


Prevalence of Plantar Fasciitis Pain and Its Association with Quality of Work Among Sales Promotion Persons at Supermarkets

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Disclaimers

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ABSTRACT

Background: Plantar fasciitis is a common foot condition causing pain and discomfort, often affecting individuals in occupations that require prolonged standing, such as sales promotion personnel. The condition impacts work performance and quality of life.

Objective: This study aimed to determine the prevalence of plantar fasciitis among sales promotion workers and evaluate its association with pain, disability, and activity limitations affecting work quality.

Methods: A cross-sectional study was conducted from March to July 2024 among 175 sales promotion workers aged 20-45 years in Faisalabad. Participants were assessed using the Windlass Test for diagnosing plantar fasciitis, the Foot Function Index (FFI) for measuring pain, disability, and activity limitation, and the Visual Analogue Scale (VAS) for pain intensity. Statistical analysis was performed using SPSS version 25. Pearson's Chi-square test was applied, with a significance level set at $p < 0.05$.

Results: Of the 175 participants, 30.3% were diagnosed with plantar fasciitis. Significant associations were found between plantar fasciitis and FFI pain ($p = 0.000$), disability ($p = 0.000$), and activity limitation ($p = 0.000$).

Conclusion: Plantar fasciitis is prevalent among sales promotion workers, significantly affecting pain, disability, and activity limitation. Early intervention is recommended to reduce its impact on work quality.

INTRODUCTION

Plantar fasciitis is a common and often painful foot condition characterized by inflammation of the plantar fascia, a thick band of tissue that stretches across the bottom of the foot, connecting the heel bone to the toes. This condition typically manifests as a sharp, stabbing pain in the heel, particularly noticeable during the first few steps after waking up or following periods of inactivity (1). While plantar fasciitis can occur in any individual, it is especially prevalent in middle-aged adults, particularly women, and is often linked to activities that place excessive strain on the heel and its surrounding tissues. High-impact activities, such as running, ballet, and aerobics, are common contributors to the development of plantar fasciitis, as are faulty foot mechanics like high or low arches and abnormal walking patterns (2, 3). Other risk factors include obesity, occupations requiring prolonged standing, and wearing improper footwear, such as high heels or shoes with inadequate arch support (4, 5).

The condition progresses through different stages, beginning with an acute phase of sharp pain localized at the medial tubercle of the calcaneus, often improving with a few steps but worsening without complete healing. This acute phase can evolve into a chronic stage, where persistent micro-injuries and degeneration of the plantar fascia lead to more complex changes, including fiber disorientation and calcification (6). Plantar fasciitis has a significant impact on individuals' daily activities, leading to mobility restrictions

and reduced quality of life, particularly for those in professions that involve prolonged standing or walking on hard surfaces, such as retail, healthcare, and manufacturing (7). Sales promotion workers, who spend extensive hours on their feet, are especially vulnerable to this condition due to the repetitive stress placed on the plantar fascia. Recognizing occupational factors contributing to plantar fasciitis is critical for implementing preventive measures and tailored treatments that reduce its impact on work performance and quality of life (8).

The prevalence of plantar fasciitis varies across populations. In the United States, around 10% of the population is estimated to experience plantar fasciitis at some point in their lives, with the highest incidence occurring among active working adults aged 25 to 65 (9). Annual healthcare visits for plantar fasciitis in the United States exceed one million, with 62% of cases managed in general medicine clinics, while orthopedic or general surgeons evaluate a significant portion of these patients (10). Inferior heel pain, the most common symptom of plantar fasciitis, impacts approximately 10% of the population and often leads to functional limitations (11). Conservative treatments, such as nonsteroidal anti-inflammatory drugs (NSAIDs), orthotics, and stretching exercises, are the primary approach for managing plantar fasciitis, with extracorporeal shock wave therapy (ESWT) showing long-term effectiveness in reducing pain and improving foot function in a significant percentage of patients (12, 13). Despite the availability of various

treatment options, the chronic nature of plantar fasciitis and its associated morbidity continue to pose challenges for affected individuals, particularly in occupations with high physical demands (14).

MATERIAL AND METHODS

A cross-sectional study was conducted to determine the prevalence of plantar fasciitis and its association with the quality of work among sales promotion persons working at various clothing outlets and supermarkets in Faisalabad, including stores such as Sana Safinaz, Khaadi, Limelight, Rang Ja, Almas, Orient, Cross Stitch, Mediacom Plaza, Lyallpur Galleria, Boulevard Mall, Alfatah Plaza, and RCG. The study was carried out from March to July 2024 and included a sample size of 175 participants, all recruited using a purposive sampling technique. The target population consisted of sales promotion persons between the ages of 20 and 45 years, with at least two years of work experience. Inclusion criteria required that participants worked between 7 to 8 hours daily, wore hard, non-cushioned footwear with no built-in arch support, and had no history of foot surgery, osteoporosis, congenital foot disease, heel spur, recent foot injury, or psychiatric disorders.

Data collection was performed using a structured questionnaire. The Foot Function Index (FFI) was employed to assess the pain, disability, and activity limitation

experienced by participants, while the Windlass Test was used to diagnose plantar fasciitis. Pain intensity was measured using the Visual Analogue Scale (VAS). All participants were thoroughly informed about the study's objectives, procedures, and ethical considerations. Written informed consent was obtained from all subjects prior to their participation. The study adhered to the ethical guidelines of the Declaration of Helsinki, and ethical approval was obtained from the Institutional Review Board of The University of Faisalabad (Ref: TUF/IRB/426/24). Statistical analysis was conducted using SPSS version 25. Descriptive statistics, such as frequency distributions and percentages, were calculated to describe the demographic characteristics of the participants and the prevalence of plantar fasciitis. Chi-square tests were applied to determine the association between plantar fasciitis and the pain, disability, and activity limitation scales of the FFI. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 175 participants were included in this study. The demographic characteristics of the participants are summarized in Table 1. The majority of participants (48%) were aged between 20 and 25 years, while the lowest percentage (4.6%) was in the 36-40 years age range. Male participants represented 73.7% of the sample, while females comprised 26.3%.

Table 1: Demographic Data of Subjects

Age Group (years)	Frequency	Percent (%)
20-25	84	48.0
26-30	48	27.4
31-35	20	11.4
36-40	8	4.6
41-45	15	8.6
Total	175	100.0
Gender	Frequency	Percent (%)
Male	129	73.7
Female	46	26.3
Total	175	100.0

The overall prevalence of plantar fasciitis among the study population was 30.3%, as diagnosed by the Windlass Test (p = 0.000), while 69.7% did not have the condition (Table 2).

Table 3 presents the association between the Windlass Test results and the pain scale of the FFI. Among the 53

participants who tested positive for plantar fasciitis, 33 experienced mild pain and 19 had moderate pain, with only 1 participant reporting no.

Table 2: Prevalence of Plantar Fasciitis

Windlass Test Result	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)	p-value
Negative	122	69.7	69.7	69.7	0.000
Positive	53	30.3	30.3	100.0	
Total	175	100.0	100.0	100.0	

Pain. In contrast, the majority of participants with negative Windlass Test results reported no pain or mild pain. The association between plantar fasciitis and pain levels was statistically significant (p = 0.000).

The relationship between the Windlass Test and the disability scale of the FFI is presented in Table 4. Most

participants who tested positive for plantar fasciitis experienced mild (40 participants) or moderate disability (9 participants), with 1 participant in the severe disability category. The association between plantar fasciitis and the disability scale of the FFI was also statistically significant (p = 0.000).

Table 3: Pain Scale of FFI

Windlass Test Result	No Pain	Mild Pain	Moderate Pain	Total	p-value
Negative	59	63	0	122	0.000
Positive	1	33	19	53	
Total	60	96	19	175	

Table 4: Disability Scale of FFI

Windlass Test Result	No Disability	Mild Disability	Moderate Disability	Severe Disability	Total	p-value
Negative	61	61	0	0	122	0.000
Positive	3	40	9	1	53	
Total	64	101	9	1	175	

Table 5 displays the association between the Windlass Test and the activity limitation scale of the FFI. Among those who tested positive, 45 participants reported mild activity

limitation, while 8 reported no activity limitation. The association between plantar fasciitis and activity limitation was statistically significant ($p = 0.000$).

Table 5: Activity Limitation Scale of FFI

Windlass Test Result	No Activity Limitation	Mild Activity Limitation	Total	p-value
Negative	86	36	122	0.000
Positive	8	45	53	
Total	94	81	175	

The results demonstrate that plantar fasciitis significantly impacts pain, disability, and activity limitation, all of which were found to have a statistically significant association with the condition ($p < 0.05$ across all scales).

DISCUSSION

The findings of this study indicate that plantar fasciitis is a significant issue among sales promotion personnel, with 30.3% of participants diagnosed with the condition. This prevalence aligns with previous studies, which also highlighted the high incidence of plantar fasciitis in occupations involving prolonged standing and walking. For example, a study conducted in a healthcare setting similarly reported a high prevalence of plantar fasciitis among healthcare workers due to extended periods of standing and insufficient foot support (19, 20). The association between plantar fasciitis and the pain, disability, and activity limitation scales of the Foot Function Index (FFI) was statistically significant in this study, reinforcing the impact of this condition on work performance and overall quality of life. These findings are consistent with those of Waclawski et al., who identified prolonged weight-bearing as a major risk factor for plantar fasciitis, leading to significant functional limitations (4).

In this study, the majority of participants with plantar fasciitis experienced mild to moderate pain and disability, which is in agreement with previous studies that have documented similar levels of discomfort and impairment among individuals suffering from this condition (3, 21). The use of the Windlass Test as a diagnostic tool for plantar fasciitis proved to be effective, as supported by its high diagnostic accuracy in other studies (15). Additionally, the significant relationship between plantar fasciitis and the pain, disability, and activity limitation scales of the FFI demonstrates the widespread impact of this condition on both physical and functional abilities in the workplace.

One of the strengths of this study is the focus on a specific occupational group, which allows for a more targeted understanding of plantar fasciitis in relation to work-related risk factors. The inclusion of validated tools such as the FFI and Visual Analogue Scale (VAS) further strengthens the reliability of the findings. Moreover, the use of a cross-sectional design enabled the collection of data at a single point in time, providing a snapshot of the prevalence and severity of plantar fasciitis in this population.

However, this study also had several limitations. The relatively small sample size limits the generalizability of the findings to other occupational groups or populations. Additionally, the study relied on self-reported data for some variables, which may have introduced recall bias. The lack of consideration for other biomechanical factors, such as foot arch structure or gait abnormalities, which are known contributors to plantar fasciitis, represents another limitation. Moreover, the exclusion of participants with previous foot surgeries or congenital foot diseases may have resulted in underestimating the true prevalence of plantar fasciitis in this population. Lastly, the study was conducted in a single geographic region, which may limit the external validity of the results.

Future research should aim to address these limitations by incorporating larger and more diverse samples, as well as exploring the biomechanical aspects of plantar fasciitis. Additionally, longitudinal studies would provide a better understanding of the chronic nature of this condition and its long-term effects on occupational performance. Preventive measures, including the provision of proper footwear with adequate arch support and cushioning, as well as ergonomic interventions in the workplace, are recommended to reduce the incidence and impact of plantar fasciitis among sales promotion personnel and similar occupational groups. Such strategies may not only

improve workers' comfort but also enhance productivity and reduce absenteeism due to foot-related pain and disability.

CONCLUSION

In conclusion, this study highlights the significant burden of plantar fasciitis among sales promotion personnel and its detrimental effects on pain, disability, and activity limitation. The findings underscore the importance of early diagnosis and appropriate interventions to mitigate the negative impact of plantar fasciitis on quality of life and work performance.

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