

The Prevalence of Hallux Valgus among Three Ethnic Groups in Delta State, Southern Nigeria

¹W.N. Dare, ²O.A. Ebeye and ²C.F. Nsi

¹Department of Anatomy, College of Health Sciences, Niger Delta University, Wilberforce Island, Nigeria

²Department of Anatomy and Cell Biology, College of Health Sciences, Delta State University Abraka, Nigeria

Abstract: The purpose of this study was to investigate the prevalence of hallux valgus among Urhobo, Isoko and Delta Ibo (Anioma) ethnic groups in Delta State, Nigeria and to evaluate its influence in age and gender subgroups. Seven hundred and seventy five (775) male and female subjects aged between 10-30 years from Urhobo (257), Isoko (254) and Delta Ibo (262) ethnic groups of Delta State were examined by visual observation of their feet. The data obtained from this study was analyzed using descriptive statistics and chi-square test was utilized to determine hallux valgus association with foot pain. Results obtained showed, hallux valgus was more prevalent in Isoko ethnic group (28.0%) as compared to Urhobo (25.0%) and Delta Ibo (23.3%) ethnic groups. Hallux valgus was more prevalent between the ages of 16 and 20 years for Isoko (35.5%) and Delta Ibo (27.5%) ethnic groups. This result was different for Urhobo ethnic group, where hallux valgus was more prevalent between the age groups 10 and 15 years (23.8%) and 16 and 20 years (25.5%). Mild hallux valgus was observed more prevalent among the three ethnic groups pooling a total of 20.6% for Delta Ibo, 23.0% for Urhobo and 24.0% for Isoko ethnic group. Bunion was also more prevalent among the three ethnic groups (Isoko 28.0%, Urhobo 23.3% and Delta Ibo 23.7%). Corns' prevalence was also low among the three ethnic groups (Isoko 0.4%, Urhobo 2.3% and Delta Ibo 3.1%). Bilateral hallux valgus (Both feet) was more prevalent among the three ethnic groups (Isoko 17.3%, Urhobo 18.3% and Delta Ibo 17.2%). Unilateral distribution was observed more on the right foot than the left pooling a total of Isoko 5.9%, Urhobo 4.3% and Delta Ibo 3.1%. Foot pain was also associated with the hallux valgus subjects and its association was low between the three ethnic groups (Isoko 3.1%, Urhobo 3.1% and Delta Ibo 1.9%). In conclusion, hallux valgus is more prevalent among females than males and its prevalence increases with age.

Key words: Hallux Valgus • Bunion • Corns • Foot Pain • Unilateral • Bilateral

INTRODUCTION

Hallux valgus (HV) is a common deformity characterized by abnormal angulation, rotation and lateral deviation of the great toe at the first metatarsophalangeal (MTP) joint [1]. It is characterized by lateral drift of the great toe, which is an association of joint subluxation and medial deviation of the first metatarsal [2-4]. The condition is frequently accompanied by a soft tissue pain and osseous prominence on the medial aspect of the first metatarsal head called bunion [5]. Often hard corns (Inflamed areas of thick skin) also form over the proximal interphalangeal joints, especially of the little toe [6]. Hallux valgus occurs in two distinctive aspects: it can occur either on the left or right foot (Unilateral Hallux Valgus) or

on both feet (Bilateral Hallux Valgus) [7]. The hallux deviation may be mild, moderate or severe. The etiology of hallux valgus is complex and multifactorial. It may be affected by improper footwear, abnormalities in foot anatomy and foot biomechanics, limb inequality, occupational hazards, inflammatory joint diseases (Rheumatoid arthritis) and genetic factors [8]. Estimations about community prevalence of hallux valgus vary widely, ranging from 21% to 65% of general adult population [4]. Women are significantly more likely to have hallux valgus compared with men, with gender ratios as high as 9:1 [2, 9-11] and the prevalence increases with age [9-12]. Due to the lack of firm epidemiological data relating to hallux valgus, it is difficult to estimate the impact that this condition has on a given population;

thus, in order to establish the need for future research, a better understanding of hallux valgus prevalence is warranted. To date there has been no published or written systematic review study investigating the prevalence of hallux valgus and its influence to age and gender in Delta state. Therefore, the aim of this study was to examine and evaluate the prevalence of hallux valgus among three ethnic groups (Urhobo, Isoko and Delta Ibo) in Delta State, Nigeria in age and gender subgroups.

MATERIALS AND METHODS

This study was carried out on male and female primary and secondary school students, undergraduates and indigenes from Urhobo, Isoko and Delta Ibo ethnic groups in Delta State. The number of volunteers who took part in this study was seven hundred and seventy five (775): Urhobo 257, Isoko 254 and Delta Ibo (Anioma) 262 and were between the ages 10 and 30 years. Individuals whose normal feet have been altered by trauma, accidents and foot surgery and those below the age of 10 and above the age of 30 were all excluded during the course of the study. Subjects were examined and assessed with a well structured data sheet for the present and absent of hallux valgus, bunion, corns, bilateral hallux valgus, unilateral hallux valgus, mild hallux valgus, moderate hallux valgus and foot pain. Data obtained from this research study was analyzed using IBM SPSS (Statistical package for social sciences) for windows. Firstly, distribution of hallux valgus, bunion, corns and deviation of hallux valgus was evaluated in age and gender subgroups for the three ethnic groups. Secondly, chi-square test was utilized to determine hallux valgus association with foot pain among the three ethnic groups at $P < 0.001$.

RESULTS

The results obtained for each ethnic group is as represented in the table below:

Table 1: Showing the general prevalence of hallux valgus among the three ethnic groups

Parameters	ISOKO %	URHOBO %	DELTA IBO %
•Hallux valgus	71 (28%)	64 (25%)	61 (23.3%)
•Bunion	71 (28%)	60 (23.3%)	62 (23.7%)
•Corns I	(0.4%)	6 (2.3%)	8 (3.1%)
•Unilateral Dist. (L)	12 (4.7%)	7 (2.7%)	8 (3.1%)
•Unilateral Dist. (R)	15 (5.9%)	11 (4.3%)	8 (3.1%)
•Bilateral Dist.	44 (17.3%)	47 (18.3%)	45 (17.2%)
•Mild Deviation	61 (24.0%)	59 (23%)	54 (20.6%)
•Moderate Deviation	10 (3.9%)	6 (2.3%)	7 (2.7%)
•Associated with foot pain	8 (3.1%)	8 (3.1%)	5 (1.9%)

DISCUSSION

The findings in this study indicated that hallux valgus is more prevalent in females than males and also that hallux valgus increase with age. These findings agree with the study conducted by Roddy *et al.* [10], owoeye *et al.* [13], Nix *et al.* [14], Menz and Lord [15] and Cho *et al.* [16], where hallux valgus was more prevalent in females than males. Results obtained from our study revealed that cases of hallux valgus were more prevalent in Isoko ethnic group (28.0%) than Urhobo (23.3%) and Delta Ibo (25.0%). It was only in Isoko ethnic group that hallux valgus was more prevalent in males. Bunion deformity was more in females than males in Urhobo and Delta Ibo ethnic groups. This result was in accordance with the research conducted by Wiley-Blackwell [17] and Daneshmandi and Saki [18] where hallux valgus was more prevalent in females than males. Bunion was more prevalent in males than females only in Isoko ethnic group. Corns were not prevalent among the three ethnic groups pooling a total of 2.3%, 0.4% and 3.0% for Urhobo, Isoko and Delta Ibo respectively. Unilateral distribution of hallux valgus was more prevalent on the right foot for the three ethnic groups (Delta Ibo 3.0%, Isoko 6.0% and Urhobo 4.3%) than the left foot. Bilateral distribution of hallux valgus was also more prevalent among the three ethnic groups (Urhobo 18.3%, Isoko 17.3% and Delta Ibo 17.1%). This aspect of our result disagrees with the research conducted by Owoeye *et al.* [13] where unilateral hallux valgus was more prevalent than bilateral hallux valgus. For hallux valgus subjects, mild hallux valgus was more prevalent among the three ethnic groups (Delta Ibo 20.6%, Isoko 24.0% and Urhobo 22.5%) than moderate hallux valgus. This result was similar to the research conducted by Cho *et al.* [16] where mild hallux valgus was observed more than moderate hallux valgus. From the chi-square test performed to determine hallux valgus association with foot pain among the three ethnic groups; there was no significant difference between hallux valgus and foot pain ($P < 0.001$) among the three ethnic groups.

CONCLUSION

The results obtained from this study revealed that hallux valgus is more prevalent in Isoko ethnic group than Urhobo and Delta Ibo ethnic groups of Delta State. It also showed that hallux valgus is more common in females than males and also increases with age. More attention should be focused on foot pain and deformities. Preventive measures and education on the hallux valgus deformity is advocated.

REFERENCES

1. Roddy, E., W. Zhang and M. Doherty, 2007. Validation of self report instrument for assessment of hallux valgus. *Osteoarthritis and Cartilage*, 15: 1008-1012.
2. Mann, R. and M. Coughlin, 1981. Hallux valgus; etiology, anatomy, treatment and surgical considerations. *Clin Orthop Relat Res.*, 157: 31-41.
3. Gilheany, M.F., K.B. Landorf and P. Robinson, 2008. Hallux valgus and hallux rigidus: a comparison of impact on health-related quality of life in patients presenting to foot surgeries in Australia. *J Foot Ankle Res*, 1: 14.
4. Menz, H.B., E. Roddy, E. Thomas and P.R. Croft, 2011. Impact of hallux valgus severity on general and foot-specific health-related quality of life. *Arthritis Care & Res.*, 63(3): 396-404.
5. Dawson, J., M. Thorogood and S.A. Marks, 2002. The prevalence of foot problems in older women: a cause for concern. *Public Health Med.*, 24: 77-84.
6. Moore, K.L., A.F. Dalley and A.M. Agur, 2010. *Clinically Oriented Anatomy, Sixth Edition*, Chap. 5, pp: 667.
7. Young, K.W., Y.U. Park, J.S. Kim, H. Jegal and K.T. Lee, 2013. Unilateral hallux valgus: is it true unilaterality, or does it progress to bilateral deformity? *Foot Ankle Int* journal. Apr, 34(4): 498-503.
8. Pique-Vidal, C., M.T. Sole and J. Antich, 2007. Hallux valgus inheritance: pedigree research in 350 patients with bunion deformity. *J Foot Ankle Surg*, 46: 149-54.
9. Cho, N.H., S. Kim, D.J. Kwon and H.A. Kim, 2009. The prevalence of hallux valgus and its association with foot pain and function in a rural Korean community. *J Bone Joint Surg Br*, 91: 4948.
10. Roddy, E., W. Zhang and M. Doherty, 2008. Prevalence and associations of hallux valgus in a primary care population. *Arthritis and Rheumatism Journal*, 59: 857-862.
11. Coughlin, M.J. and C.P. Jones, 2007. Hallux valgus; demographics, etiology and radiographic assessment. *Foot Ankle Int*, 28: 759-777.
12. Spink, M.J., H.B. Menz and S.R. Lord, 2008. Distribution and correlates of plantar hyperkeratotic lesions in older people. *J Foot Ankle Res*, 2: 8.
13. Owoeye, B.A., S.R. Akinbo, A.L. Aiyegbusi and M.O. Ogunsola, 2011. Prevalence of hallux valgus among youth population in Lagos, Nigeria. *Niger Postgrad Med J. Mar*, 18(1): 51-5.
14. Nix, S., M. Smith and B. Vicenzino, 2010. Prevalence of hallux valgus in the general population: a systematic review and meta-analysis. *J Foot Ankle Res.*, 3(1): 21.
15. Menz, H.B. and S.R. Lord, 2005. Gait instability in older people with hallux valgus. *Foot Ankle Int J*, 26: 483-9.
16. Cho, N.H., S. Kim, D.J. Kwon and H.A. Kim, 2009. The prevalence of hallux valgus and its association with foot pain and function in a rural Korean community. *J Bone Joint Surg Br*, 91: 4948.
17. Wiley-Blackwell, 2011. Prevalence of bunion increases with age; more common in women. *Science Daily journal*. 25 February.
18. Daneshmandi, H. and F. Saki, 2010. The study of joint hypermobility and Q angle in female football players. *World J. Sport Sci.*, 3(4): 243-247.