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PREVALENCE OF PLANTAR FASCIITIS AMONG TRAFFIC WARDENS OF RAWALPINDI: A CROSS-SECTIONAL STUDY

Marium Khalid[*1], Aqsa[2], Ayesha Rafique[3], Ayesha Alam[4], Muhammad Usman Ali[5], Fatima Qalender[6], Najam us Sehr[7], Hamza Tahir[8]

*[*1]Assistant Professor, Department of Physical Therapy, Ibadat International University, Islamabad, Pakistan*
[2,3,4,6]Physiotherapist, Shaheed Zulfiqar Ali Bhutto medical university Islamabad
[5]Physiotherapist, Ibadat International University, Islamabad, Pakistan
[7]Assistant Professor, Ibadat International University Islamabad
[8]Physiotherapist, Dr. Shoaib Physio & Rehab (DSPR) center PWD Islamabad

[*1]marium.khalid@uipt.iiui.edu.pk; [2]aksa9803@gmail.com; [3]ayesha rafique168@gmail.com; [4]ashiash624@gmail.com; [5]musmanalidpt@gmail.com; [6]fatimashaykh222@gmail.com; [7]najam.usseher@pharm.iiui.edu.pk; [8]hamza.tahir4578@gmail.com

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Corresponding Author: * Marium Khalid

Abstract

Background: Plantar fasciitis is an inflammation of the band of tissue that connects the heel to the toes and supports the foot's arch. It often causes sharp pain on the inside of the foot, especially with the first steps in the morning. For traffic wardens, long hours of standing and higher body weight increase the risk Objective: The purpose of the current study is to determine the prevalence of plantar fasciitis among traffic wardens of Rawalpindi. Methodology: The current study employs a cross-sectional study design. A purposive convenience sampling technique was used to select 330 Individuals who fulfilled the inclusion criteria. A structured plantar fasciitis and disability scale (PPFS) was used to collect demographic data, a history of heel pain, and factors associated with plantar fasciitis. The data were then analyzed using IBM SPSS Statistics 22. Result: The Plantar Fasciitis was prevalent among 145 individuals (44.0%) with a statistically significant value of 0.00. Among them, 41.4% reported pain once a week, 26% once a day, 23.9% every other week, and 8.2% many times a day. There is an association found between plantar fasciitis and prolonged standing, and participants experienced greater standing restrictions ($\chi^2 = 143.929$, $p < 0.001$). Conclusion: The study concluded that plantar fasciitis was prevalent among the traffic wardens of Rawalpindi. Pain was most common on the ball of the foot. Pain intensity was highest in the morning, leading to difficulty in taking the first few steps in the morning.

INTRODUCTION

Heel pain is a common foot problem, and the leading cause of long-term heel pain is plantar fasciitis. It affects both Active and Sedentary individuals [1]. Many factors are responsible for heel pain, but most often, it comes from the damage and swelling of the plantar fascia [2]. Plantar fasciitis is defined as the inflammation of the origin of the plantar fascia and nearby tissues. The main signs are

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pain and tenderness near the inner part of the heel bone [3]. Plantar fasciitis is also known as plantar fasciopathy, Stone bruise, subcalcaneal bursitis, and calcaneodynia [4,5]

The central band is most affected in plantar fasciitis. It stabilizes the foot and works as a shock absorber during movement [3]. The plantar aponeurosis is a thick pad that supports and protects the structures under it by keeping them within their normal position [6]. Furthermore, it extends forward to connect to the base of the toes, helping to maintain foot function [6,7]. Pain occurs when taking the first steps in the morning or after resting. The pain usually reduces as the person starts moving but can return after standing for a long time [8]. Recent studies suggest that Plantar Fasciitis is a degenerative pathology instead of an inflammatory one [9].

Tight calf muscles are often seen in patients. About half of them may develop a heel spur [10]. Obesity is associated with an increased risk of plantar fasciitis. Many patients also show excessive foot pronation while walking, which strains the fascia [6]. Additionally, weak plantar flexor muscles and long periods of standing are also risk factors (11) and adult diabetic patients are more at risk of PF than non-diabetic patients [12]. Heel spurs may also form, especially in older or overweight people [13].

The reason for the pain being worse in the morning is that the foot stays still overnight, leading to poor circulation and a buildup of irritating substances [14]. The pain usually stays in the foot, but in rare cases, it may spread to the ankle if nearby nerves are irritated [15].

Pain in the bottom of the heel can be due to several conditions, including heel pad syndrome [16]. Heel pad syndrome causes a bruise-like pain [17]. Furthermore, a calcaneal stress fracture occurs when the heel bone is repeatedly overloaded [18]. Additionally, if a patient has heel pain along with burning, tingling, and numbness, it is likely due to entrapment of the medial and lateral plantar nerves [19]. Achilles tendinopathy is often caused by overuse activities like excessive running or wearing high heels regularly. The pain is usually sharp and worsens with activity [20].

Plantar fasciitis is treated through medical, physical, and sometimes surgical methods if pain continues [21]. Ice massage is a simple and effective way that can be done at home to relieve symptoms of plantar fasciitis. It involves using ice packs or rolling the foot over a frozen can or bottle for about 15 minutes, twice a day. This technique is useful in reducing inflammation, along with swelling and pain [22].

Furthermore, stretching and strengthening exercises help fix functional issues like tight calf muscles and weak foot muscles. This stretch should be held for 30 seconds and repeated 2–3 times per session. It is recommended to perform this stretch daily, especially before taking the first step in the morning [23,21].

Orthotics are commonly used to reduce abnormal foot pronation and minimize ground pressure on the plantar fascia. They help improve foot alignment and function through devices such as heel



Figure 1: Stretching and strengthening exercises for treating plantar fasciitis.

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cups, insoles, and viscoelastic pads [6, 19, 23]. For patients with persistent symptoms, night splints are often recommended. These maintain the ankle in a dorsiflexed position during sleep, gently stretching the plantar fascia and Achilles tendon, which helps reduce microtrauma during initial weight-bearing [21–23]. In terms of pharmacological management, NSAIDs are used to relieve pain and inflammation, while steroid injections may be considered if symptoms do not improve [23]. When conservative measures fail, extracorporeal shock-wave therapy (ESWT) offers a non-invasive alternative; it is typically administered in short sessions and is effective in resistant cases [21,23]. Additionally, local steroid injections can provide rapid relief in both acute and chronic cases by reducing inflammation [6,21]. The traffic wardens of Pakistan have long working hours, which mainly include standing, which can make them vulnerable to this condition. Therefore, the current study aims to determine the prevalence of plantar fasciitis among traffic wardens of Rawalpindi and to identify its associated risk factors.

3. Methodology

This cross-sectional study aimed to determine the prevalence and risk factors of plantar fasciitis among traffic wardens in Rawalpindi and was initiated after getting approval from the Institutional Review Board of the University (IRB/DPT/1022-1307). It was conducted over six months at the City Traffic Police Headquarters. Slovin's formula, $n = N / (1 + Ne^2)$, was used to determine the total sample size, which consisted of 330 male participants. The age of the participants was 30–60 years, selected through non-probability convenience sampling. Inclusion criteria included unilateral or bilateral heel pain, morning stiffness, and standing for 4–8 hours daily, while individuals with foot deformities, fractures, malignancy, trauma, or recent injections were excluded. Data were collected using a modified Plantar Fasciitis Pain Scale (PFPS) after obtaining written informed consent from each participant, along with an explanation of the procedure, the study's purpose, and the right to withdraw at any stage. The questionnaire included demographic details, a facial analogue scale, and mobility function tests. Analysis was performed using IBM SPSS Statistics 22. The qualitative variables were summarized using descriptive statistics as percentages and frequencies, whereas the quantitative variables were represented by means and standard deviations.

3. Results

Among the 330 participants, plantar fasciitis was identified in 145 individuals (44.0%) . Pain was reported most frequently once a week (41.4%), although a considerable proportion experienced daily symptoms (26%) and a smaller group noted pain multiple times per day. The duration of pain varied: nearly one-third reported discomfort lasting less than one hour, while about one-fifth experienced episodes exceeding two hours. In addition, 28.1% associated their pain with episodes of overexertion. Morning was the most common peak pain period (39.3%), followed by a consistent pattern throughout the day (24.8%), indicating a tendency toward early-day symptom aggravation. Recovery to comfortable ambulation typically required 11–30 minutes (43.2%), although 28.4% reported no recovery time, reflecting a wide range of symptom severity. Table 1
These findings highlight a substantial burden of plantar fasciitis in the traffic wardens of Rawalpindi, with pain that is not only frequent but also variable in duration and timing. The predominance of morning pain and the need for extended recovery in many participants underscore the potential impact of this condition on daily mobility and functional activities.

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Table 1: Pain frequency, duration, peak timing, and recovery characteristics among participants with plantar fasciitis

	Frequency	Percentage
Pain Frequency		
Every other week	79	23.9
Once a week	137	41.4
Once a day	86	26
Many times a day	27	8.2
Pain last		
After overexertion	93	28.1
Less than 1 hour	105	31.7
For 1-2 hours	62	18.7
For more than 2 hours	70	21.1
Total	330	99.7
System	1	0.3
Total	331	100
Peak Pain Time		
Always the same	82	24.8
Afternoon	52	15.7
Both day and night	66	19.9
Morning	130	39.3
Peak pain recovery time		
No time	94	28.4
Less than 10 min	60	18.1
11-30 min	143	43.2
More than 30 min	33	10
Total	330	100

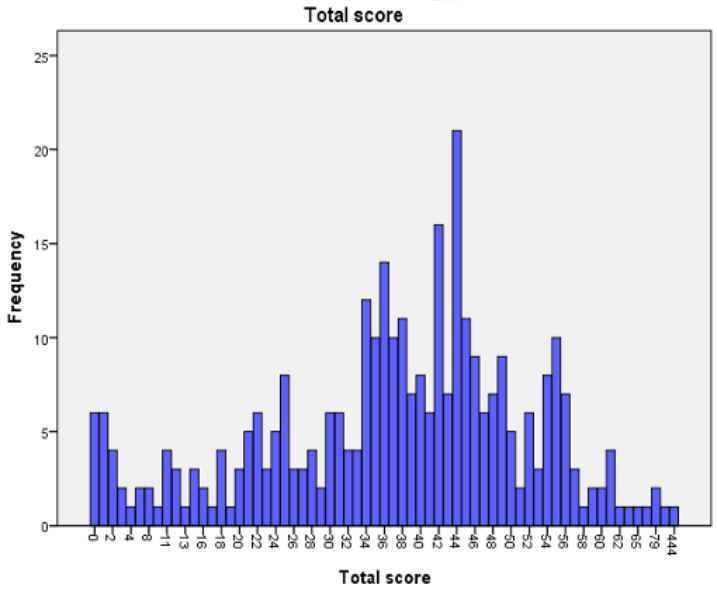

Figure 2 Demonstrates the pain score levels in individuals with Plantar fasciitis.

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4. Discussion

Plantar fasciitis, the inflammation of the plantar fascia and nearby tissues, is the leading cause of heel pain in outpatient settings. The study found plantar fasciitis to be fairly common among traffic wardens. Among 330 participants, 44% had plantar fasciitis. Of these, 36% reported pain at the bottom of the heel, 39.3% felt pain in the morning on taking their first steps, 31.7% experienced pain for less than an hour, and 43.2% reported peak pain relief within 11–30 minutes. A recent study found a strong link between plantar fasciitis and prolonged standing, which aligns with the findings of Riddle et al., who identified prolonged standing, obesity, and extended exercise as major risk factors. In our study, prolonged standing was a key contributor to plantar fasciitis among traffic wardens, consistent with the results of a cross-sectional study by Syed Ahmed Q.F et al. conducted in Lahore. The study confirmed a significant association between plantar fasciitis, long hours of standing, and frequent running.

Similarly, a cross-sectional study conducted in Sialkot among 150 female teachers from Sialkot College of Physical Therapy found that 46.3% had plantar fasciitis. The study showed a strong association between plantar fasciitis and increasing age, with weaker links to prolonged standing and BMI. Another cross-sectional study by Riaz Hashmi et al. in five randomly selected primary health centers in Makkah, Saudi Arabia, included 270 patients with heel pain. The prevalence of plantar fasciitis was 57.8%. This study identified obesity, poor footwear, prolonged standing, and lack of physical activity as major risk factors for plantar fasciitis. Reda A. Goweda et al. conducted a study in Pune, India, on 88 traffic wardens and found that 25% had plantar fasciitis. The main cause was prolonged standing, which caused microtrauma to the plantar fascia. In contrast, a cross-sectional study in Peshawar involving 360 traffic wardens reported a lower prevalence, only 5 cases of plantar fasciitis, accounting for 13.2% of those with heel pain. However, strong associations were found with the 20–40 age group, use of hard footwear, and long-standing hours. **Limitations**

In the current study, only male wardens were included; these traffic wardens were from just one city (Rawalpindi). In our study, we could not perform a vast study due to COVID-19 restrictions.

Conclusion

The study concluded that plantar fasciitis was prevalent among the traffic wardens of Rawalpindi. Out of 330 participants, 145 (44.0%) had plantar fasciitis. Pain was most common on the ball of the foot with a frequency of 210. Pain intensity was highest in the morning, leading to difficulty in taking the first few steps in the morning. The study demonstrates a significant association between plantar fasciitis and prolonged standing, underscoring the importance of ergonomic interventions to help reduce such occupational health problems.

Recommendations

Prolonged standing is a major, often overlooked risk factor for plantar fasciitis. Screening, awareness of symptoms, and preventive measures, such as proper posture, rest breaks, and stretching, can help reduce risk. Departmental and governmental health awareness programs are recommended.

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