

Original Research Article

# Community Awareness of Risks Related to Footwear Problems

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## ABSTRACT

Footwear being an important part in today's world is also a leading cause of various health problems. This survey focused on the study of common traits of the respondents in the process of selecting their footwear and consequences caused by various types of footwear.

**Method:** A cross sectional survey was carried out among the ambulatory individuals within the age of 15-35 years using a self-administered questionnaire. 200 subjects were invited in the study out of which 170 responded.

**Result:** Worst type of footwear according to them were heels (74%), flip flops (13%), sandals (10%) and shoes (2%). 21% of them got pain in the ankle and foot due to inappropriate footwear. 77% of them were not aware of the health problems caused by footwear. 72% of respondents check for comfort while purchasing footwear, 19% for proper fit, 4% for design and style and 2% for brand.

**Conclusion:** Data analysis concluded that majority of people were not aware of the health problems caused by footwear and some were not aware of their footwear size. Hence, it becomes important that they become aware about the health conditions. Many of them chose comfort over brand & style. Therefore, people were somewhat aware about the various aspects to be considered before purchasing a footwear.

**Keywords:** Footwear, awareness, health problems

## INTRODUCTION

Footwear plays a vital role in progression of health problems like low back pain, arthritis, foot and toe problems like bunions, hammer toes, plantar fasciitis, ankle sprain etc. Nearly all cases of foot pain can be related to one of the following: ill-fitting shoes, high-contact exercise and certain medical conditions. A podiatric supplement to the US National Health Interview Survey estimated that older adults experience more pain than younger adults and 24% of the population has at least one foot problem. <sup>[2]</sup> Foot pain is the commonest problem being treated by the physical therapist. Age, gender, ill-fitting footwear, obesity etc are some of the multiple factors

associated with foot pain. Women are at higher risk than men for severe foot pain, probably because of high heeled shoes.

People suffer with minor health conditions, which require medical attention. The purpose of our study was to assess the level of awareness of health problems especially the musculoskeletal problems associated with footwear and to study the common traits of the respondents in the process of selecting their footwear.

**Aim:** To create and assess the level of community awareness of risks related to footwear problems

**Objectives:** 1. To understand the consequences caused by different types of footwear.

2. To study the common traits of the respondents in the process of selecting their footwear.

**MATERIALS AND METHODS**

The study includes 170 ambulatory individuals, both male and female in 15-35 years of age group. Exclusion criteria for the study were non ambulatory and adults using walking aids. For the survey, a questionnaire was drafted following with due deliberations of the relevant literature and thereby validated with an expert in the field. The questionnaire contained information on various aspects of footwear like shoe size, types of footwear worn, worst type of footwear, ankle sprain etc. The self administered questionnaire was circulated using google forms. A pilot study was done on 10 subjects and other required changes were made. The data was analysed and then presented in the graphical & tabular form. Anthropometric measurements of height and weight were noted. BMI values of the individuals were calculated and classified according to WHO- The International Classification of adult underweight, overweight and obesity according to BMI. [1]

**OBSERVATION AND STATISTICAL ANALYSIS**

The data was processed using Descriptive statistics – for demographic data (age & BMI) and percentages were used to depict proportions. Tables were made using Microsoft Word and figures were plotted using Microsoft Office Excel 2007. This study included total 170 participants and a tabular and graphical presentation was done.

According to Table 1, there were 40 respondents of age 15-20 years, 123 of age 21-25 years, 3 of age 26-30 years and 4 of age 31-35 years.

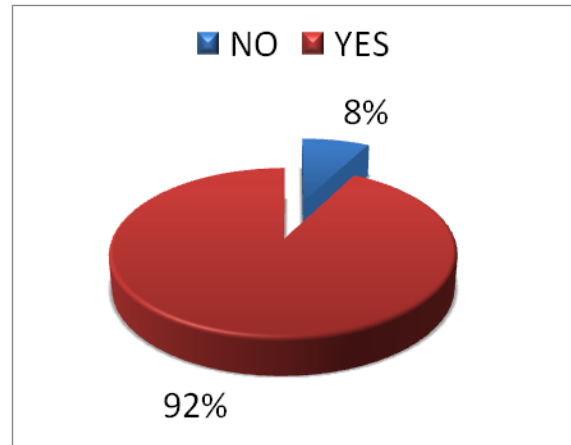
**Table 1: Age Distribution**

Age Groups	Number of Respondents	Percentage
15-20	40	24%
21-25	123	69%
26-30	3	3%
31-35	4	4%

**Table 2: Gender Distribution**

Gender	Number of Respondents	Percentage
Male	56	33%
Female	114	67%

According to Table 2, 56 of them were males and 114 females.



**Figure 1 : Awareness of Shoe Size**

According to Figure 1, 89% are aware of their shoe size and 11% are not aware.

**Table 3: Awareness of problems caused by footwear**

Responses	Number of Respondents	Percentage
Yes	40	11%
No	130	89%

According to Table 3, 130 subjects are unaware about the problems caused by footwear and 40 of them are aware.

**Table 4: Purchasing of footwear**

	Number of Responses
Shops	99
Internet	6
Both	65

According to Table 4, 99 subjects purchase footwear from shops, 6 of them from internet and 65 of them from both shop and footwear.

According to Figure 2, 35% of the subjects wear shoes, 23% of them wear flip flops, 11% of them wear sandals, 5% heels and 26% ballet flats.

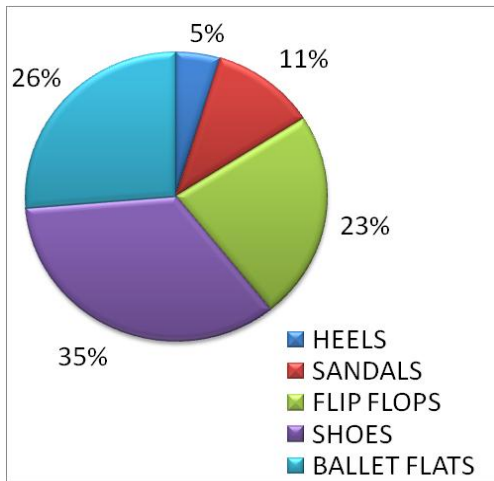


Figure 2: Footwear worn regularly

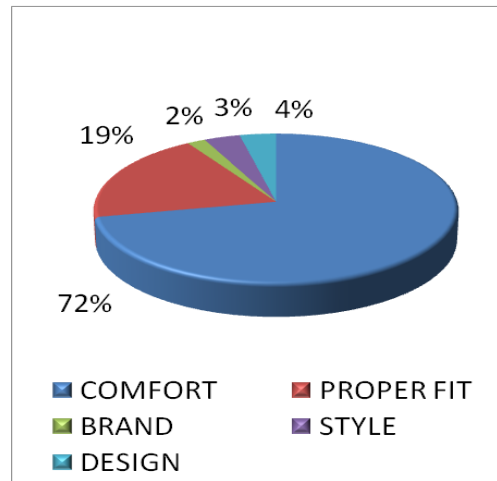


Figure 4: Feature of footwear

According to Figure 3, 70% of the subjects don't have pain in the foot due to footwear, 21% have pain and 9% are not sure of the pain.

According to Figure 5, 79% of the subjects didn't get ankle sprain due to footwear and 21% of them got.

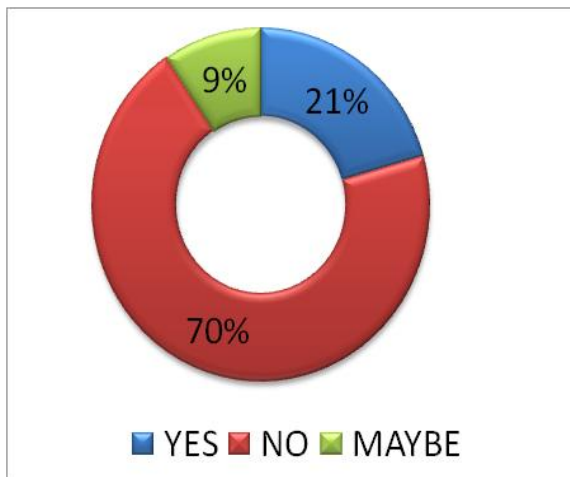


Figure 3: Pain in foot due to footwear

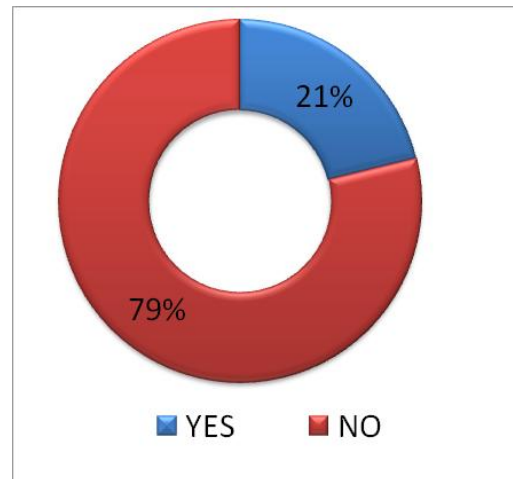


Figure 5: Ankle sprain due to footwear

Table 5: Height of Heels

Height of Heels	Number of Respondents	Percentage
Under 1 inch	68	39%
Over 2 inches	51	29%
Under 4 inches	45	25%
4 inches and above	6	7%

According to Table 5, 39% subjects think the ideal heel height is under 1 inch, 29% think over 2 inches, 25% think under 4 inches and 7% think 4 inches and above.

According to Figure 6, 74% of them check for comfort while purchasing footwear, 19% of them for proper fit, 4% for design and style and 2% for brand.

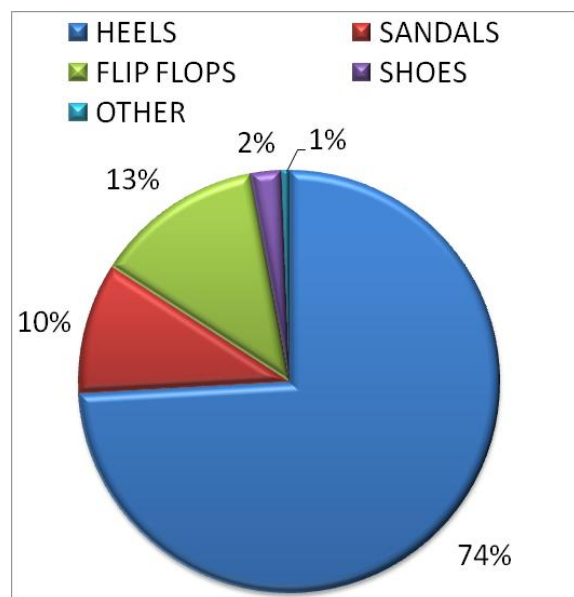


Figure 6: Worst type of footwear

According to Figure 6, 74% subjects think that heels are the worst type of footwear, 13% of them think flip flops, 10% sandals & 2% shoes.

**Table 6: BMI**

BMI Range	Number of Respondents	Percentage
Under weight <18.5	24	14%
Normal 18.5 – 24.9	109	64%
Overweight 25 – 29.9	26	15%
Obesity Class 1 30 – 34.9	8	4%
Obesity Class 2 35 – 39.9	2	1%
Obesity Class 3 > 40	1	0.5%

Table 6 shows that 14% are underweight, 64% are normal, 15% are overweight, 4% obesity C1, 1% obesity C2 and 0.5% obesity C3.

**Table 7 : Time of the day**

Time of the Day	Number of Respondents	Percentage
Morning	14	8%
Afternoon	50	30%
Evening	106	62%

Table 7 shows that that 62% of them purchase their footwear in the evening, 30% of them purchase in the afternoon and 8% in the morning.

## DISCUSSION

The study showed that the injury occurred usually due to wearing improper type of footwear. Data analysis found that 21% of the population had pain in the ankle and foot due to footwear. According to the previous studies, in today’s generation high heels remains the topmost footwear choices. [2] According to another study shows that high heels, sandals and slippers were categorized as “poor” footwear choices with potential impact on foot health and 60% of women owned them. [3] Sprained ankles, low back pain, leg pain due to more weight placed on the toes, shortened Tendo-Achilles, unstable gait pattern and balance are consequential negative effects of wearing heels. [4] Studies have shown that women are advised to avoid heels to reduce

the risk factors for secondary arthritis of knee or back pain. [5]

Poorly fitting footwear causes structural changes due to compression of the digits and altered function. [6,7] Wearing of wrong shoe size can lead to irritation of the joints in the foot due to constant rubbing thereby leading to arthritis. Metatarsalgia, bunions, corns and hammer toes are some of the other problems can be caused by it more than foot pain alone. [8] People unaware of their shoe size can also be one of the contributing factors for improper fit which can lead to pain, functional limitations and falls. [9] According to the study, 11% of the people were unaware of their shoe size.

High heeled footwear push too much body weight toward the toes and then squeeze them together. Over time, the result can be hammertoe, abnormal bends in the toe joints that can gradually become rigid. According to the previous research, high heels causes hallux valgus and musculoskeletal pain which are both more common in women than in men and also causes change in biomechanics of walking gait [10] According to the survey analysis, 5% of the population wear high heeled footwear regularly out of which maximum people wear wedges followed by kitten heels, stilettos, platforms and peep toes.

Ballets flats don’t have arch support and no shock absorbing material. It can cause too much friction on the heel, Achilles tendon and toes resulting in blisters, corns and calluses. Ballet flats and flip flops both can aggravate plantar fasciitis as constant landing hard on your heel and lack of arch support can cause the band of tissue running the length of your foot (plantar fascia) to stretch and tear. According to the data analysis, people prefer wearing ballet flats (26%) followed by flip flops (23%) more commonly after shoes (35%).

Shop for footwear during the afternoon, foot naturally expands with use during the day.

Our feet will swell in the day because of walking and standing. The largest our feet will expand to is in the

afternoon. Thus, when a pair of shoes feels just nice in the morning, it can get too tight in the afternoon. According to the study, purchasing of footwear in the evening (62%) and afternoon (30%) was more commonly seen than in the morning (8%).

Individuals with a higher BMI have a significant increase in foot and ankle problems. Carrying extra body weight can greatly increase pressure on the bottom of the foot, flatten the foot, shorten your gait and lead to your feet angling out more. Posterior tibial tendonitis, plantar fasciitis, arthritis, ball-of-foot pain, fractures and sprains of the feet and ankles are some common foot problems associated with weight gain. The joints of the foot and ankle can be damaged due to extra weight. [11] According to the study, out of 170 respondents 37 of them had BMI above 25.

Ideally, heels should be no more than 2 inches in height. As the height of the heels increases the pressure on the forefoot also increases. Majority of the population (61%) feel that the ideal height of the heel is more than 2 inches. When it comes to pain related to footwear, forefoot has been highlighted as the most frequent area. [6]

### Limitations

Study was not focused on specific condition This study involved only ambulatory individuals

### CONCLUSION

So the overall interpretation of study shows that people are aware of their shoe size but are not aware of health problems caused by footwear including the consequences caused by ill-fitting footwear. People wear ballet flats and flip flops more compared to shoes, which in turn is equally as harmful as high heeled footwear. People wearing heels above the height of 2 inches are more prone in developing footwear problems like forefoot pain. People purchase footwear from the shops which is better as it allows them to try and test the comfort and fit before buying thereby reducing the chance of occurrence of

footwear related problems. Improper footwear can cause impairments in joints other than ankle i.e. knee and spine, which further could contribute to biomechanical and postural imbalance. As a result, this imbalance would lead to abnormal forces acting on the different joints thereby affecting the alignment of the body segments as a whole.

**Clinical significance:** Hence people should consider the different aspects of footwear before buying them and should have knowledge of appropriate footwear.

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