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Anatomy

Prevalence of Morton's Toe among the Idoma Tribe, Benue State, Nigeria

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Abstract **Original Research Article**

Introduction: There is variation in the distribution of feet pattern and this variation in could be genetic. Genetic variation in humans is caused by many factors such as natural selection, migration, temporal variation, gene flow and genetic drift. In certain populations, there is the predominant feet structure or toe pattern that is common which results from the genetic makeup of the people. The dearth of information on the distribution of Morton's toe (Greek's feet) among the Idoma people informed this study, which would provide a baseline data for the population. ***Materials and Methods*:** The study was descriptive and cross-sectional in design with a sample size of 384 participants who were recruited using a multistage sampling method. Data for the study was collected using a self-created, closed-ended questionnaire that examined the presence or absence of Morton's toe. Statistical analysis was done using SPSS version 25. ***Results***: The most frequent socio-demographic characteristics were age category 33-47yrs with 205(53.3%), male gender with 213(55.4%), Tertiary education with 229(59.6%), Married/Co-habiting 210(54.6%), and Christianity 276(71.8%). The proportion of participants with Morton's toe was 28.3%. In the population few persons have Morton's toe. The only significant (p=0.038) socio-demographic characteristic among participants was marital status. ***Conclusion***: The proportion of participants with Morton's toe was 28.3%. In the population few persons have Morton's toe. The only significant (p=0.038) socio-demographic characteristic among participants was marital status. Less than a third of the sampled population had Morton's toe; in the general population, 2 in 7 persons had Morton's toe.

Keywords: Morton's Toe, Idoma, Benue State, Nigeria.

INTRODUCTION

The phenomenon known as Morton's toe, also known as Morton's foot, occurs when the second toe seems longer than the big toe. Some people simply have it, while others don't, and it's fairly prevalent [1]. Morton's toe may make it more likely for calluses to form on the bottom of your foot and to cause certain other foot pain in some people. In contrast to many other foot issues, Morton's toe is also known as Greek toe [2]. Though scientific data shows no link between longer second toes and Greek ancestry, the name's origin may have something to do with the Greeks' artistic presentation of their concept of beauty [3].

Inappropriate footwear, injuries, or overuse do not contribute to Morton's toe, this is because it is hereditary [3, 4]. Morphogenetic features, which vary in

expression among populations, are observable characteristics that people inherit from their parents in an autosomal dominant or recessive fashion [5]. The basis for diversity and variation among populations is typically found in the ways that these qualities are inherited and expressed differently.

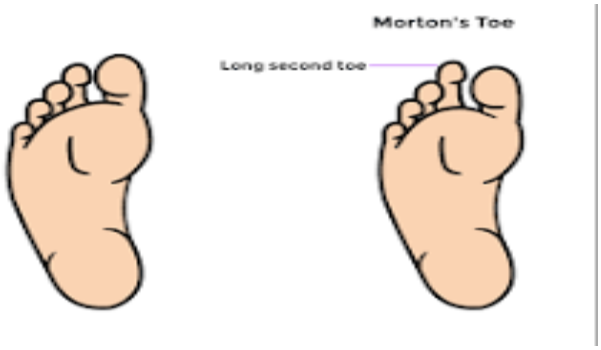

Figure 1: Morton's toe (adopted from www.healthline.com)

Morton's toes is also known as Greek feet [5, 6]. There is variation in the distribution of feet pattern/type and this variation is attributable to genetics. Genetic variation in humans is caused by many factors such as natural selection, migration, temporal variation, gene flow and genetic drift [7-9]. In certain populations, there is the predominant feet structure or toe pattern that is common which results from the genetic makeup of the people.

There is dearth of information on the prevalence of Morton's toe in the Idoma people hence, this study was done to survey the distribution of Morton's toe among the Idoma people of Benue State.

There are existing reports on Morton's toe by previous authors who had done similar works in other populations [7-10].

MATERIALS AND METHODS

Study Design: The study was descriptive and cross-sectional in design.

Study Area: The study was done on the Idoma tribe of Benue State. Otukpo town is the ancestral headquarter of the Idoma people in Benue State, Nigeria, located in the Middle Belt Region of Nigeria.

Sample Size: 384 participants were recruited for the study.

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.

Eligibility criteria: participants who are indigenes of Idoma whose parents, grandparents, and great grandparents were Idoma; those who reside in Idoma land were included in the study, while those who had malformations of the feet were excluded from the study.

Data Collection

Data for the study was collected using 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 and religion. Section B examined the presence or absence of Morton's toe. The questionnaire was pre-tested among 40 volunteers who share similar characteristics with the study population. Modifications and adjustments were made to the procedure and the study instruments in response to the pre-test.

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	121	31.5
33 -47	205	53.3
48 -62	54	14.0
63 -77	4	1.2
Total	384	100.0
Gender		
Male	213	55.4
Female	167	43.4
I don't want to disclose	4	1.2
Total	384	100.0
Education		
No formal education	76	19.7
Primary education	3	1.0
Secondary education	76	19.7
Tertiary education	229	59.6
Total	384	100.0
Marital status		
Single/Never married	157	40.8
Married/Co-habiting	210	54.6
Divorced/separated	17	4.6
Total	384	100.0
Religion		
Christianity	276	71.8
Islam	71	18.4
Traditional	34	8.9
Others	3	0.9
Total	384	100.0

The most frequent socio-demographic characteristics were age category 33-47yrs with 205(53.3%), male gender with 213(55.4%), Tertiary education with 229(59.6%), Married/Co-habiting 210(54.6%), and Christianity 276(71.8%).

Table 2: The distribution of Morton's toe among the Idoma people of Benue State

Morton's toe	Frequency	Per cent
Present	109	28.3
Absent	275	71.7
Total	384	100.0

The proportion of participants with Morton's toe was 28.3%. In the population few persons have Morton's toe.

Table 3: Comparison of Morton's toe distribution with socio-demographic characteristics

Socio-demographic characteristics	Morton's toe			X^2(p-value)
	Present	Absent	Total	
Gender				
Male	72(18.7)	141(36.7)	213(55.5)	
Female	36(9.4)	131(34.1)	167(43.5)	0.334(0.846)
I don't want to disclose	1(0.3)	3(0.8)	4(1.0)	
Total	109(28.4)	275(71.6)	384(100.0)	
Age category				
18 -32	48(12.5)	70(18.2)	118(30.8)	
33 -47	83(21.6)	120(31.2)	203(52.9)	6.401(0.094)
48 -62	13(3.3)	46(12.0)	59(15.3)	
63 -77	2(0.6)	2(0.6)	4(1.0)	
Total	146(38.0)	238(62.0)	384(100.0)	
Education				
No formal education	24(6.3)	57(14.8)	81(21.1)	
Primary education	1(0.3)	2(0.6)	3(0.8)	2.156(0.541)
Secondary education	31(8.0)	47(12.2)	78(20.3)	
Tertiary education	90(23.4)	132(34.4)	222(57.8)	
Total	146(38.0)	238(62.0)	384(100.0)	
Marital status				
Single/Never married	59(15.3)	100(26.0)	159(41.4)	
Married/Co-habiting	81(21.0)	127(33.1)	208(54.2)	**0.038(15.981)**
Divorced/separated	6(1.6)	11(2.8)	17(4.4)	
Total	146(38.0)	238(62.0)	384(100.0)	
Religion				
Christianity	112(29.1)	157(41.0)	269(70.1)	
Islam	25(6.5)	48(12.5)	73(19.0)	5.795(0.122)
Traditional	9(2.3)	30(7.7)	39(10.1)	
Others	0(0.0)	3(0.8)	3(0.8)	
Total	146(38.0)	238(62.0)	384(100.0)	

The only significant (p=0.038) socio-demographic characteristic among participants was marital status.

DISCUSSIONS

Summary of results

The most frequent socio-demographic characteristics were age category 33-47yrs with 205(53.3%), male gender with 213(55.4%), Tertiary education with 229(59.6%), Married/Co-habiting 210(54.6%), and Christianity 276(71.8%). The proportion of participants with Morton's toe was 28.3%. In the population few persons have Morton's toe. The only significant (p=0.038) socio-demographic characteristic among participants was marital status (Tables 1-3).

Implication of findings

Less than a third of the sampled population had Morton's toe; in the general population, 2 in 7 persons had Morton's toe (Table 2). The ratio of males to females who had Morton's toe was 2:1. Morton's toe was most frequent in the male gender resulting in sexual dimorphism. This perhaps may be a result of hormonal difference between both gender (Table 3). Morton's toe was most prevalent among married/cohabiting participants as seen on the Table 3.

The result of this study corroborates the reports of the following persons Adekoya [1], Ebeye [3], Aigbogun [4], and Eboh [7] who had in the past reported similar results in their respective study populations.

CONCLUSION(S)

The proportion of participants with Morton's toe was 28.3%. In the population few persons had Morton's toe. The only significant (p=0.038) socio-demographic characteristic among participants was marital status. Less than a third of the sampled population had Morton's toe. In the general population, 2 in 7 persons had Morton's toe.

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