Advanced International Journal for Research (AIJFR)
E-ISSN: 3048-7641 ● Website: www.aijfr.com ● Email: editor@aijfr.com

Occurrence of Plantar Fascitis Among Bus Drivers in Chennai: A Cross-Sectional Study

Goutham Anil[1], Sweeta Priyadarshini[2], Dr. B.S. Santhosh Kanna[3]

[1]Bpt Intern, College of Physiotherapy Niepmd (D)
[2]Lecturer, College of Physiotherapy Niepmd (D)
[3]Principal, College of Physiotherapy Niepmd (D)

ABSTRACT:
Plantar fasciitis is one of the most common causes of heel pain and is associated with repetitive mechanical loading of the plantar fascia. Bus drivers are considered a high-risk occupational group due to prolonged sitting, repetitive pedal operation, and sustained foot postures during driving, which increase stress on the plantar fascia. However, there is limited evidence regarding the occurrence of plantar fasciitis among bus drivers in India. The present cross-sectional observational study was conducted to determine the occurrence of plantar fasciitis among Metropolitan Transport Corporation (MTC) bus drivers in Chennai. A total of 167 male bus drivers aged 18–60 years from the Adyar, Saidapet, Mandaveli, and Tambaram depots participated in the study. Data were collected using a structured questionnaire to assess demographic characteristics, occupational factors, and symptoms related to heel pain. Pain severity was assessed using the Visual Analogue Scale (VAS), and the Windlass Test was performed for clinical confirmation of plantar fasciitis. The results showed that 36 drivers tested positive for plantar fasciitis, indicating an occurrence of **21.6%**. Overall, **80.2%** of the participants reported foot-related problems, including plantar fasciitis and other causes of heel pain. The occurrence of plantar fasciitis increased with advancing age and years of driving experience, suggesting that cumulative occupational exposure contributes to the development of the condition. The findings indicate that plantar fasciitis is a significant occupational musculoskeletal disorder among MTC bus drivers. Early screening, ergonomic modifications, appropriate footwear, regular stretching exercises, and physiotherapy-based preventive interventions may help reduce the occurrence of plantar fasciitis, improve foot health, and enhance occupational performance among bus drivers.

Keywords: Plantar fasciitis, Bus drivers, Occupational health, Heel pain, Windlass test, Cross-sectional study, Musculoskeletal disorders, incidence, occurrence

1. Introduction

Plantar fasciitis (PF) is one of the most common causes of heel pain, resulting from repetitive mechanical overload and degenerative changes in the plantar fascia rather than inflammation alone. It typically presents as sharp "first-step pain" in the morning or after prolonged sitting and worsens with prolonged standing or walking. The plantar fascia plays a vital role in maintaining the longitudinal arch and absorbing forces during gait. Bus drivers are particularly vulnerable due to prolonged sitting, repetitive use of accelerator and brake pedals, restricted foot movement, and sudden transition from sitting to standing, all of which increase mechanical stress on the plantar fascia. Although occupational musculoskeletal disorders among drivers have been widely studied, PF remains under-investigated in this population,

particularly in India. Early identification and conservative management, including stretching, orthotic support, ergonomic modification, and physiotherapy, can prevent chronic disability and improve functional outcomes. The study aims to generate evidence on the burden of PF, identify occupational risk factors, and support the development of targeted preventive and physiotherapy interventions. It also seeks to increase awareness among drivers and promote early diagnosis to prevent chronic musculoskeletal complications.

2. Methodology

A cross-sectional observational study was conducted among 167 male MTC bus drivers aged 18–60 years from the Adyar, Saidapet, Mandaveli, and Tambaram depots over one month. Drivers with at least one year of experience who provided informed consent were included. Those with recent lower limb fractures, surgery, or neurological disorders affecting gait were excluded. Data were collected using a structured questionnaire covering demographic details, occupational factors, heel pain symptoms, and risk factors. Pain intensity was assessed using the Visual Analogue Scale (VAS), while the Windlass Test was used for clinical confirmation of plantar fasciitis. Descriptive statistics were used to estimate prevalence and analyse associations with occupational factors.

3. Results

Among the 167 participants, 36 tested positive for plantar fasciitis, yielding a prevalence of **21.56%**. While 58.7% reported foot or heel pain from various causes, only 21.6% were confirmed to have PF, and 19.8% reported no foot problems. The prevalence increased with age, from 0% in the 21–30-year age group to 30.3% among those aged 51–60 years. Similarly, PF prevalence increased with years of driving experience, suggesting a cumulative effect of occupational exposure. Overall, 80.2% of the drivers experienced some form of foot-related problem.

4. Discussion

The present study assessed the occurrence of plantar fasciitis among MTC bus drivers in Chennai using a structured questionnaire and the Windlass test. The findings showed that **21.6%** of the participants had plantar fasciitis, while **80.2%** reported some form of foot or heel pain, indicating that foot-related musculoskeletal problems are common in this occupational group.

The prevalence observed in the present study is lower than the **60.4%** reported by **Zulfqar et al. (2025)** among heavy vehicle drivers. This difference may be due to variations in driving duration, work environment, footwear, and study population. Nevertheless, both studies indicate that prolonged driving and repetitive pedal use increase the risk of plantar fasciitis. Similarly, **Mazhar et al. (2023)** reported a high prevalence of foot pain among occupational bus drivers, supporting the present findings that bus driving places considerable mechanical stress on the foot.

The present study also demonstrated that the occurrence of plantar fasciitis increased with age and years of driving experience. The highest prevalence was observed in drivers aged **51–60 years** and in those with longer occupational exposure. These findings are consistent with those of **Jumle et al. (2023)** and **Hashmi et al. (2018)**, who reported increasing prevalence with advancing age. Age-related degeneration of the plantar fascia, combined with cumulative occupational stress, may explain this trend.

The occupational demands of bus driving likely contribute to plantar fascia overload. Prolonged sitting, repetitive accelerator and brake pedal use, and sudden transition to standing after long periods of driving may produce repetitive tensile stress on the plantar fascia, resulting in microtrauma and pain. These findings support the biomechanical explanations described in previous literature.

The Windlass test proved to be a practical clinical tool for identifying plantar fasciitis in the present study. Although many participants reported heel pain, only a proportion tested positive, suggesting that heel pain may result from conditions other than plantar fasciitis. Therefore, clinical assessment remains essential for accurate diagnosis.

The findings highlight the need for preventive strategies among bus drivers. Regular stretching exercises, appropriate footwear, ergonomic modifications, periodic screening, and physiotherapy interventions may help reduce the occurrence of plantar fasciitis and improve occupational health. Overall, the study demonstrates that plantar fasciitis is a significant occupational problem among MTC bus drivers, emphasizing the importance of early identification and preventive management.

5. Conclusion

The study found that plantar fasciitis affects approximately one in five MTC bus drivers, with foot-related pain being highly prevalent in this occupational group. The condition was more common among older drivers and those with longer work experience, indicating the cumulative effects of repetitive pedal use, prolonged sitting, and occupational mechanical stress. These findings emphasize the importance of early screening, ergonomic modifications, appropriate footwear, regular stretching, and physiotherapy-based preventive strategies to reduce disability and improve occupational health among bus drivers.

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