for the right hand while females have more on the left hand.

Current research works such as the work of Onyije, Batmiriam, Dutta, Ali *et al* and Maria *et al* have indicated the absence of hair on the distal phalanges of the hand which was similar to the observation on the hand but was different for the foot, where only 1 subject had the pattern on only the right big toe and none on the left.

In males, the most prominent pattern on the **proximal phalanges** of the foot was 2-3-4-5, with more males having more hair on the right (35.4%) than on the left (34%). The subjects with hair on the **proximal phalanges** of the right foot was 80.7% and those without hair was 19.3%, while on the left it was 82% and those without was 18%. This observation is not similar to the research work done by (Ordu, K, 2013). **It can be inferred from the present study that in males generally, individuals had phalangeal hair existing more on their hands than foot,**

Table 1. THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN MALES (HAND)

S/N	HAND (PROXIMAL PHALANX)	MALE		RIGHT (%)	LEFT (%)
		RIGHT	LEFT		
1	1-2-3-4-5	25	23	20.3	18.7
2	1-2-3-4	0	1	0	0.8
3	1	2	2	1.7	1.7
4	2-3	1	1	0.8	0.8
5	3	2	0	1.7	0
6	1-2-3-5	1	0	0.8	0
7	2-3-4	10	5	8.1	4.1
8	WITHOUT HAIR	3	2	2.4	1.6
9	2-3-4-5	62	71	50.4	57.7
10	3-4	7	5	5.7	4.1
11	3-4-5	8	11	6.5	8.9
12	4	0	1	0	0.8
13	1-3-4-5	1	1	0.8	0.8
14	5	1	0	0.8	0
	TOTAL	123	123	100	100
NUMBER OF SUBJECTS WITH HAIR (%)		97.6	98.4		
NUMBER OF SUBJECTS WITHOUT HAIR (%)		2.4	1.6		

indicating that it is more likely to find phalangeal hair patterns on the hands than the foot. Also, males generally mainly had the same pattern of hair on their hands with their foot that is both having mainly the 2-3-4-5 pattern. In females, the most prominent pattern with hair on the proximal phalanges of the foot was 1-2-3-4-5, and this pattern was present on the right (17.3%) and the left (17.3%). In females, the subjects with hair on the proximal phalanges of the right foot was 67.3% and those without hair was 22.7%, while on the left it was 70% and those without was 30%.

In males, the most prominent pattern on the middle phalanges of the foot were those WITHOUT HAIR, with males having this pattern on the left (98.6%) and on the right (98.6%). For the most prominent pattern with hair, it was the 2 pattern. In males, the subjects with hair on the middle phalanges of the right foot was 1.4% and those without hair was 98.6%, while on the left it was 1.4% and those without was 98.6%. In females, the most prominent pattern on the middle phalanges of the foot was WITHOUT HAIR, with more females having this pattern more on their left (94.6%) than on their right (93.2%). For the most prominent pattern with hair, it is the 1 pattern. In females, the subjects with hair on the middle phalanges

of the right foot was 6.7% and those without hair was 93.3%, while on the left it was 5.3% and those without was 94.7%.

In relation to ethnicity, The Hausas have the most hair on the middle phalanges, according to the work of (Mbajorgu *et al.*, 1996), followed by the Igbos according to the work of (Singh, 1982) and the least hair is present in Yorubas based on the work of (Olabiyi *et al.*, 2008), (Onyije, 2011) and the present study.

RESULTS

The tables below show the results of the pattern of phalangeal hair distribution on the proximal, middle and distal phalanges of the hand and toes of male and female subjects studied:

1st Digit (Thumb or Big Toe) - 1, 2nd Digit (Index finger)- 2, 3rd Digit (Middle finger) – 3, 4th Digit (Ring finger) – 4 and the 5th Digit (Small finger) – 5.

TABLE 2. THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN FEMALES (HAND)

S/N	HAND (PROXIMAL PHALANX)		FEMALE		RIGHT (%)	LEFT (%)
	PATTERNS	RIGHT	LEFT			
1	1-2-3-4-5	23	19		15.5	12.8
2	1-2-3-4	0	1		0	0.7
3	1	1	1		0.7	0.7
4	1-2	2	0		1.3	0
5	2-3	0	1		0	0.7
6	2-3-4	4	4		2.7	2.7
7	WITHOUT HAIR	12	11		8.1	7.4
8	2-3-4-5	92	95		62.2	64.2
9	3-4	3	3		2	2
10	3-4-5	8	9		5.4	6.1
11	4	1	1		0.7	0.7
12	4-5	1	3		0.7	2
13	5	1	0		0.7	0
	TOTAL	148	148		100	100
NUMBER OF SUBJECTS WITH HAIR (%)			91.9	92.6		
NUMBER OF SUBJECTS WITHOUT HAIR (%)			8.1	7.4		

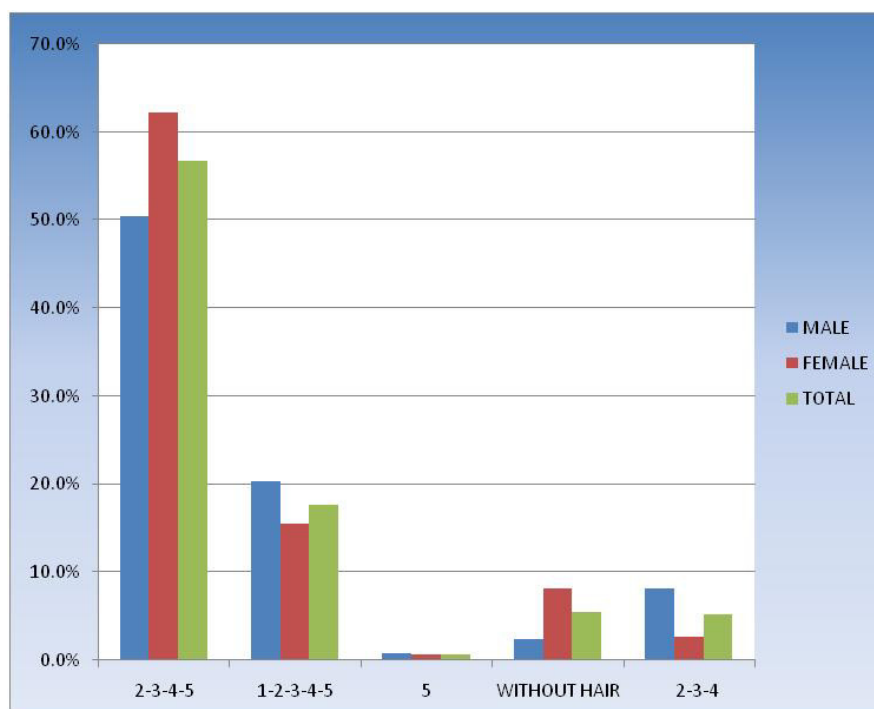


Figure 15. The distribution of proximal phalangeal hair in male and female on the right hand

TABLE 3 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN MALES (HAND)

S/N	HAND (MIDDLE PHALANX)		MALE		RIGHT (%)	LEFT (%)
	PATTERNS		RIGHT	LEFT		
1	2		1	0	0.8	0
2	2-3		1	1	0.8	0.8
3	WITHOUT HAIR		115	112	93.5	91.1
4	2-3-4-5		0	1	0	0.8
5	3-4		0	1	0	0.8
6	3-4-5		1	1	0.8	0.8
7	4		4	7	3.3	5.7
8	5		1	0	0.8	0
	TOTAL		123	123	100	100
NUMBER OF SUBJECTS WITH HAIR (%)			6.5	8.9		
NUMBER OF SUBJECTS WITHOUT HAIR (%)			93.5	91.1		

TABLE 4 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN FEMALES (HAND)

S/N	HAND (MIDDLE PHALANX)		FEMALE		RIGHT (%)	LEFT (%)
	PATTERNS		RIGHT	LEFT		
1	1		3	6	2	4
2	1-5		1	0	0.7	0
3	1-2		1	0	0.7	0
4	1-3-4		1	0	0.7	0
5	WITHOUT HAIR		135	132	91.2	89.3
6	2-3-4-5		1	1	0.7	0.7
7	4		4	9	2.6	6
8	5		1	0	0.7	0
9	3-5		1	0	0.7	0
	TOTAL		148	148	100	100
NUMBER OF SUBJECTS WITH HAIR (%)			8.8	10.8		
NUMBER OF SUBJECTS WITHOUT HAIR (%)			91.2	89.2		

TABLE 5 THE DISTRIBUTION OF DISTAL PHALANGEAL HAIR IN MALES (HAND)

S/N	HAND (DISTAL PHALANX)		MALE		RIGHT (%)	LEFT (%)
	PATTERNS		RIGHT	LEFT		
1	WITHOUT HAIR		123	123	100	100

TABLE 6 THE DISTRIBUTION OF DISTAL PHALANGEAL HAIR IN MALES (FOOT)

		FOOT (DISTAL PHALANX)			
		MALE			
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)
1	1	1	0	0.8	0
2	WITHOUT HAIR	122	123	99.2	100
	TOTAL	123	123		

TABLE 7 THE DISTRIBUTION OF DISTAL PHALANGEAL HAIR IN FEMALES (HAND)

		HAND (DISTAL PHALANX)			
		FEMALE			
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)
1	1	6	7	4	4.9
2	WITHOUT HAIR	142	141	96	95.1
	TOTAL	148	148		

TABLE 8 THE DISTRIBUTION OF DISTAL PHALANGEAL HAIR IN FEMALES (FOOT)

		FOOT (DISTAL PHALANX)			
		FEMALE			
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)
1	1	7	6	4.7	4
2	WITHOUT HAIR	143	144	95.3	96
	TOTAL	150	150		

TABLE 9 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN MALES (FOOT)

S/N	FOOT (PROXIMAL PHALANX)			RIGHT (%)	LEFT (%)
	PATTERNS	RIGHT	LEFT		
1	2-3-4-5	53	51	35.4	34
2	1-2-3-4	17	19	11.3	12.6
3	1-2-3	9	9	6	6
4	1	19	21	12.7	14
5	2	2	2	1.3	1.3
6	1-5	2	0	1.3	0
7	1-2	6	3	4	2
8	1-3-4	0	1	0	0.7
9	3	2	0	1.3	0
10	1-4	0	2	0	1.3
11	1-3	2	3	1.3	2
12	1-2-3-5	1	0	0.7	0
13	2-3-4	0	1	0	0.7
14	WITHOUT HAIR	29	27	19.3	18
15	2-3-4-5	7	6	4.7	4
16	3-4	0	1	0	0.7
17	3-4-5	0	2	0	1.3
18	1-4-5	0	1	0	0.7
19	4	1	1	0.7	0.7
	TOTAL	150	150	100	100
NUMBER OF SUBJECTS WITH HAIR (%)			80.7	82	
NUMBER OF SUBJECTS WITHOUT HAIR (%)			19.3	18	

TABLE 10 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN FEMALES (FOOT)

S/N	FOOT (PROXIMAL PHALANX)			RIGHT (%)	LEFT (%)
	PATTERNS	RIGHT	LEFT		
1	1-2-3-4-5	26	26	17.3	17.3
2	1-2-3-4	17	22	11.3	14.6
3	1-2-3	10	7	6.7	4.7
4	1	19	24	12.7	16
5	2	1	0	0.7	0
6	1-5	2	0	1.3	0
7	1-2	4	2	2.6	1.3
8	1-3-4	0	2	0	1.3
9	2-3	1	2	0.7	1.3
10	3	2	0	1.3	0
11	1-4	0	1	0	0.7
12	1-3	3	1	2	0.7
13	1-2-3-5	0	2	0	1.3
14	2-3-4	2	3	1.3	2
15	WITHOUT HAIR	49	45	32.6	30

TABLE 10 CONTINUE

16	2-3-4-5	6	5	4	3.3
17	3-4	1	0	0.7	0
18	1-4-5	0	1	0	0.7
19	1-3-4-5	1	3	0.7	2
20	4-5	2	0	1.3	0
21	5	0	1	0	0.7
22	1-2-4-5	0	1	0	0.7
23	1-2-4	1	0	0.7	0
24	1-3-5	1	0	0.7	0
25	2-5	1	1	0.7	0.7
26	2-3-5	1	1	0.7	0.7
	TOTAL	150	150	100	100
NUMBER OF SUBJECTS WITH HAIR (%)			67.3	70	
NUMBER OF SUBJECTS WITHOUT HAIR (%)			32.7	30	

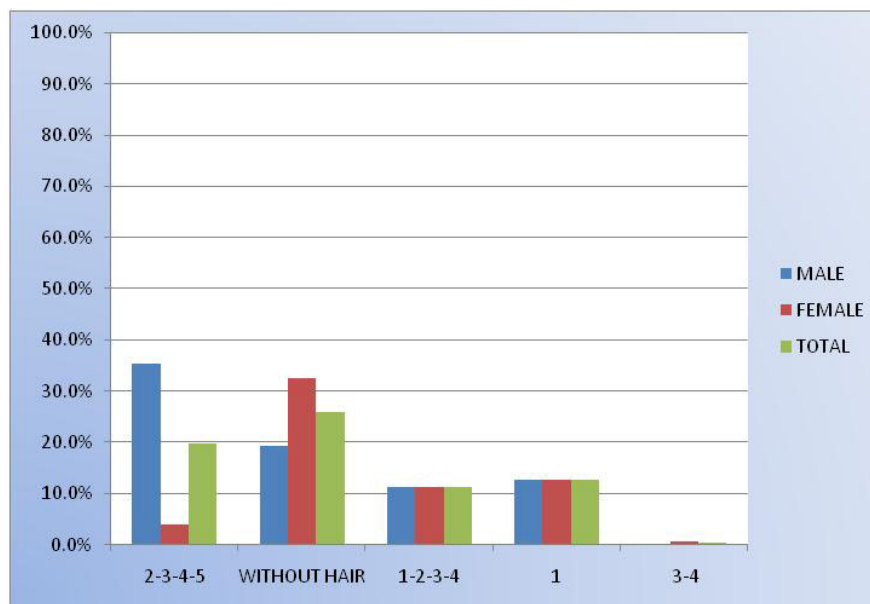


Figure 16. The distribution of proximal phalangeal hair in male and female on the right foot

TABLE 11 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN MALES (FOOT)

S/N	FOOT (MIDDLE PHALANX)				RIGHT (%)	LEFT (%)
	PATTERNS	MALE				
		RIGHT	LEFT			
1	1	1	0		0.7	0
2	2	1	2		0.7	1.4
3	WITHOUT HAIR	148	148		98.6	98.6
	TOTAL	150	150		100	100
NUMBER OF SUBJECTS WITH HAIR (%)		1.4	1.4			
NUMBER OF SUBJECTS WITHOUT HAIR (%)		98.6	98.6			

TABLE 12 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN FEMALES (FOOT)

S/N	FOOT (MIDDLE PHALANX)				RIGHT (%)	LEFT (%)
	PATTERNS	FEMALE				
		RIGHT	LEFT			
1	1	6	5		4	3.3
2	3	1	1		0.7	0.7
3	1-3	1	1		0.7	0.7
4	WITHOUT HAIR	140	142		93.2	94.6
5	3-4	1	0		0.7	0
6	4	1	1		0.7	0.7
	TOTAL	150	150		100	100
NUMBER OF SUBJECTS WITH HAIR (%)		6.7	5.3			
NUMBER OF SUBJECTS WITHOUT HAIR (%)		93.3	94.7			

TABLE 13 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN YORUBA MALES (HAND)

S/N	ETHNICITY (YORUBA)				RIGHT (%)	LEFT (%)
	PATTERNS	MALE				
		RIGHT	LEFT			
1	1-2-3-4	17	15		17.2	15.2
2	1	1	2		1	2
3	2-3	2	1		2	1
4	2-3-4	9	5		9.1	5
5	WITHOUT HAIR	1	1		1	1
6	2-3-4-5	55	61		55.6	61.6
7	3-4	5	6		5	6.1
8	3-4-5	6	8		6.1	8.1
9	1-2-5	1	0		1	0
10	5	1	0		1	0
11	1-2-3-4-5	1	0		1	0
	TOTAL	99	99		100	100
NUMBER OF SUBJECTS WITH HAIR (%)		99	99			
NUMBER OF SUBJECTS WITHOUT HAIR (%)		1	1			

TABLE 14 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN YORUBA FEMALES (HAND)

		ETHNICITY (YORUBA)					
		FEMALE					
		PROXIMAL PHALANX (HAND)					
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)		
1	1-2-3-4-5	16	15	12.2	11.4		
2	1	3	3	2.3	2.3		
3	1-2	2	0	1.5	0		
4	2-3	0	1	0	0.8		
5	2-3-4	4	4	3	3		
6	WITHOUT HAIR	12	11	9.2	8.5		
7	2-3-4-5	83	81	63.4	61.8		
8	3-4	2	2	1.5	1.5		
9	3-4-5	6	9	4.5	6.9		
10	4	1	1	0.8	0.8		
11	4-5	1	4	0.8	3		
12	5	1	0	0.8	0		
TOTAL		131	131	100	100		
NUMBER OF SUBJECTS WITH HAIR (%)			90.8	91.6			
NUMBER OF SUBJECTS WITHOUT HAIR (%)			9.2	8.4			

TABLE 15 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN YORUBA MALES (HAND)

		ETHNICITY (YORUBA)					
		MALE					
		MIDDLE PHALANX (HAND)					
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)		
1	3	1	0	0.8	0		
2	WITHOUT HAIR	115	113	87.8	86.2		
3	3-4	0	1	0	0.8		
4	3-4-5	1	1	0.8	0.8		
5	4	13	16	9.8	12.2		
6	5	1	0	0.8	0		
TOTAL		131	131	100	100		
NUMBER OF SUBJECTS WITH HAIR (%)			12.2	13.7			
NUMBER OF SUBJECTS WITHOUT HAIR (%)			87.8	86.3			

TABLE 16 THE DISTRIBUTION OF MIDDLE PHALANGEAL HAIR IN YORUBA FEMALES (HAND)

		ETHNICITY (YORUBA)				
		FEMALE				
		MIDDLE PHALANX (HAND)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	2	1	1	0.8	0.8	
2	WITHOUT HAIR	130	130	99.2	99.2	
	TOTAL	131	131	100	100	
SUBJECTS WITH HAIR (%)		0.8	0.8			
SUBJECTS WITHOUT HAIR (%)		99.2	99.2			

TABLE 17 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN IGBO MALES (HAND)

		ETHNICITY (IGBO)				
		MALE				
		PROXIMAL PHALANX (HAND)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	2-3-4-5	13	15	59.2	68.2	
2	3-4-5	1	1	4.5	4.5	
3	1-2-3-4-5	5	3	22.7	13.7	
4	3-4-5	0	1	0	4.5	
5	3-4	2	2	9.1	9.1	
6	3	1	0	4.5	0	
	TOTAL	22	22	100	100	
SUBJECTS WITH HAIR (%)		100	100			
SUBJECTS WITHOUT HAIR (%)		0	0			

TABLE 18 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN IGBO FEMALES (HAND)

		ETHNICITY (IGBO)				
		FEMALE				
		PROXIMAL PHALANX (HAND)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	1-2-3-4-5	2	2	9.1	9.1	
2	2-3-4-5	20	20	90.9	90.9	
	TOTAL	22	22	100	100	
SUBJECTS WITH HAIR (%)		9.1	9.1			
SUBJECTS WITHOUT HAIR (%)		90.9	90.9			

TABLE 19 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN HAUSA MALES (HAND)

		ETHNICITY (HAUSA)				
		MALE				
		PROXIMAL PHALANX (HAND)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	2-3-4-5	3	3	60	60	
2	1-2-3-4-5	1	0	20	0	
3	1-3-4-5	0	1	0	20	
4	3-4-5	1	1	20	20	
	TOTAL	5	5	100	100	
SUBJECTS WITH HAIR (%)		100	100			
SUBJECTS WITHOUT HAIR (%)		0	0			

TABLE 20 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN HAUSA FEMALES (HAND)

		ETHNICITY (HAUSA)				
		FEMALE				
		PROXIMAL PHALANX (HAND)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	3-4-5	3	3	60	60	
2	2-3-4-5	2	2	40	40	
	TOTAL	5	5	100	100	
SUBJECTS WITH HAIR (%)		100	100			
SUBJECTS WITHOUT HAIR (%)		0	0			

TABLE 21 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN YORUBA MALES (FOOT)

		ETHNICITY (YORUBA)				
		MALE				
		PROXIMAL PHALANX (FOOT)				
S/N	PATTERNS	RIGHT	LEFT	RIGHT (%)	LEFT (%)	
1	1-2-3-4-5	49	44	40.8	35.2	
2	1-2-3-4	11	9	9.2	7.2	
3	1-2-3	8	6	6.7	4.8	
4	1	16	24	13.3	19.2	
5	1-5	2	0	1.7	0	
6	1-2	5	3	4.2	2.4	
8	1-3-4	0	1	0	0.8	
9	3	1	1	0.8	0.8	
10	1-4	0	3	0	2.4	
11	1-3	1	2	0.8	1.6	
12	1-2-3-5	1	0	0.8	0	
13	2-3-4	1	1	0.8	0.8	
14	WITHOUT HAIR	21	25	17.6	20	
15	2-3-4-5	2	2	1.7	1.6	
16	3-4	0	1	0	0.8	
17	3-4-5	0	1	0	0.8	

TABLE 21 CONTINUE

18	1-4-5	0	1	0	0.8
19	1-3-4-5	1	0	0.8	0
19	4	1	1	0.8	0.8
	TOTAL	120	125	100	100
SUBJECTS WITH HAIR (%)		82.4	80		
SUBJECTS WITHOUT HAIR (%)		17.6	20		

TABLE 22 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN YORUBA FEMALES (FOOT)

S/N	ETHNICITY (YORUBA)				RIGHT (%)	LEFT (%)
	FEMALE					
	PROXIMAL PHALANX (FOOT)					
PATTERNS	RIGHT	LEFT				
1	1-2-3-4-5	18	18	16.8	23.4	
2	2-3-4	12	1	11.2	1.3	
3	1	15	1	13.9	1.3	
4	1-5	2	0	1.8	0	
5	1-2	3	2	2.9	2.6	
6	1-3-4	1	4	0.9	5.2	
7	2-3	1	1	0.9	1.3	
8	1-3	2	1	1.8	1.3	
9	2-3-4	2	4	1.8	5.2	
10	WITHOUT HAIR	37	32	34.3	41.5	
11	2-3-4-5	7	6	6.5	7.8	
12	3-4	2	1	1.8	1.3	
13	1-4-5	0	1	0	1.3	
14	4	1	2	0.9	2.6	
15	1-3-4-5	1	0	0.9	0	
16	1-2-5	0	1	0	1.3	
17	5	0	1	0	1.3	
18	1-2-4	1	0	0.9	0	
19	1-3-5	1	1	0.9	1.3	
20	2-5	1	0	0.9	0	
21	1-2-4-5	1	0	0.9	0	
	TOTAL	108	77	100	100	
SUBJECTS WITH HAIR (%)		65.7	58.4			
SUBJECTS WITHOUT HAIR (%)		34.3	41.6			

TABLE 23 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN IGBO FEMALES (FOOT)

		ETHNICITY (IGBO)					
		FEMALE					
		PROXIMAL PHALANX (FOOT)					
S/N	PATTERNS	RIGHT		LEFT		RIGHT (%)	LEFT (%)
1	3-4	1		0		8.3	0
2	1-2-3-5	0		1		0	8.3
3	1-2-3-4-5	2		2		16.7	16.7
4	1-2-3-4	2		3		16.7	25.1
5	2-3-4	1		1		8.3	8.3
6	2	0		1		0	8.3
7	WITHOUT HAIR	2		0		16.7	0
8	1	2		1		16.7	8.3
9	1-2-3	1		2		8.3	16.7
10	1-3-4-5	1		0		8.3	0
11	1-4	0		1		0	8.3
	TOTAL	12		12		100	100
SUBJECTS WITH HAIR (%)		83.3		100			
SUBJECTS WITHOUT HAIR (%)		16.7		0			

TABLE 24 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN IGBO MALES (FOOT)

		ETHNICITY (IGBO)					
		MALE					
		PROXIMAL PHALANX (FOOT)					
S/N	PATTERNS	RIGHT		LEFT		RIGHT (%)	LEFT (%)
1	1-3-5	1		1		4.4	5.6
2	1-2	2		2		8.7	11.1
3	1	4		6		17.4	33.2
4	1-2-3-4	4		3		17.4	16.7
5	WITHOUT HAIR	3		2		13	11.1
6	1-2-3-4-5	7		2		30.3	11.1
7	1-3	1		0		4.4	0
8	2-3-4-5	1		1		4.4	5.6
9	4	0		1		0	5.6
	TOTAL	23		18		100	100
SUBJECTS WITH HAIR (%)		87		88.9			
SUBJECTS WITHOUT HAIR (%)		13		11.1			

TABLE 25 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN HAUSA FEMALES (FOOT)

		ETHNICITY (HAUSA)					
		FEMALE					
		PROXIMAL PHALANX (FOOT)					
S/N	PATTERNS	RIGHT		LEFT		RIGHT (%)	LEFT (%)
1	1	5		5		50	50
2	1-2-3-4	5		5		50	50
	TOTAL	10		10		100	100
SUBJECTS WITH HAIR (%)		100		100			
SUBJECTS WITHOUT HAIR (%)		0		0			

TABLE 26 THE DISTRIBUTION OF PROXIMAL PHALANGEAL HAIR IN HAUSA MALES (FOOT)

S/N	ETHNICITY (HAUSA)		RIGHT (%)	LEFT (%)
	PATTERNS	MALE PROXIMAL PHALANX (FOOT)		
1	1-2-3-4-5	4	57.1	42.8
2	1-2-3-4	2	28.6	28.6
3	WITHOUT HAIR	1	14.3	28.6
	TOTAL	7	100	100
SUBJECTS WITH HAIR (%)		85.7		71.4
SUBJECTS WITHOUT HAIR (%)		14.3		28.6

Table 27 Comparative Distribution of Proximal Phalangeal Hairs in Different Population

Population	Percentage of Hair			References
	Male	Female	Total	
Nigeria	96	95	-	J.D.Singh 1982
Turkey	99.8	98.3	-	Hati Boglu 1983
Pakistan	98	80	-	Nasir 1995
Nigeria	92	92.4	-	M Bajjorgu 1996
Malaysia	99.3	85.1	-	Dhurap 1996
Korea	-	-	98	Jung <i>et al.</i> 2001
Nigeria	-	-	98	Olabiya 2008
Nigeria	98.4	100	98	Onyije 2011
India(South)	99.1	98	98.6	Muralidhar R.S. 2012
India (North)	98.8	97.4	98.1	Ali <i>et al.</i> 2012
Nigeria	98	92.2	95.1	Present Study 2014

Table 28 Comparative distribution of middle phalangeal hair in different populations of the world

Population	Percentage with hair	References
America (White)	70.4	Danforth 1921
Japan	36.8	Matsunaga 1956
Ethopia	25.6	Batmiriam 1962
Britain	70.2	Brothwell & Molleson 1965
Calabar (Nigeria)	21	Singh 1982
Turkey	49	Hatiboglu 1983
Kanuris and Baburs/Buras	25.2	Mbajjorgu <i>et al.</i> 1996
Yoruba (Nigeria)	0.2	Olabiya <i>et al.</i> 2008
Ogba (Nigeria)	10.9	Onyije 2011
Osun (Nigeria)	8.7	Present Study 2014

CONCLUSION

The patterns of phalangeal hair distribution indicate regional and sexual variations and also show some

similarities within and among various race, language and nationality. Due to its relevance in medicolegal investigations and anthropology generally, it is sure essential for more studies to be done in this field of interest

and the generated knowledge carefully applied to various scientific fields.

RECOMMENDATIONS

- Larger samples can be employed for further studies
- More research works can be carried out in other tribes and regions so as to establish a clear margin between various ethnicities.
- Further studies can be made on the relation of phalangeal hair distribution with evolutionary trends such as the patterns of descent.

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