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The Arch Pattern Dermatoglyphics on the Toes of Hausa Ethnic Group of Nigeria

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Dermatoglyphic has found application in establishing ethnic differences (Harlich et al., 2002). The plantar Arch pattern dermatoglyhics of the Hausa ethnic group of Nigeria has not been established, and a lot of work had been done in southern Nigeria. This work attempts to look into the plantar arch patterns of the Hausas in Northern Nigeria. A cross-sectional survey of 357 subjects was collected from persons who were truly of the Hausa tribe in Nigeria. 222 of the subjects were males while 135 were females. There was a significant difference in the plantar arch pattern on both sexes as confirmed by the chi-square test. There were differences on both feet. The percentage frequency of the arch pattern on the toes was greatest on the females and on the right toe (63%). The frequency was least on females (9.9%). The frequencies were greatest on the right toes of both sexes.

Keywords: Arch; Pattern; Toe; Hausa; Nigeria

Introduction

Dermatoglyphic patterns are genetically determined i.e. they are inheritable. It is believed that they follow a polygenic pattern of inheritance, Adebisi (2008, 2009). Dermatoglyphics has found application in establishing ethnic differences (Harlich et al., 2002). The science of Dermatoglyphics involves the study of epidermal ridges present on the surface of palms, fingers, soles and toes. The following dermatoglyphic features in **Figure 1** are found on the toes which include:

- Arches
- Loops
- Whorls

Starting with the big toes, the toes are numbered from big toe (I) to the small toe (V).

Materials and Methods

A total of 357 subjects were collected from persons who are genuinely of Hausa ethnic group in Nigeria, 222 were males while 135 were females (**Figure 2**).

The Ink procedure by Cummins and midlo was used to collect digital prints on the soles; the prints were counted with the aid of hand lens and classified. The arches frequencies were expressed in percentages and analyzed.

Results and Discussions

These were the most abundant dermatoglyphics features found on the toes. They possess no tri-radius. **Table 1** shows that the arches were more distributed on the hallux of the toes. The percentage frequency showed a significant difference in both sexes. A significant difference was also observed on the right and left feet. The percentage of distribution of arches on the toes was greatest in females and on the right toe. It was least in females (9.9%) in equal proportion.

Figure 1.
Dermatoglyphics patterns on the toes.

Table 1.
Shows percentage frequencies of archs on the toe of hausa ethnic group.

	No. of Sample	I	II	III	IV	V
Male	L 222	43.2%	36.5%	26.6%	20.3%	11.7%
	R 222	45.5%	29.7%	29.3%	29.3%	12.2%
Female	L 135	61.5%	41.5%	41.5%	35.6%	9.9%
	R 135	63.0%	50.4%	44.4%	44.4%	9.9%

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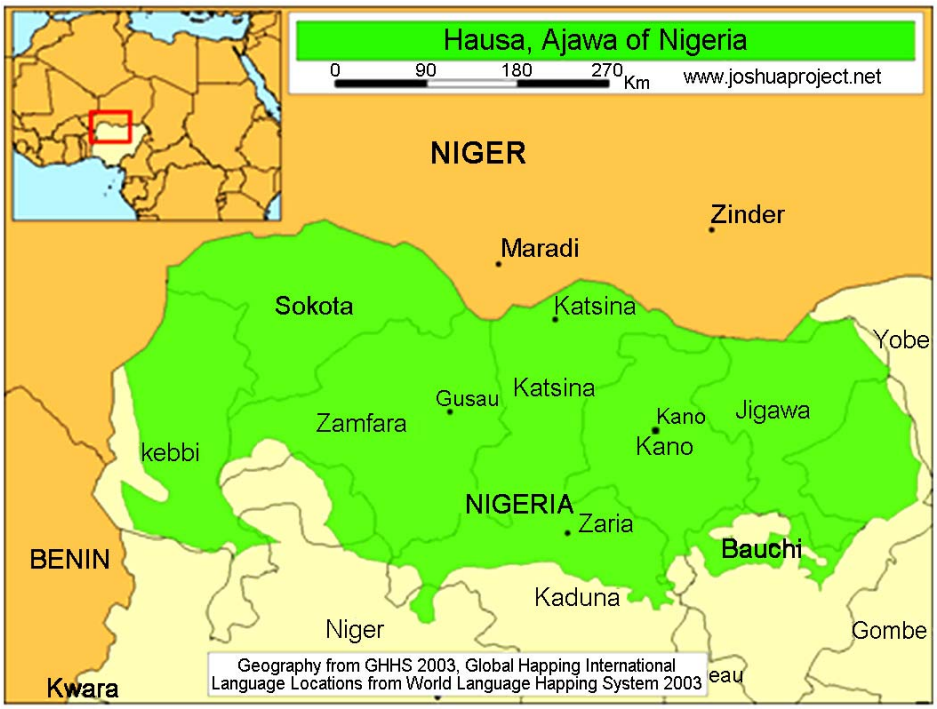

Figure 2.
The map of Hausa speaking states in Nigeria.

Table 2.
Shows numerical distribution of arches pattern on the toe of hausa ethnic group.

	No. of Sample	I	II	III	IV	V
Male	L 222	96	81	59	45	26
	R 222	101	66	65	65	27
Female	L 135	83	56	56	48	22
	R 135	85	68	60	60	22

In the males, the percentage frequency was 45.5% on the right toe. The frequency was greatest on the right toes of both sexes. It was least on the hypothenar distal of the left toe in males (11.7%). In females, the percentage frequency was highest on the right hallux (63%). It was least on the little toe of both feet (9.9%). The 3rd and 4th toe had equal percentage frequency on the right foot (44.4%). The 2nd toe had (50%). The observations in this research tallies with Ekanem et al. 2009 on the Annang ethnic group of Nigeria. This also tallies with Igbigbi et al. on the Malawians population.

Conclusion

Significant differences existed on both sexes and feet in the Hausa ethnic group of Nigeria as shown in **Table 2** above.

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