بسم الله الرحمن الرحيم

قال تعالى: (و علَّمَ آدم الأسماء كلها ثم عرضهم على الملائكة فقال أنبئوني بأسماء هؤلاء إن كنتم صادقين)

صدق الله العظيم
سورة البقرة اية رقم (31)

Dedication
To my father …
The candle light that
Shows me the road
….. to my mother…
The warmest asylum
That I resort to for
Support

To my sisters and brothers
My eyes through which
…..I vise the world …

To my husband and daughters
The sweetest garden of being
…..To them all…

I dedicate this humble
Work

Acknowledgement

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Thanks and deep gratitude should be convey to Almighty Allah Who gave the strength and power to complete this effort.
Great indebtedness and deep appreciation should be reflected to Dr. Hago Elfadil Haroun my supervisor who helped me a lot through his guidance and precious advices without which this effort will not see the light.
My thanks are extended to the staff of hospitals and students in universities and institutes in Khartoum state about their fruitful cooperation and support.
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Abstract
This research was conducted as a trial to get acquainted with the Sudanese foot shape and anatomy as it is necessary in the field of foot wear
industry. Besides, the research aims at proposing shoes size and fitting system for Sudanese dwelling in Khartoum state and studying the factors affecting the shape of Sudanese foot.

The study was conducted into two parts. The first part was questionnaire investigating a sample of 480 individuals from medical cadres operating in the medical and health institutions in Khartoum state about the most effective factors on the shape of Sudanese feet from Sudanese land vastness, land topography, work, diet and genetic factors.

In the second part, foot survey through manual measurement was conducted for sample of 327 individuals as 172 males and 155 females. The sample was distributed into 6 groups to be three for each sex according to their age and their foot length, width, joint, waist, instep, long heel, short heel and ankle girths were measured for each one.

The obtained results from the first part were subjected to analysis using The Statistical Package for Social Science application program (SPSS) which showed that the type of work is the most effective factor on the shape of Sudanese feet when it is compared with diet and land topography factors. The topography factor is more effective than diet factor. Whereas the genetic factor is the most effective factor on the shape of Sudanese feet when it is compared with land topography, diet and work factors. Generally, it was found that the genetic and work factors are more effective that the other factors on determination of the Sudanese foot shape.

Also, the obtained results from the second part were subjected to analysis using The Statistical Package for Social Science application program (SPSS) determining the common foot measurements for the group 1 of females with age ranging from 6 to 15 years old to be foot length (221.97mm), width (87.478mm), joint (204mm), waist (197.72mm), instep (207.28mm), long heel (305.03mm), short heel (279.03mm) and
ankle (228.39mm) girths. And for the group 2 of females with age ranging from 16 to 25 years old to be foot length (242.92mm), width (85.00mm), joint (208.99mm), waist (219.71mm), instep (207.28mm), long heel (302.96mm), short heel (276.30mm) and ankle (246.01mm) girths. And for the group 3 of females with age ranging from 26 to 54 years old to be foot length (256.45mm), width (97.55mm), joint (236.29mm), waist (229.24mm), instep (241.95mm), long heel (352.90mm), short heel (332.26mm) and ankle (268.00mm) girths.

For males groups, the analysis determined the common foot measurements for the group 4 of males with age ranging from 5 to 15 years old to be foot length (226.45mm), width (91.47mm), joint (212.52mm), waist (206.95mm), instep (218.23mm), long heel (313.10mm), short heel (287.42mm) and ankle (235.57mm) girths. And for the group 5 of males with age ranging from 16 to 25 years old to be foot length (267.66mm), width (103.78mm), joint (242.26mm), waist (239.19mm), instep (257.92mm), long heel (343.88mm), short heel (318.15mm) and ankle (263mm) girths. And for the group 6 of males with age ranging from 26 to 60 years old to be foot length (270.26mm), width (107.26mm), joint (249.42mm), waist (246.23mm), instep (255.61mm), long heel (366.77mm), short heel (349.29mm) and ankle (272.90mm) girths. These results will surely the base on which the suitable shoe size and fitting system for the six groups to be made. In addition to the above, comparative analysis was conducted for the six groups between the foot length and girths which determine the common measurements for their feet and gave a clear picture for variations of foot sizes and shapes according to sex and age groups.

مستخلص الدراسة

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اجري هذا البحث كمحاولة للتعرف على الشكل والتركيب التشريحي للقدم السودانية فيما يتعلق بعملية صناعة الاحذية ومحاولة الوصول لمقترح بنظام للقياس وضبط للاحذية داخل ولاية الخرطوم. بالإضافة إلى دراسة تشريح القدم، وبكل ما يتعلق بالقدم من مؤثرات تؤثر على شكل القدم السودانية.

في القسم الأول من الدراسة، وعبر استبيان عينة من المختصين بلغت 480 فرد يعملون في المؤسسات الصحية وذلك للإجابة عن بعض الأسئلة التي تدور حول أكثر العوامل تأثيراً على شكل القد السودانية وتم تحديد عوامل اتساع مساحة السودان وطبيعة الأرض وطبيعة العمل وطبيعة الغذاء وعامل الوراثي.

وفي القسم الثاني من الدراسة، اجري مسح ميداني لعينة تتألف من الذكور والإناث بمختلف فئاتها العمرية بولاية الخرطوم بلغت عدد 172 فرد من الذكور و155 فرد من الإناث قسموا إلى ثلاثة مجموعات عمرية. حيث تم قياس وطول القدم وعرضها مع محيطات الفصل القدم ومسط القدم ومشط القدم وكعب الطويل للقدم وكعب القصير وكاهل القدم.

了一口气 مواقع المحصول عليها من الاقسام الأول من البحث للتحليل عبر برنامج الحزم الإحصائية للعلوم الاجتماعية SPSS، و التي أظهر التحليل ان عامل طبيعة العمل أكثر تأثيراً على شكل القد من طبيعة الغذاء وطبيعة الأرض عند المقارنة بينهم. وجد أن عامل طبيعة العمل أكثر تأثيراً من عامل طبيعة الغذاء عند المقارنة بينهما. كما وجد أن العامل الوراثي أكثر تأثيراً على شكل القد من عوامل طبيعة الغذاء وطبيعة الارض وطبيعة الغذاء عند المقارنة بينهم. ومحبنا صادق التوصل إلى أن كل من العامل الوراثي وطبيعة العمل لهما أثر اكبر على وصول القد السودانية من عوامل طبيعة الأرض والغذاء.

وذلك أخصوص نتائج القسم الثاني من البحث للتحليل عبر برنامج الحزم الإحصائية للعلوم الاجتماعية SPSS، وقد توصل انين متوسطات اعداد القد للمجموعة الأولى والتي تتألف من الإناث ذو الاعمار بين 6 الى 15 سنة في طول القدم (219.97 ملم) وعرضها (87.478 ملم) مع محيطات الفصل القد (197.72 ملم) ووسط القد (204 ملم) ومشط القد (221.97 ملم) وكعب الطويل للقد (228.39 ملم) وكعب القصير (279.03 ملم) وكاهل القد (305.03 ملم) و متوسطات اعداد القد للمجموعة الثانية والتي تتألف من الإناث ذو...

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الاعمار بين 16 الي 25 سنة هي طول القدم (242.92 ملم) و عرضها (85.00 ملم) مع محيطات مفصل القدم (208.99 ملم) و وسط القدم (219.71 ملم) و الكعب الطويل (302.96 ملم) و الكعب القصير (276.30 ملم) و كاحل القدم (246.01 ملم) و متوسطات ابعاد القدم للمجموعة الثالثة التي تتالف من الإناث ذو الاعمار بين 26 الى 54 سنة هي طول القدم (256.45 ملم) و عرضها (97.55 ملم) مع محيطات مفصل القدم (212.52 ملم) و وسط القدم (206.95 ملم) و مشط القدم (218.23 ملم) و الكعب الطويل (313.10 ملم) و الكعب القصير (287.42 ملم) و كاحل القدم (235.57 ملم) و متوسطات ابعاد القدم للمجموعة الرابعة التي تتالف من الذكور ذو الاعمار بين 26 الى 54 سنة هي طول القدم (226.45 ملم) و عرضها (91.47 ملم) مع محيطات مفصل القدم (218.23 ملم) و وسط القدم (212.52 ملم) و مشط القدم (218.23 ملم) و الكعب الطويل (313.10 ملم) و الكعب القصير (287.42 ملم) و كاحل القدم (235.57 ملم) و متوسطات ابعاد القدم للمجموعة الخامسة التي تتالف من الذكور ذو الاعمار بين 16 الى 25 سنة هي طول القدم (267.66 ملم) و عرضها (103.78 ملم) مع محيطات مفصل القدم (242.26 ملم) و وسط القدم (239.19 ملم) و مشط القدم (257.92 ملم) و الكعب الطويل (343.88 ملم) و الكعب القصير (318.15 ملم) و كاحل القدم (263 ملم). و متوسطات ابعاد القدم للمجموعة السادسة التي تتالف من الإناث ذو الاعمار بين 26 إلى 60 سنة هي طول القدم (270.26 ملم) و عرضها (107.26 ملم) مع محيطات مفصل القدم (249.42 ملم) و وسط القدم (246.23 ملم) و مشط القدم (255.61 ملم) و الكعب الطويل (366.77 ملم) و الكعب القصير (349.29 ملم) و كاحل القدم (349.29 ملم) و كاحل القدم (272.90 ملم). و وشكلت المعلومات السابقة مقاسات الحذاء لباس المجموعات الستة. بالإضافة لما ذكر أجريت مقارنة بين اطوال الأقدام و المحيطات بالنسبة للمجموعات الستة حددت الأطوال الشائعة و أعطت صور متعددة لأحجام الأقدام وفق النوع و الفئة العمرية. 

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