

Prevalence of simian and Sydney creases in the Ijaws of South- South Nigeria

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Citation

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Abstract

Simian, and Sydney creases are anomalous palmar crease that had generated medical attention as their presence correlate strongly with several human chromosomal abnormalities and diseases. Works on these creases have been done on several human populations; racial and ethnic, but no specific documented study had singled out the Ijaws of South- South Nigeria in respect to these palmar creases aberration. This study was to determine the prevalence of simian and Sydney creases in apparently normal individual of the Ijaw ethnicity of South- South Nigeria and to compare it with known population prevalence. Five hundred and seven subjects of Ijaw origin were randomly selected. Subjects palms were physically inspected for simian and / or Sydney crease. Observations were categorised into gender and right / left palm(s). Relationship between creases, gender and right or left palm was assessed by Fisher's exact test. Results shows that the prevalence of male with simian crease in the male population and in the entire population was 3.98% and 1.77% respectively, while that for female were 4.27% and 2.37%. Sexual predilection was not statistically significant ($p > 0.05$). Subject in the study population with simian crease is 4.14%. Sydney crease was uncommon, it occurred in 0.19% of individuals. Values in the Ijaws of South- South Nigeria were generally lower than those of the Orient and higher than those of the Caucasians. Confirming that physical anthropology trait varies amongst populations.

INTRODUCTION

The scientific study of dermal ridges of the hands and feet was first begun in 1823 by Evangelista Purkinje¹. Overtime, several studies have emerged which progressively show that dermal ridges of the hands and feet can be employed in the prediction of a range of medical conditions and diseases^{1,2,3}. Palmar crease are epidermal lines that produce typical or atypical patterns on the palmar surface of the hand. Simian, and Sydney creases are anomalous palmar crease that had engendered medical attention, because it is known that their presences correlate very strongly with several human chromosomal abnormalities and diseases^{4,5}. Palmar crease aberrations are most times indicative of chromosomal aberration and other intrauterine assault occurring early in pregnancy³. Dermal ridge configurations begin to develop about the 12th week of gestation. Dermatoglyphics polymorphism results from the interplay of genetic and environmental factors during the early stages of ontogenesis³. Epidermal lines or dermatoglyphics analysis is now a valuable companion to other methods used for diagnosis of some genetic diseases such as phenylketonuria and syndromes genetically determined (e.g., Down, Turner or Klinefelter syndromes)⁶. Consequently, they are employed

as predictive indices in apparently normal infants in whom cryptic damage may manifest later⁷. It has enabled early detection of genetic abnormalities such as Down's syndrome and many other defects that occur in- vivo caused by infection such as German measles virus. Moore and Dalley wrote on the surface anatomy of the hand⁸; the palm usually has three flexion creases sloping from an angle near the metacarpophalangeal joint of the index finger. Neither of the transverse creases extends entirely across the palm from the radial boarder to the ulnar boarder. The occasional fusion of the proximal and distal creases, an event that occur prior to the 12th week of foetal life, creates a single palmar crease, the simian crease (figure 1), which extends entirely across the palm⁹. Infrequently, both transverse creases are present, but with only one of either completely crossing the palm, resulting to a Sydney crease¹⁰ (figure 1). Simian crease has been implicated in more than twenty human diseases / genetic disorders⁴, including Down's syndrome¹¹ and in the aetiology of several diseases such as leprosy¹² and cancer¹³, and rheumatoid arthritis¹⁴. Sydney creases though very rare, is also associated with clinical conditions⁵ including Down's syndrome¹⁵ and cancer¹⁶. It is also associated with delayed development and learning difficulties¹⁷. The presences of

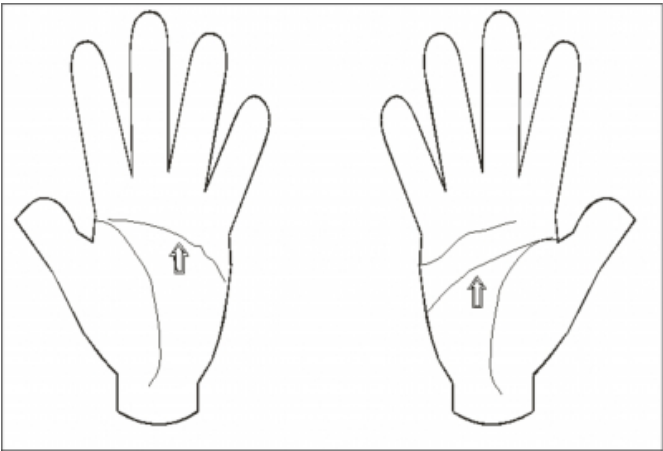
these creases do not necessarily signify abnormality, as it has been observed in some normal individual and, some were exceptionally intelligent^{18, 19}. The objective of this study is to determine the prevalence of simian and Sydney creases in apparently normal individuals of the Ijaw ethnicity of South-South Nigeria. Hitherto, no specific documented study had singled out the Ijaws in respect to these palmar creases aberration.

MATERIAL AND METHODS

This cross-sectional study was conducted in Niger Delta University, Wilberforce Island, Bayelsa state, Nigeria. Five hundred and seven subjects of Ijaw origin, (n = 507), comprising of 281 female and 226 males were randomly selected from the student population. Subjects whose father and mother were not of Ijaw ethnic origin were excluded from this study. Also excluded were individuals with limb anomaly, or any morphological anomaly /syndrome. This study did not discriminate between the variants of either simian crease or Sydney crease. Informed consent was obtained from subjects. Subjects’ palms were physically inspected for simian and / or Sydney crease by the method of Dar et al.,²⁰ (figure 1). Observations were categorised into gender and right / left palm(s). Relationship between creases and gender / right or left palm was assessed by Fisher's exact test (GraphPad InStat V2.03). Significance level for all comparisons was set at p < 0.05. The study design was approval by Niger Delta University’s research ethics committee in accordance with the Helsinki convention on health and medical research.

Figure 1

Figure 1. Diagram of the palm showing simian crease (left) and Sydney crease (right).



RESULTS

This work shows that the prevalence of simian and Sydney

creases in normal individual of the Ijaw ethnicity of South-South Nigeria is 4.1% and 0.19% respectively (Table 1).

Simian crease: The percentages of male with a simian crease in at least a palm in the studied male population and in the entire studied population were 3.98% and 1.77% respectively. The percentages of female with a simian crease in at least a palm in the studied female population and in the entire studied population were 4.27% and 2.37% respectively. Sexual and hand preponderance were not statistically significant (p > 0.05). Fisher's exact test (one-sided, p = 0.52 for hand and 0.53 for sex respectively). The percentage subjects in the study population with a simian crease in at least a palm 4.14%.

Sydney crease: No female subject was observed with a Sydney crease in either of the palms. A Sydney line was observed in the right palm of a male subject. The percentage of subjects in the study population with a Sydney crease is 0.19%.

Figure 2

Table 1: Number of Subject with Crease

Sex	N	Simian		Sydney	
		RP (%)	LP (%)	RP (%)	LP (%)
Male	226	5 (2.21)	4 (1.77)	1 (0.44)	0 (0)
Female	281	5 (1.78)	7 (2.49)	0 (0)	0 (0)
Total	507	10 (1.97)	11 (2.16)	1 (0.19)	0 (0)

RP = right palm, LP = left palm, N_{male} = 249 and N_{female} = 258

Figure 3

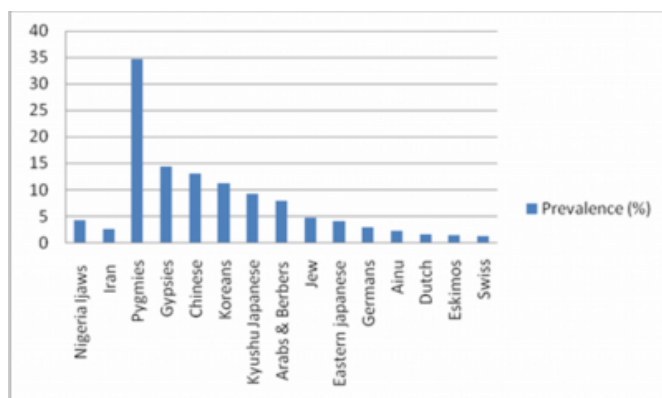
Table 2: Comparison of simian crease prevalence in this study versus others known Populations prevalence

Country / Region	Prevalence (%)
Nigeria Ijaws	4.1(present study)
Iranian	2.5
Pygmies	34.7 *
Gypsies	14.3 *
Chinese	13 *
Koreans	11.2 *
Kyushu Japanese	9.2 *
Arabs & Berbers	7.9 *
Jew	4.6
Eastern Japanese	4.0
Germans	2.8
Ainu	2.2
Dutch	1.5 *
Eskimos	1.3 *
Swiss	1.2 *

* Significant (Fisher's exact test $p < 0.05$ in all case)

Figure 4

Figure 2: Simian Crease Prevalence Rate (%) of Diverse Human Populations



DISCUSSION

We have demonstrated that the prevalence of simian crease was 1.8% in male and 2.4% in female of the Ijaws of South-South Nigeria. The general population prevalence was 4.1%.

Gender or hand predominance was not experiential ($p > 0.05$). This agrees with the work of Kamali⁸, but in variant with the study of Hernandez¹⁸ in respect to sex preponderance. The population prevalence of simian crease in the Ijaws is significantly different ($p < 0.05$) from those of the Caucasian except for the Germans, the Orients except for the Eastern Japanese, the Gypsies and African Pygmies¹⁹ (Table 2). We also observed that the general pattern was an increase in prevalence rate as we move from the Caucasian to the Orients (figure 2). This discrepancy can be explained by ethno-historic and geographic variations between different human populations^{21,22}. Dar et al.,²⁰ have earlier submitted that race, sex, and age are factors that influence the expression of palmar crease patterns. The influence of genes also can not be overlooked, as several studies have shown^{23,24}. Besides, experiences in physical anthropological studies on other parts of the human body have established that anthropologic variation in Human population is a norm^{25,26,27,28,29}. Hence this lack of homogeny is not unusual, thus accentuating the importance of undertaking parallel study on every Human population where possible. This study also shows the prevalence of Sydney creases as 0.19% in our studied population. This differs from those of the Orients¹⁹, but not with that of the Caucasian¹⁸. Arguments as regards to racial variation in Sydney crease prevalence need no emphases as it is rare. Although Ravindranath et al.,¹⁴ in their work: dermatoglyphics in rheumatoid arthritis shed a bit of controversy in reporting a high occurrence of Sydney crease in their normal control which was in contrast to established patterns¹⁸ and to our findings. They also recorded female preponderance, which do not agree with our observations (Table 1). It is however, not evident from our study if Sydney creases exhibit sexual predilection.

Nevertheless, the submissions of Hassanzadeh et al.,¹ and Dar et al.,²⁰ that dermatoglyphic polymorphism results from the co-operation of genetic, ethno-historic and environmental factors remains valid in explaining the lack of homogeny observed between various studies. However, rather paradoxical, dermatoglyphic pattern of patients with Down syndrome is not affected by ethnic or geographic factors¹⁰. Conclusively, physical anthropological variations are normal occurrence amongst diverse Human populations. It is noteworthy to have this in mind when interpreting prevalence values between two different Human communities / populations. This work draws emphasis to the import of undertaking parallel investigations on every socio-cultural Human group or population wherever possible. We submit that the prevalence of simian and Sydney creases in

normal individual of the Ijaw ethnicity of South- South Nigeria is 4.1% and 0.19% respectively, with simian crease been predominantly bilateral. We found no substantiation of gender or hands preponderance in the episode of simian crease in the Ijaws.

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