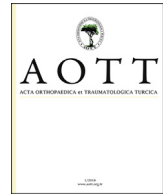


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## Prevalence estimation and familial tendency of common forefoot deformities in Turkey: A survey of 2662 adults

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## ABSTRACT

**Objective:** This survey was designed to evaluate the prevalence estimations of HV, bunionette, hammertoe as well as their relations to shoe wearing and also familial tendency, in Turkey.**Material and Methods:** Two thousand six hundred sixty two volunteers (1615 females and 1047 males) with a mean age of  $34.15 \pm 14.23$  (range; 18 to 96) years were asked to answer the predetermined questionnaire between January and June, 2016. Hallux valgus, hammertoe and bunionette images were provided as references and every adult participant without any known forefoot problems or past forefoot surgery history was asked to rate his/her foot and to respond the questions about family history and shoe wearing habits. Responses were statistically analyzed.**Results:** The prevalence estimations of hallux valgus, bunionette and hammertoe were calculated as 54.3%, 13.8% and 8.9% and positive family history rates were 53.2%, 61.2% and 56.1%, respectively. All three deformities were more common in females than in males ( $p < 0.001$ ). Nonetheless the older age group reported significantly higher prevalence rates for only HV ( $p < 0.001$ ). Likewise, among the three deformities, females reported a higher rate of positive family history only in HV compared to men ( $p < 0.001$ ). Constricting shoe wear was found to affect HV incidence in women ( $p < 0.001$ ) and bunionette incidence in both sexes ( $p < 0.01$ ).**Conclusion:** This study concludes that forefoot deformities are common with high familial tendency. Hence it is worthwhile to work on molecular genetics and this may enable the anticipation of forthcoming deformities in order to take early action in prevention, in nearly the half of the population.© 2018 Turkish Association of Orthopaedics and Traumatology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

First metatarsophalangeal (MTP) joint bunion (Hallux valgus-HV), bunionette (tailor's bunion) and hammer toe deformities are highly prevalent forefoot disorders presenting with similar complaints like difficulty in shoe wearing, pain, enlargement of the forefoot, painful callosities and distortions in cosmetics.<sup>1,2</sup> These deformities are the major contributors to foot surgery bills and also related to functional disabilities, like foot pain, balance disorders and increased fall rates, especially in elderly.<sup>2–6</sup>

The absolute prevalences of these deformities are not known accurately, prevalence studies for HV presents a wide range from 3 to 74% with acute differences owing to a number of factors including age, gender and race/ethnicity.<sup>4–11</sup>

There is no comprehensive study about the frequencies of forefoot deformities (at least to our knowledge) in Turkey, so this survey was designed to evaluate the prevalences of HV, bunionette and hammertoe in adults, to promote an awareness about the potential impact of these highly prevalent conditions and to reveal the necessity to design a programme for prevention as well as relations of these deformities to shoe wearing and familial tendency.

## Material and methods

The research team consisted of 6 researchers, all of them but one was medical doctor. Before initiation of the survey, the team

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**WE DO APPRECIATE YOUR CONTRIBUTION TO THE SURVEY ABOUT FOREFOOT DEFORMITIES IN OUR COUNTRY. CAN WE KINDLY ASK TO ANSWER THE FOLLOWING QUESTIONS?**

1-) Age :

2-) Occupation :

3-) City :

4-) Gender :

For Male	For Female
5-) Do you prefer tight- narrow shoes?	5-) Do you prefer high heels?
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>


6-) If Yes, how often?

a) Every day

b) Several days a week

c) Rare

d) Never



**Which of the above is the best fit for your foot? (Right and Left)**

7-) Right foot    A)    B)    C)    D)                      8-) Left foot    A)    B)    C)    D)

**Fig. 1.** Self-report questionnaire.

designed a user friendly questionnaire (Fig. 1). For each attendee, the purpose of the study and a brief information was described by a member from the team and an oral consent was taken.

The Material group consisted of 2662 participants, 1615 (60.7%) were females, and 1047 (39.3%) males with a mean age of  $34.15 \pm 14.23$  (18–96). The research period was between January to June, 2016.

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