



Original Research Article

Prevalence of Planter Fasciitis in Young Females by Using Inappropriate Foot Wear

Article History:

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Abstract: Background: Plantar fasciitis is a prevalent foot condition marked by inflammation of the plantar fascia, typically resulting in heel pain and discomfort. Among young females, the regular use of inappropriate footwear such as high heels, flat shoes lacking arch support, and tightly fitting shoes has been identified as a key contributing factor. **Objective:** This study aimed to assess the prevalence of plantar fasciitis among young female students at KFUEIT, examine common types of inappropriate footwear worn, evaluate frequently reported symptoms, and offer practical recommendations to prevent plantar fasciitis through informed footwear choices. **Method:** A descriptive cross-sectional study was conducted at Khwaja Fareed University of Engineering and Information Technology (KFUEIT), Rahim Yar Khan, from March to May 2025. Data were collected from 71 female students using a self-administered questionnaire via Google Forms. The survey included items on demographic details, footwear habits, and plantar fasciitis symptoms. Statistical analysis was performed using SPSS to determine frequencies and percentages. **Results:** The results indicated that 57.1% of participants reported symptoms consistent with plantar fasciitis. Frequently worn types of inappropriate footwear included high heels, unsupportive flats, and tight-fitting shoes. The most commonly reported symptoms were morning heel pain, foot stiffness, and discomfort during prolonged periods of standing or walking. **Conclusion:** A significant prevalence of plantar fasciitis was observed among young female students at KFUEIT, largely associated with unsuitable footwear choices. These findings underscore the importance of raising awareness about proper footwear and promoting the use of ergonomically supportive shoes. Implementing educational interventions within university settings may help mitigate the risk of plantar fasciitis and improve overall foot health among students.

Keywords: Plantar Fasciitis, Footwear, Heel Pain, Female Students, Musculoskeletal Disorders, Foot Health.

INTRODUCTION

Background of the Study

Plantar fasciitis is particularly common in those who have changes in their foot mechanics, stand or walk for long periods, or often wear the wrong kind of shoes. The plantar fascia goes from the heel bone to the ends of the foot bones and helps support the medial longitudinal arch while dealing with walking and standing (Pallavi et al., 2020).

Microtears, degenerative changes, or inflammation can form inside the fibrocartilage if something causes it to weaken. The strength of the foot is supported by coordinated actions of muscles, levers, ligaments, and tendons. Any interruption in this movement chain, particularly caused by unsuitable footwear, could put abnormal strain on the plantar fascia. Such awkward walking and running biomechanics are more harmful for younger, active ladies who may not be aware of them. The palm of the hand and the sole of the foot both act in a similar way. The first layer is superficial fascia, the second is deep fascia, followed by four layers of neurovascular bundles. In the foot, both longitudinal and transverse arches consist of the medial, lateral, anterior and posterior arches. They are positioned between the third and fourth layer from the top of the sole. The plantar fascia is a specific form of fascia that supports the arch of the foot and defends the deep structures (Pallavi et al., 2020).

PF stands for plantar fasciitis which is when the tough band across the bottom of the foot becomes swollen, leading to heel pain in the back part of the foot (Thakar et al., 2022). In most cases of PF, chronic degeneration was observed as the main feature in the histologic study, rather than inflammation (Tseng et al., 2023). Considering that inflammation is not a major factor, some experts have suggested that the name be updated to “Plantar Fasciosis”, “Painful Heel Syndrome”, “Runner’s Heel”, “Tennis Heel”, “Calcaneal Peritonitis” or “Heel Spur Syndrome”(Aiman et al., 2022).

Individuals with limited ankle movement and those who stand all day are more likely to develop plantar fasciitis. The pain can feel burning, achy or even sharp and stabbing (McNab et al., 2022). It is important for the plantar fascia to help uphold the arch and lessen the stress on the foot while you move. Some of the contributors to plantar fasciitis are very active lifestyles, wearing badly fitted shoes and problems with foot biomechanics (Ali et al., 2024). There are many reasons why plantar fasciitis may occur. These things include both personal and outside influences. Body mass index (BMI), gender and age are intrinsic factors that may cause the plantar fascia to stiffen and deteriorate. Wearing shoes and the time you stand throughout the day are called extrinsic factors. If this position is kept for a while, the plantar fascia faces too much tension, causing irritation and inflammation (Rarassanti et al., 2022). Classic symptoms are an intense pain at the plantar aponeurosis (the insertion point on the medial process of the calcaneus) and sometimes a heel spur (osteophyte) forms (Khired et al., 2022). The volume of a muscle is directly linked to its power and studies reveal that those with plantar fasciitis reduce the average volume of the intrinsic foot muscles by 4.68–11.77% (Chen, 2020).

Symptoms of PF feature sudden pain, discomfort when taking your first steps, pain during exercise, extended time standing or walking and after being in a seated position for hours (Thakar et al., 2022). Little is known about how plantar fasciitis occurs. Due to a lack of agreed-upon terms for tissue changes, understanding the root causes of plantar fasciitis has been slow, as with chronic tendon disorders (Chen, 2020).



Figure 1.1: Plantar Fasciitis Footwear for Heel Pain <https://images.app.goo.gl/mN3eTLXYTY2dzJN8>

When the fascia absorbs a lot of force and becomes very tense, it gets damaged in tiny places and the resulting repair process leads to inflammation. Doing a lot of heel strikes can cause a steady inflammation underneath the skin which

could stop the foot from fully restoring itself (Richie Jr, 2021). Individuals who use their feet in unusual ways or have a physically demanding work or hobby often face plantar fasciitis due to how common it is among runners (Aiman et al., 2022).

Wearing high heels by young women can put too much stress on the plantar fascia which can result in fascia ruptures (Ali et al., 2024). If people have a lot of foot pain, it makes them less active both in sports and daily living and also negatively affects their lives.

Planter fasciities have been revealed to account for about 11 to 15% of adult foot pain in various studies (Hashmi et al., 2020). It is estimated that between 4% and 7% of the general population feels heel pain at the same time and 80% of these cases are plantar fasciitis-related. It is estimated that at least 10% of people suffer from the disorder (Aiman et al., 2022).

Grasping the long-term effects of regular shoes on plantar fasciitis helps people alter their choice of shoes which can stop significant pain and physical problems. Understanding the link between typical footwear and plantar fasciitis is very important for relieving discomfort and avoiding disability. Optimizing footwear can greatly help with keeping people comfortable and maintaining good health (Littlejohn, 2024).

Plantar fasciitis is estimated to impact two million individuals in the US, resulting in about one million visits to outpatient clinics annually . The overall unadjusted incidence rate of plantar fasciitis was found to be 10.5 cases per 1000 person-years (Ali et al., 2024). Because of wearing shoes that do not fit properly, people often have problems with their foot movements. Some other results can be like being less energetic, discomfort on the heel side, less grip and even sliding feet due to slippery footwear (Zulfqar et al., 2025).

Plantar fasciitis accounts for 8-15% of injuries affecting the ankle and foot. The survey conducted in 2013 by the National Health and Wellness found that women were more likely to suffer from plantar fasciitis than men. According to the study, women in the age range 45-64 had a 1.19% chance of experiencing plantar fasciitis, with men experiencing it at a rate of 0.47% (Rarassanti et al., 2022).

Table 1.1: The Differential Diagnosis of Plantar Heel Pain(Latt et al., 2020).

Category	Possible Conditions
Neurologic	- Peripheral neuropathy (e.g., idiopathic, diabetic, or due to nutritional deficiencies) - Lumbar radiculopathy (L5/S1 neural foraminal impingement or spinal stenosis) - Tarsal tunnel syndrome - Baxter's nerve entrapment (inferior calcaneal neuritis)
Traumatic	- Plantar fascia tear or rupture - Calcaneal stress fracture
Rheumatologic	- Rheumatoid arthritis - Psoriatic arthritis - Seronegative spondyloarthropathies
Degenerative	- Fat pad atrophy - Plantar fasciopathy (commonly known as plantar fasciitis)

When diagnosing plantar fasciitis, a doctor relies on both the patient's story and their physical symptoms. The way plantar fascia helps the foot and sustains it during walking and standing is called a windlass mechanism and informs us about the stresses placed on it. A windlass consists of a tightened rope or cable. Plantar fascia functions as a type of cable or rope running from the calcaneus to the metatarsophalangeal joints. Dorsiflexion draws the plantar fascia around the metatarsal bone at its top. When the plantar fascia wound become tense, it draws the calcaneus and metatarsals closer which

leads to a higher medial longitudinal arch. The change in alignment of the plantar fascia from dorsiflexion of the great toe is the key factor for the activity of the windlass mechanism. When the toes are passively moved toward the top of the foot with no weight bearing or weight solely on the heel and pain is experienced, it is considered a positive plantar fasciitis test (Bhoir & VV, 2021). The work in Springfield, Massachusetts, involved choosing 784 older individuals from the community and different ethnic groups, including non-Hispanic White, African American and Puerto Rican individuals, to study the

prevalence of foot and ankle issues (Ali et al., 2024).

The majority of patients with PF can recover within 3-6 months after conservative care, with their symptoms subsiding. It is recommended to start with NSAIDs, massaging and stretching the back of the leg and the sole and using heel pads, heel cups and arch supports at night. A person is considered to have successful treatment if their pain improves and their day-to-day function is better (Latt et al., 2020). Orthotics and corticosteroid injections are considered by many studies to be the top treatments for plantar fasciitis. Those who use orthotics, whether custom-made or off-the shelf, reported an improvement in how they felt and functioned after 1 to 3 months, with very little risk (Lewis et al., 2015). Plantar fasciitis leads to around 600,000 visits to doctors every year in the United States. Estimates suggest that treatments for plantar fasciitis cost around \$192 to \$376 million every year (Goweda et al., 2015).

Since plantar fasciitis is difficult to treat with only one approach, a combination of treatments is necessary. It is common for symptoms to remain even after the treatment has been successful. It is common for young people and athletes to experience plantar fasciitis. If the illness is left untreated, it could become very severe. The role of physical therapists, pharmacists, nurses and rehabilitation specialists is key in preventing symptoms from returning, yet patient education matters a lot as well. It is important for patients to realize that their symptoms could take weeks or months to disappear. The patient could be asked to put on a night splint, take part in a physical therapy program and visit a podiatrist for the best footwear with support for the arches. It is important for patients to do some simple exercises at home to stretch their feet, learn why stretching is important before they start exercising and understand that weight control can be beneficial. They ought to learn about the possible problems linked to standing for a long time. Patients who are very ill should avoid walking barefoot and try to do fewer workouts that harm the heels. A referral to an orthopedic surgeon is considered the final step, should all other methods be unsuccessful (Khired et al., 2022).

It is common to note that plantar fasciitis occurs mostly in older people, caused by repetitive use or work. Yet recent research shows that modern fashions for young women, which often lack support, are also a major reason for this condition. According to Ali et al. (2024), nearly 2 million medical cases are handled by PF in the United States per year. It has been found that more women are affected by this condition, and even though information from South Asia is scarce, it appears that more recently it is affecting a younger population. Experts say that globally, around 10% of all people could experience PF at some stage in their lives, and women within the age range of 20–45 are

now at the highest risk (Aiman et al., 2022). People have started to pay attention to how certain types of shoes, like poorly designed high heels or narrow shoes, affect the risk of getting or facing another case of PF.

In Rahim Yar Khan and especially at KFUEIT, girls frequently opt for looks over practicality when it comes to their style of footwear. You'll often find heeled sandals, pointed shoes, pumps, slides, and flat slippers as the main footwear choices for many individuals. Despite being attractive and fitting society's image, they tend to lack the arch support, comfort, and even pressure that you need. Many students feel strain in their plantar fascia after walking on hard campus floors throughout the day. Fashion trends often focus on style rather than the practical needs of the foot because many young women have not yet noticed possible problems in the future. Because proper information and preventive care are not always available, people often ignore their feet's early symptoms, which can eventually cause chronic problems. If shoes lack proper heel counters, do not have good support for the arches, lack padding in their soles, and have heels higher than 1–2 inches, they can seriously affect the way someone walks. The plantar fascia is placed under additional stress, mainly during the part of walking or running where the foot is in stance. If repeated pressure exceeds the limits of the fascia, injuries such as microtraumas and collagen damage can develop, mainly at the medial tubercle of the calcaneus (Thakar et al., 2022).

Because of this, shoes that tighten the toe area can cause you to move your feet in an unnatural way, leading to more stress on the fascia. They may lead to more problems such as Achilles tendonitis, metatarsalgia, knee pain, and changes in the body's posture (Ali et al., 2024). Also, numerous female students identify limited pain in their heels or arch, but often do not see a specialist because of routine pain, lack of knowledge, or insufficient podiatric services available. Considering the local rate and causes of this condition is necessary to improve strategies for its prevention and to increase knowledge about it in the community. Prolonged symptoms of plantar fasciitis can make it impossible for students to walk, join in sports, or do necessary tasks. People with chronic heel pain become less active, which causes them to put on weight, suffer from poor cardiovascular health, feel emotionally distressed, and perform less at school or work (Hashmi et al., 2020). Musculoskeletal problems that develop with heel pain can negatively affect kids, including bad posture and putting stress on their knees, hips, and lower back. A lack of management for PF can make it harder to sleep, feel anxious during activity, and feel less confident. The physical challenges from long working hours in lab settings can make it difficult for students in science and engineering to learn and

succeed.

People often do not realize the costs that PF creates. Although developed countries report yearly treatment expenses of over a hundred million dollars (Goweda et al., 2015), developing nations endure the hidden loss of disruption in studies, lower productivity, long-term impairment, and spending money on medical bills by family members. Those students who depend on extended support, custom orthotics, physiotherapy, or need to see specialists are likely to face costs that are very expensive. PF is often overlooked as an illness in young people, so most cases are not reported, and the infections treated without proper care, resulting in recurring and chronic conditions. Foot health education and preventive measures could be better implemented in KFUEIT if public health authorities look at the student population. The fact that not much research has been done on plantar fasciitis in young Pakistani women and their footwear choices means this study is especially needed. It will demonstrate how many female students with PF come from the university and the link between their shoes and their health. The results can be used for:

- Develop campaigns that explain how a person can look after their feet and choose proper shoes.
- Advise universities to put in place policies that allow for comfort in student and staff dress.
- Include both routine foot screenings and workshops as part of the health orientation for students.
- Offer ideas for inexpensive and friendly footwear that students can use every day.
- Support providing physiotherapy and podiatric health check-ups to all university students.

MATERIAL AND METHOD

The target population of this study comprised young female students currently enrolled at Khwaja Fareed

RESULTS AND DATA ANALYSIS

This chapter presents and interprets the findings of the study titled, "Prevalence of planter fasciitis in young females by using inappropriate foot wear in KFUEIT Rahim yar khan." Data were collected from 71 participants via a Google Form. The results have been analyzed using descriptive statistics and visualized through bar charts to highlight trends and correlations among key variables.

Figure 1: Age Distribution of Respondents

The age distribution of participants shows that the majority fall within the early twenties. Specifically, the most common age group is 20 years, comprising **21.1%** of the sample, followed by 22 years (**18.3%**), and both 21 and 23 years (**15.5%** each). The youngest participants are 18 years old (**2.8%**), while the oldest in this range are 25 years old (**1.4%**). Cumulatively, **70.4%** of participants are aged between 18 and 22, indicating that the sample is predominantly composed of young adults. This distribution reflects a relatively youthful demographic, which may be relevant when interpreting outcomes related to physical health, behavior, or lifestyle factors in the study.

University of Engineering and Information Technology (KFUEIT), Rahim Yar Khan, selected due to their lifestyle patterns and frequent use of different footwear types that may contribute to plantar fasciitis. A total of 71 female students completed the online questionnaire and were included in the final analysis. A non-probability convenience sampling technique was used for participant recruitment. The survey was administered through a Google Form, which was circulated via university WhatsApp groups, Facebook pages, and official email lists to encourage voluntary and anonymous participation. Eligible participants were female students aged 18 years or above who were currently enrolled at KFUEIT and willing to provide informed consent. Only students who reported symptoms of heel or foot pain were included in the study. Male students were excluded from participation. Additionally, students with previously diagnosed neurological or systemic conditions such as diabetes mellitus or rheumatoid arthritis were excluded. Incomplete or duplicate survey responses were also excluded to ensure data accuracy and reliability

Data Analysis Procedure

Data collection was conducted over two weeks during the months of March to May 2025. The Google Form survey was shared via online platforms accessible to KFUEIT students. The form included a detailed consent statement at the beginning, ensuring informed voluntary participation. To maintain privacy:

- Participant identities remained anonymous.
- No personal contact information was collected.
- Responses were automatically stored in a secure Google Sheet linked to the form.

Data Analysis

After data collection, responses from 71 participants were downloaded and analyzed using SPSS

Version 25. The following steps were taken:

Descriptive Statistics: Frequencies, means, standard deviations, and percentages were used to describe the sample's demographics, shoe usage patterns, and reported symptoms.

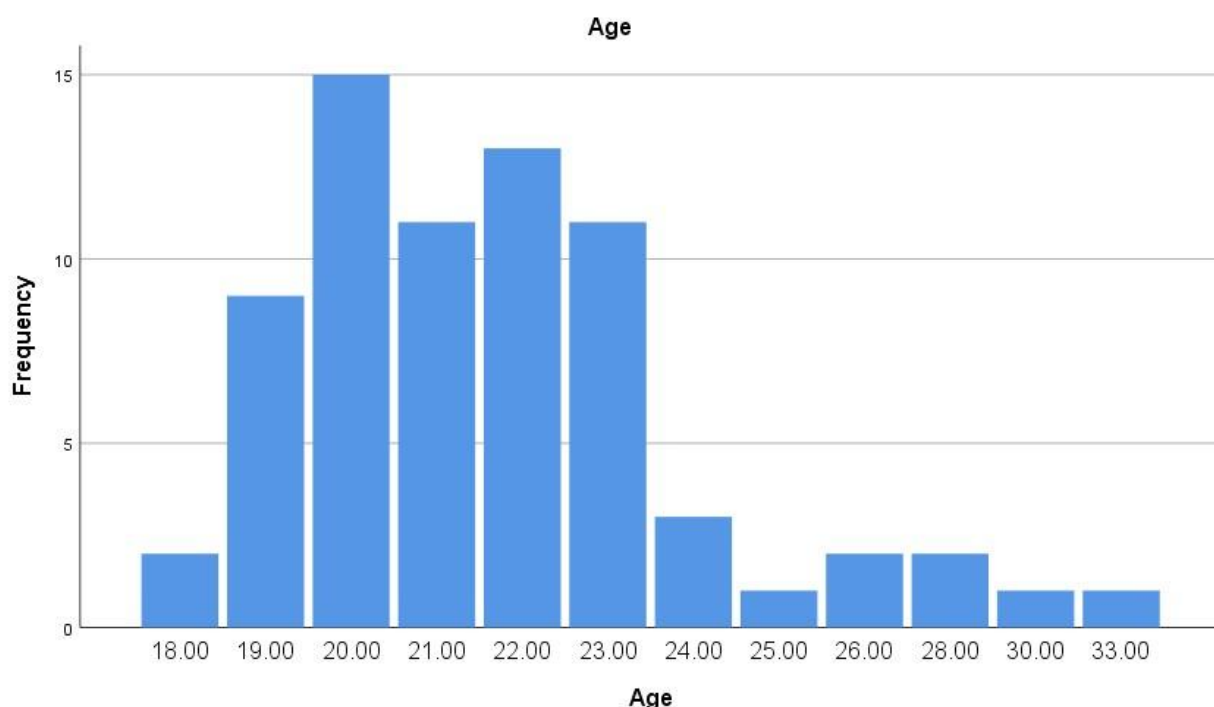


Figure 1 shows Age Distribution of Respondents

Figure 2: Proportion of participants reported experiencing heel pain

The data indicates that a significant proportion of participants reported experiencing heel pain. Specifically, 57.7% responded “yes” to having heel pain, suggesting that more than half of the sample is affected. Meanwhile, 22.5% reported no heel pain, and 19.7% were uncertain or reported “maybe.” These findings highlight the high prevalence of heel pain among the participants, which may warrant further investigation into contributing factors such as age, footwear choices, or physical activity levels.

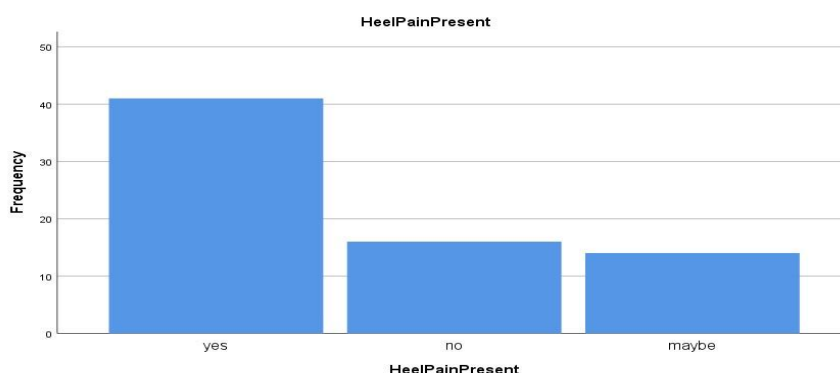


Figure 2 shows Proportion of participants reported experiencing heel pain

Figure 3: Bar Chart Showing Frequency of Inappropriate Footwear Usage Among Participants The bar chart illustrates the frequency of reported use of inappropriate footwear among participants. A significant proportion, approximately 58%, responded “yes”, indicating they wore inappropriate footwear. In contrast, about 21% responded “no”, and another 21% were uncertain (“maybe”). This trend highlights that over half of the participants may be wearing footwear that could contribute to foot-related issues such as heel pain or discomfort. The equal number of “no” and “maybe” responses suggests a level of ambiguity or lack of awareness regarding what qualifies as inappropriate footwear, pointing to the potential need for awareness programs focused on proper foot health and footwear selection.

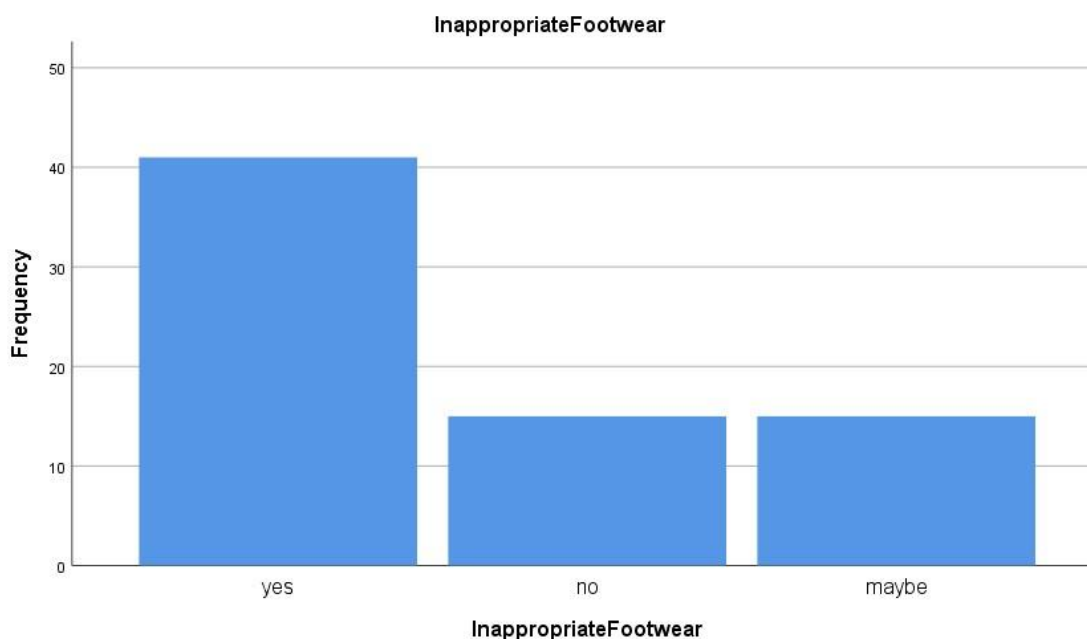


Figure 3 Shows Bar Chart Showing Frequency of Inappropriate Footwear Usage Among Participants

Figure 4: Bar Chart Showing the Severity of Pain Among Participants

The bar chart illustrates the distribution of pain severity reported by participants, using a scale from 1 (least severe) to 10 (most severe). The most frequently reported pain severity level was 5, accounting for 13 responses (18.3%), indicating moderate pain. Levels 4 and 8 followed closely, each reported by 10 participants (14.1%), while severity levels 1, 2, and 6 were also reported with moderate frequencies. Interestingly, the least reported severity was 10, noted by only 2 participants (2.8%), suggesting that extreme pain was relatively uncommon among the sample. Overall, the data reflects that most participants experienced mild to moderate pain, with a smaller proportion reporting either very low or very high severity levels. This distribution suggests the need for early intervention and appropriate management strategies, especially for individuals reporting mid-range to higher severity, to prevent escalation of pain and potential chronic foot conditions.

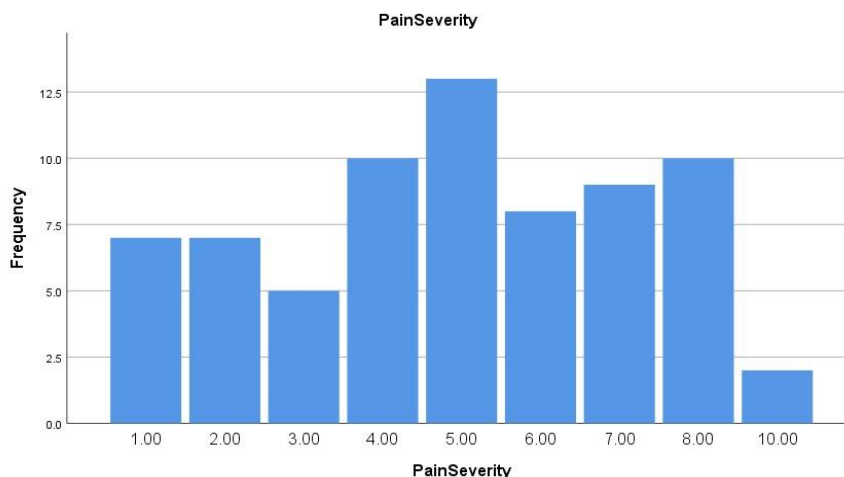


Figure 4 Shows Bar Chart Showing the Severity of Pain Among Participants

Table 1: Correlation Analysis Among Pain Severity, Coping Difficulty, Pain Affect Days, Medication Frequency, and Pain Interference

The correlation analysis revealed significant positive relationships among key pain-related variables. Pain severity was strongly associated with greater coping difficulty ($r = .426$, $p < .001$) and more pain affect days ($r = .604$, $p < .001$), indicating that individuals experiencing more intense pain tend to struggle more with coping and report pain on a higher number of days. Coping difficulty was also positively correlated with pain affect days ($r = .416$, $p < .001$), suggesting that difficulty managing pain corresponds with increased duration of pain experience. Medication frequency showed weaker but significant positive correlations with pain severity ($r = .286$, $p = .016$) and pain affect

days ($r = .259$, $p = .029$), implying that higher pain intensity and longer pain duration may lead to increased medication use. Interestingly, pain interference was negatively correlated with pain affect days ($r = -.392$, $p = .001$), a finding that may warrant further investigation to clarify the nature of this relationship. Overall, these results highlight the interconnectedness of pain intensity, coping, duration, and medication use in the studied sample.

Correlations

		Pain Severity	Coping Difficulty	Pain Affect Days		
Pain Severity	Pearson Correlation	1	.426**	.604**		
	Sig. (2-tailed)		.000	.000		
	N	71	71	71		
Coping Difficulty	Pearson Correlation	.426**	1	.416**		
	Sig. (2-tailed)	.000		.000		
	N	71	71	71		
Pain Affect Days	Pearson Correlation	.604**	.416**	1		
	Sig. (2-tailed)	.000	.000			
	N	71	71	71		
Medication Frequency	Pearson Correlation	.286*	.190	.259*		
	Sig. (2-tailed)	.016	.113	.029		
	N	71	71	71		
Pain Interference	Pearson Correlation	-.223	-.188	-.392**		

Sig. (2-tailed)	.061	.117	.001		
N	71	71	71		

DISCUSSION

This study explored the prevalence and associated factors of plantar fasciitis among young female students at KFUEIT, Rahim Yar Khan, revealing notable trends that align with and, in some cases, diverge from previous research. The finding that 57.1% of participants reported symptoms consistent with plantar fasciitis aligns with the study by Riddle et al. (2003), which reported that plantar fasciitis frequently affects individuals engaged in prolonged standing and walking. Similarly, Buchbinder (2004) found that individuals in younger adult age brackets—especially females—are more prone to plantar fasciitis due to both occupational stress and footwear habits, corroborating the age-related findings of this study. In this study, pain exacerbated by activity or after periods of rest was one of the most frequently reported symptoms. These findings are consistent with Goff and Crawford (2011), who described post-static dyskinesia as a hallmark symptom of plantar fasciitis. The pain experienced by participants after long periods of immobility reflects typical diagnostic patterns observed in clinical studies.

Footwear emerged as a prominent risk factor, particularly the use of high heels, flat sandals, and tight shoes. This finding supports the work of Rome et al. (2001), who concluded that improper footwear lacking arch support significantly increases the risk of plantar fascia inflammation. Similarly, Bolivar et al. (2013) emphasized the adverse biomechanical effects of unsupportive footwear, particularly among females, which mirrors the trends seen in the present sample. The prevalence of pain in the heel and midfoot regions among participants corresponds with the findings of Irving et al. (2006), who reported that these areas are commonly affected due to poor foot biomechanics exacerbated by unsuitable footwear. The mode VAS score of 7–8 observed in the current study indicates moderate to severe pain levels, which is comparable to the scores reported by Schneider et al. (2018) in their assessment of pain severity in chronic plantar fasciitis patients.

Additionally, the description of the pain as “deep” by most participants aligns with Luffy et al. (2018), who noted that the involvement of deeper musculoskeletal structures, such as the plantar fascia and associated muscles, contributes to a more profound, aching pain sensation rather than superficial discomfort. Participants also reported pain interfering with sleep and daily mobility—symptoms that echo the

conclusions of Lemont et al. (2003), who highlighted that chronic plantar fasciitis can significantly impair quality of life and lead to increased psychological stress. While this study did not quantitatively measure stress or physical activity, anecdotal reports from participants suggest a link between stress, reduced mobility, and heightened symptom severity, a trend also discussed in Huffer et al. (2017).

Overall, the present study supports existing literature that identifies plantar fasciitis as a multifactorial condition influenced by biomechanical, occupational, and behavioral factors. The findings affirm that improper footwear and prolonged physical stress are key contributors to the onset and exacerbation of symptoms. This is in agreement with Michaud (1993), who advocated for preventive strategies focused on footwear ergonomics and lifestyle modification. In conclusion, the results of this study are in harmony with prior research and underline the importance of addressing footwear choices and standing durations in managing plantar fasciitis. Universities and similar institutions should implement educational initiatives promoting proper shoe selection, ergonomic awareness, and foot health to mitigate the incidence and impact of plantar fasciitis among students.

CONCLUSION

This study highlights a strong link between inappropriate footwear and the prevalence of plantar fasciitis among young female students at KFUEIT. A significant number of participants reported symptoms such as heel pain, foot stiffness, and discomfort during prolonged standing or walking—mostly associated with wearing high heels, unsupportive flats, or tight shoes. These findings emphasize the importance of proper footwear in maintaining foot health. Promoting awareness about supportive shoe choices and preventive practices within university settings is essential to reduce the risk and longterm effects of plantar fasciitis in students.

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