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Foot Health and Pain: A Study among Residents of Al-Kharj City

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Abstract

Introduction: Foot pain is prevalent and impactful across age groups, particularly affecting young and middle-aged adults. Understanding its prevalence, intensity, and influencing factors is crucial for effective intervention. This study investigates foot health among Al-Kharj City residents, focusing on pain prevalence, intensity, and lifestyle impacts. Method: This cross-sectional study, approved by Prince Sattam bin Abdul Aziz University's ethical council, involved 151 adult participants. Data collection via self-administered questionnaires covered demographics, medical history, and foot health. Statistical analysis utilized IBM SPSS version 22, including chi-square tests and frequency distributions. Result: The study found a notable prevalence of foot discomfort, especially among young and middle-aged adults, with comfort primarily guiding footwear choice. No significant associations were found between demographic or lifestyle factors and foot pain intensity, highlighting its multifactorial nature. Conclusion: This study emphasizes the widespread occurrence of foot discomfort in Al-Kharj City, underscoring the need for comprehensive public health strategies to address foot pain and improve overall quality of life. Further research is warranted to explore additional factors influencing foot health and develop targeted interventions that effectively reduce foot discomfort.

Keywords: Foot pain, Foot Health, Prevalence, Lifestyle choices, Young adults

Introduction

Although it can affect persons of all ages, young and middle-aged adults most frequently experience foot pain. Numerous characteristics, including age, body mass index, height, weight, and standing for the majority of the day, are thought to be associated with foot pain. In the general population, foot pain is not uncommon, especially in elderly persons. Adults above the age of 18 have a prevalence of 17 to 24% [1]. Any pain or discomfort felt at or near the back of the foot is referred to as "foot pain" in general. [2]. It was observed in 10% of people who run or stand for extended periods of time, as well as at the same rate in the general population. [3] Other, less frequent conditions such as osteomyelitis, skeletal anomalies like calcaneal stress fractures, or tumours have been linked to foot discomfort. Although systemic disorders rarely cause heel pain, they may still factor in those with bilateral foot pain, pain in other joints, or

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known inflammatory arthritis conditions. The inability to carry out daily tasks easily, balance and gait issues, and an increased risk of falling are all linked to foot pain, particularly heel discomfort. [5] Foot pain occurs frequently and affects everyday living and work productivity. Studies on students and medical personnel in Saudi Arabia and elsewhere focus on musculoskeletal diseases, including shoulder, back, and neck pain, rather than foot discomfort and plantar fasciitis. In the USA, heel discomfort is reportedly one of the top reasons for yearly doctor visits. 7.5% of all musculoskeletal foot and ankle visits to primary care in the UK in 2006 indicated heel pain, with 12.1% stating plantar fasciitis. [6] After visiting a metropolitan university podiatry clinic in Australia, 10% of patients complained of heel discomfort; however, in the USA, only 7.1% of patients with plantar heel pain are sent to a physical therapist. [7] Heel pain is more likely to occur in those who spend more working hours standing. Other risk factors are obesity, heel spurs, the nature of the work, reduced plantar flexion, the type of shoes worn, and a sedentary lifestyle. [8]. A previous study used the Manchester Foot Pain and Disability Index to determine the prevalence of foot and ankle pain among nurses at a Japanese university hospital. Drawings were included in their questionnaire to depict 26 different pain points on the foot, including the ankle, plantar, dorsal, and posterior aspects. Using the Job Content Questionnaire to create a job strain index (psychological demands score divided by job control score), they also focused on the psychosocial aspects of participants' jobs. They used a visual analogue scale to rate how comfortable the shoes were. Their estimated prevalence of foot and ankle discomfort was 23%, while it was 49% among our study participants. Additionally, just 4% of nurses indicated pain interfered with everyday activities, compared to 17% of patients. The scientists concluded that foot and ankle discomfort had substantial correlations with shoe comfort, individual characteristics like age and BMI, and psychosocial factors like high job strain and poor job control. [9]. A second study examined the prevalence of foot discomfort in 5,109 persons over 50 at one of four general practices in North Staffordshire, England. Similar to our findings, the prevalence was 9.6%, with women being more likely to experience it. Additionally, foot discomfort was similar across all age categories and substantially more common in people who had repetitive-task jobs, were overweight, or admitted to wearing high heels. Additionally, they evaluated the psychological effects of foot pain and discovered strong links to mental illness, anxiety, and sadness. [10]. Plantar fasciitis and foot pain were overlooked in the majority of research conducted in Saudi Arabia and other countries, which focused on participants' musculoskeletal problems, including neck, back, and shoulder pain. Therefore, this study aimed to determine the frequency of foot discomfort and its causes among Residents of Al-Kharj City. It seeks to understand the frequency and severity of foot problems and their effects on daily activities, functional performance, and overall quality of life.

Methods

The current study utilized a cross-sectional strategy, with approval from Prince Sattam bin Abdul Aziz University's ethical council. (PSAU/2023/03/25633). All of the participants were Al-Kharj city residents in Al-Kharj city. The participants were Adults over eighteen who could read, comprehend, and properly complete the questionnaire. The study rejected any participant who did not meet the age requirement, had cognitive impairment, or had trouble understanding the questions.

The study will not include participants with evident or known lower disorders, deformities of the lower limbs or feet, paralysis or weakness in the lower limbs, recent lower injuries, or recent operations involving the lower extremities. Cases who refuse to participate in the study due to a neurological condition, either acquired or congenital, or a history of foot surgery. Owing to

the paucity of research, particularly in the area of the percentage of people with good overall foot health, the projected percentage was established at 50% in order to maximize the number of individuals included. All adult residents in the Al-Kharj sector were given a self-administered questionnaire after receiving authorization from the institutional ethics committee. Informed consent was requested at the beginning of the questionnaire, which was then followed by a series of inquiries about the participants' sociodemographic, medical history, and foot health.

The questionnaire will ask about the demographic data, including their age, weight, occupation and how many hours a day they spend standing or walking as part of their daily routine. In addition; their low back pain statistics, any co-existing illnesses, their lifestyle, their level of habitual physical activity (including their level of exercise and extracurricular activities), and how their pain affects their day-to-day activities. Additionally, the location of the pain is the ankle, sole toes, heel or arch. Also, there was a section for Medical History and Consultation. It includes: Have you ever consulted a healthcare professional specifically for foot-related issues? Did you receive any treatment or recommendations for foot discomfort? How has foot discomfort affected your daily life? The last section was about preventive measures to avoid foot discomfort or pain.

Data will be updated, coded, and entered into the IBM SPSS version 22 statistical program after being collected. Microsoft Excel will be used to create the given graphs. For participant data, the frequency distribution of each category was represented using per cent and frequency, while the numerical data was described using mean and standard deviation. All statistical analyses will use two-tailed tests with an alpha error of 0.05. Frequencies of the variables will be calculated. A P-value of <0.05 will be considered as significant.

Result

This study delved into the intricacies of foot health, focusing on pain prevalence, its intensity, and the impact of lifestyle choices on foot discomfort among a cohort of 151 participants. The demographic spread underscores a significant male predominance (66.2%) and a tendency towards younger age groups, with half of the respondents falling within the 21-25 age bracket, suggesting an active, potentially more foot-health-conscious demographic (Figure 1).

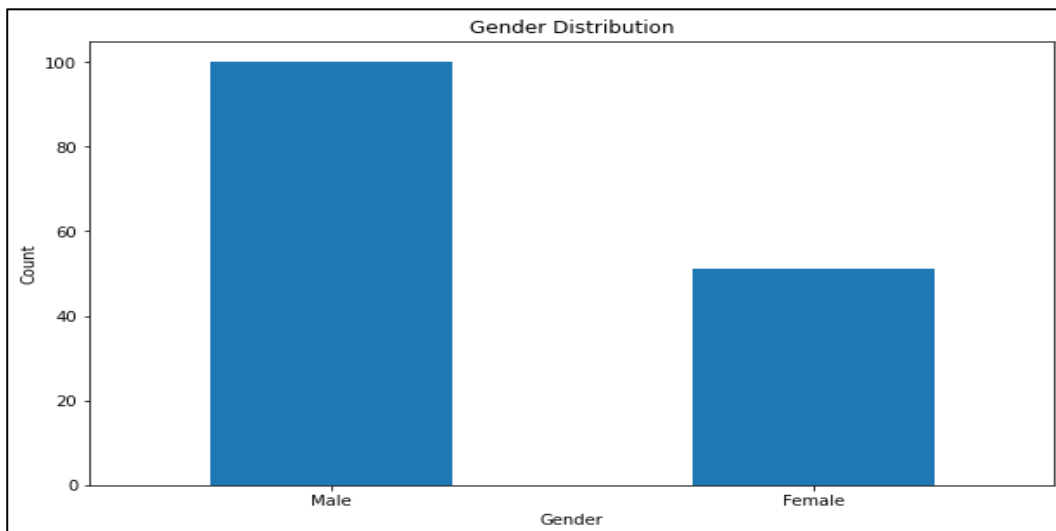


Figure 2: Gender Distribution.

Intensity of Foot Pain or Discomfort

Our findings reveal a nuanced spectrum of foot pain intensity over the preceding year, with a surprisingly large fraction of individuals categorizing their discomfort as "Very Mild." This pattern suggests that while foot discomfort is not uncommon, it seldom escalates to severe levels among the majority. This observation could reflect a resilient adaptation to minor foot discomfort or a tolerance threshold that only becomes noteworthy when the pain intensifies beyond daily nuisances (Figure 2).

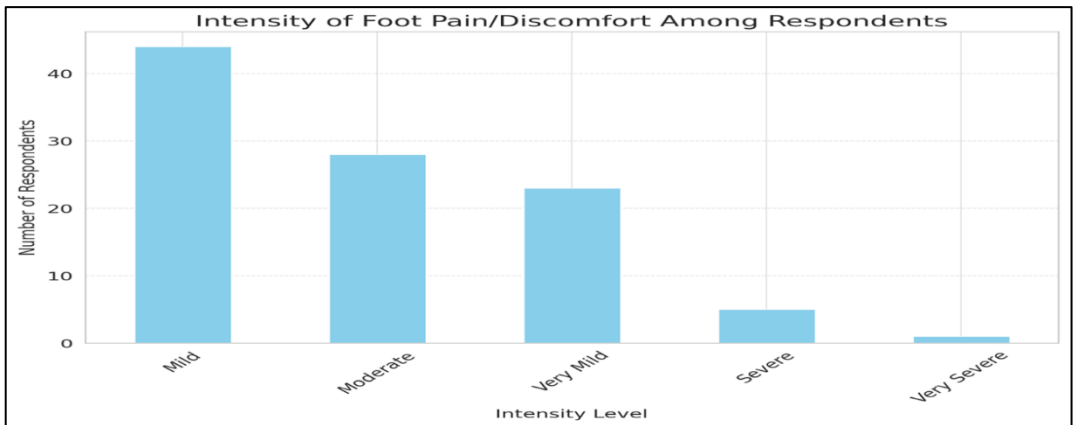


Figure 3: Intensity of Foot Pain/ Discomfort Among Respondents

Prevalence of Foot Discomfort

The data illustrate a striking prevalence of foot discomfort, with over two-thirds of respondents acknowledging some form of foot pain in the last year. This prevalence underscores the widespread nature of foot health issues, hinting at the need for more pronounced preventive measures and the potential for enhanced public health strategies to mitigate foot discomfort (Figure 3).

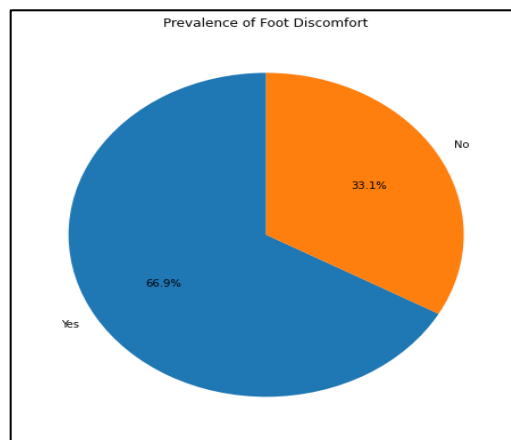


Figure 4: Prevalence of Foot Discomfort.

Factors Influencing Footwear Choice

When exploring the determinants of footwear selection, comfort emerged as the paramount concern, overshadowing style and brand considerations. This priority signals a prevalent

awareness of comfortable footwear's critical role in circumventing foot pain. Nonetheless, the influence of aesthetic appeal and brand loyalty also suggests a complex decision-making process where functional health benefits compete with social and personal identity factors in footwear choice (Table 1).

Table 1: Factors Influencing Footwear Choice.

What factors influence your choice of footwear?	Count of What factors influence your choice of footwear?
Comfort	82
Style	36
Price	15
Brand	10
Recommendations	6
Other	2
Grand Total	151

Footwear Replacement Frequency

The investigation into footwear replacement practices unveiled diverse habits among participants, with a notable contingent adhering to infrequent changes guided by necessity rather than routine. This finding points to a potential gap in public awareness regarding the health implications of prolonged footwear use, which may exacerbate or contribute to foot discomfort and other related ailments (Table 2).

Table 2: Footwear Replacement Frequency.

Only when necessary	Count of Only when necessary
Once a year	52
Every few months	48
Only when necessary	31
Rarely	20
Grand Total	151

Statistical Analysis of Factors Influencing Foot Pain Intensity

In our study examining the association between age groups and the intensity of foot pain/discomfort, a chi-square test of independence yielded a statistic of 23.48 with a p-value of 0.102. This indicates that there is no statistically significant difference in the reported intensity of foot pain/discomfort across different age groups (Table 1). The analysis suggests that age does not significantly influence the intensity of foot pain/discomfort experienced by individuals, as the variations in pain intensity among different age categories do not reach statistical significance at the 0.05 level (Table 3).

Table 3: Summary of Chi-Square Test for Age Groups vs. Pain Intensity.

Variable	Chi-Square Statistic	p-value
Age Groups	23.48	0.102

Our analysis also explored the correlation between foot pain/discomfort intensity and various demographic and lifestyle factors, including gender, weight category, hours spent standing or walking, and occupation. Chi-square tests of independence did not reveal any statistically significant associations between these variables and the intensity of foot pain/discomfort.

Specifically, the results were as follows: Gender ($\chi^2 = 5.63$, $p = 0.228$), Weight Category ($\chi^2 = 24.63$, $p = 0.077$), Hours Spent Standing/Walking ($\chi^2 = 13.98$, $p = 0.302$), and Occupation ($\chi^2 = 14.15$, $p = 0.291$). These findings suggest that within the surveyed population, these factors do not significantly influence the reported intensity of foot pain/discomfort (Table 4).

Table 4: Summary of Chi-Square Tests for Various Variables vs. Pain Intensity.

Variable	Chi-Square Statistic	p-value
Gender	5.63	0.228
Weight Category	24.63	0.077
Hours Spent Standing/Walking	13.98	0.302
Occupation	14.15	0.291

Discussion

The results of our cross-sectional study in Al-Kharj, a representation of Saudi's general population, reveal a pronounced prevalence of foot discomfort. This aligns with global epidemiological data, which suggests that foot pain is a common, albeit often overlooked, public health issue. With a significant portion of the Al-Kharj residents reporting some degree of foot pain, the implications for daily living and work productivity cannot be understated.

The demographic profile of our study, consisting of young to middle-aged adults, predominantly male, mirrors the typical at-risk population identified in the literature for foot pain. The etiology of foot pain is multifactorial; lifestyle choices, occupational demands, and personal health practices are intricately linked with the development and exacerbation of foot conditions. The fact that comfort, not style or brand, is the primary driver behind footwear choice in this population, is a testament to a prevailing health consciousness regarding foot care. However, the observed infrequent footwear replacement habits suggest an area where public health education could further bolster preventive practices.

Our findings suggest that the 'Very Mild' intensity of reported foot pain does not preclude the importance of addressing it. Even mild discomfort can escalate if not managed properly, potentially leading to more serious conditions. Heel pain, for example, is a common foot complaint that has been associated with significant morbidity and healthcare utilization globally. The ripple effects of such discomfort can impact balance, gait, and overall functional ability, which are crucial for maintaining independence and quality of life, particularly in an active population.

Interestingly, the lack of significant statistical associations between foot pain intensity and factors such as age, gender, weight category, and occupational activities in our study indicates that foot discomfort is a complex condition influenced by a wide array of factors. This suggests that while certain demographics may not be more prone to intense foot pain, the overall experience of foot discomfort is universal, cutting across different societal segments. As indicated in other studies, the role of psychosocial stressors and the potential link to shoe comfort cannot be ignored. Job strain, a psychosocial factor, has been implicated in various musculoskeletal disorders and could very well play a role in the etiology of foot discomfort.

Given the widespread nature of foot discomfort identified in our research and the lack of significant associations with the variables considered, it is imperative to conduct further research focusing on the Al-Kharj population. Such research should explore not only the physical but also the psychosocial aspects of foot health. The influence of cultural practices on

footwear choices, the impact of the hot Saudi climate on foot health, and the availability of foot care services are areas that warrant further exploration.

The utilization of the Foot Health Status Questionnaire in our methodological approach has provided a robust framework for understanding the multifaceted nature of foot health. However, the study's insights into the prevalence and intensity of foot pain raise questions about the adequacy of current foot health knowledge and practices among the general population. There is a clear need for comprehensive public health strategies that address both the preventive and curative aspects of foot care. Education campaigns, routine foot health screenings, and the promotion of ergonomically designed footwear could be potential interventions derived from our study.

Conclusions

This study in Al-Kharj highlights a significant occurrence of foot discomfort among its residents, revealing that while foot pain is common, it is usually of very mild intensity. The findings suggest an awareness of the importance of comfortable footwear but also indicate a gap in practices regarding the timely replacement of shoes. Despite the absence of a strong correlation between foot pain and demographic or lifestyle variables, the pervasiveness of the discomfort suggests the need for broader public health initiatives.

There is an opportunity for improved educational strategies that emphasize the importance of foot health and appropriate footwear habits. Further research is warranted to explore other potential factors affecting foot health in this population.

This study calls for a multifaceted approach to enhance foot health awareness and practices in Al-Kharj, aiming to reduce the prevalence of foot discomfort and improve residents' overall quality of life.

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of Data and Materials

The data are available upon request from the authors.

Ethics Approval

All series of steps that were implemented in this study that included animal models were in compliance with the Ethics Committee of Prince Sattam bin Abdulaziz University Institutional

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