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Incidence Of Heel Pain In University Students: An Observational Study

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Abstract:

Heel pain has been a common complaint among individuals, affecting various age groups and lifestyles. However, its Incidence and impact specifically among university students had remained relatively understudied. Considering the significant physical demands and prolonged periods of standing or walking associated with academic activities, investigating the incidence of heel pain in this demographic was crucial. Understanding the Incidence and contributing factors could guide preventative measures and interventions to promote student well-being and academic performance. This study aimed to assess the incidence of heel pain among university students, identify potential risk factors associated with its development, and explore its impact on daily activities and academic performance.

Keywords: heel pain, university students, Incidence, risk factors, musculoskeletal health, preventive measures, interventions, foot health, well-being.

INTRODUCTION

Heel pain is a common musculoskeletal complaint affecting individuals across various agegroups and activity levels Dinneen et al., 2016). Among university students, who often engagein prolonged standing, walking, or physical activities as part of their academic andextracurricular activities, the incidence and impact of heel pain can be significant (Pollack etal., 2018). Understanding the incidence, risk factors, and impact of heel pain among universitystudents is crucial for developing effective preventive strategies and interventions to mitigateits impact on academic performance, quality of life, and overall well-being (Martin et al.,2014).

Heel pain can arise from multiple causes, with plantar fasciitis being one of the most commonetiologies. Plantar fasciitis is characterized by inflammation of the plantar fascia, a thick bandof tissue that runs along the bottom of the foot and connects the heel bone to the toes (GrävareSilbernagel et al., 2010). Other potential causes of heel pain in young adults include Achilles

tendinopathy, stress fractures, heel pad syndrome, and bursitis. Contributing factors such asoveruse, inappropriate footwear, biomechanical abnormalities, and obesity can exacerbate therisk of developing heel pain among university students (Pearce et al., 2021).

Despite the potential impact of heel pain on student well-being and academic performance,there is limited research specifically focusing on the incidence and incidence of heel pain inuniversity populations (Hossain & Makwana, 2011). Most studies on heel pain have primarilytargeted older adults, athletes, or specific occupational groups. Therefore, investigating theincidence of heel pain in university students and identifying associated risk factors are essentialsteps toward understanding the scope of this issue and developing targeted interventions(Bhatikar, 2018).

Heel pain can originate from various anatomical structures within the foot, and understandingthe underlying anatomy is crucial for accurate diagnosis and effective treatment. This pain isoften most pronounced upon standing or walking after periods of rest, such as getting out ofbed in the morning (Renan-Ordine et al., 2011).

Another common source of heel pain is the Achilles tendon, which connects the calf musclesto the heel bone. Achilles tendinopathy, characterized by degeneration or inflammation of theAchilles tendon, can cause pain at the back of the heel (Schneider et al., 2018). This conditionis frequently observed in athletes who engage in activities involving repetitive jumping orrunning, placing strain on the Achilles tendon. Individuals with Achilles tendinopathy may experience pain and stiffness in the heel area, particularly during physical activity (Hyland etal., 2006).

Additionally, the heel pad, a specialized fat pad located beneath the calcaneus, can contributeto heel pain when compromised. The heel pad serves as a cushion, providing shock absorptionand protection to the heel bone during weight-bearing activities. However, conditions such asheel pad syndrome or thinning of the fat pad due to ageing or repetitive trauma can lead todiscomfort and pain in the heel area (Rompe et al., 2015).

Heel pain among students is a prevalent issue that can significantly impact their daily activities,academic performance, and overall quality of life. While heel pain can affect individuals of allages, it is particularly common among students, who often engage in prolonged periods ofstanding, walking, and physical activities as part of their academic and extracurricularcommitments (Pearce et al., 2021).

Several factors contribute to the development of heel pain in students. Biomechanical factorsplay a significant role, with conditions such as flat feet (pes planus) or high arches (pes cavus)predisposing students to heel pain (Asgaonkar& Kadam, 2012). These abnormal footmechanics can alter the distribution of pressure and strain on the heel and surroundingstructures, leading to conditions like plantar fasciitis or Achilles tendinopathy (Pourghasem etal., 2016).

Overuse and repetitive stress are also common causes of heel pain among students. Thedemands of student life, including walking between classes, standing for long periods duringlaboratory sessions, or participating in sports and recreational activities, can subject the feet torepetitive strain. Over time, this repetitive stress can lead to tissue damage and inflammationin the heel area (Askary kachoosangy et al., 2013).Inadequate footwear further exacerbates heelpain in students. Many students opt for unsupportive or ill-fitting footwear, such as flip-flops,sandals, or shoes with insufficient arch support, which fail to provide adequate cushioning andstability. Wearing improper footwear increases the risk of foot injuries and conditions likeplantar fasciitis (Hatton et al., 2013).

Footwear plays a crucial role in determining the comfort and health of university students' feet,particularly concerning heel pain. Shoes with poor arch support or insufficient cushioning

cansignificantly strain the heel, leading to discomfort and potential injury, especially for studentswho spend considerable time walking long distances on campus(Huang et al., 2020).Archsupport is essential because it helps distribute the body's weight evenly across the foot, preventing excessive pressure on specific areas such as the heel. When shoes lack proper archsupport, the arches of the feet may collapse or over pronate, causing the plantar fascia (the band
of tissue that runs along the bottom of the foot) to stretch excessively (Kannan et al., 2019)
Similarly, inadequate cushioning in shoes fails to absorb the impact of each step effectively,transferring more shock and pressure to the heel with every stride. This can exacerbate existingconditions like plantar fasciitis or contribute to the development of heel spurs, which are bonyprotrusions that form on the underside of the heel bone in response to chronic irritation (Majoret al., 2022). For university students, who often traverse expansive campuses and spend hourswalking between classes, the importance of supportive and cushioned footwear cannot beoverstated. Without proper support and cushioning, the repetitive stress of walking longdistances can lead to heel pain, discomfort, and potentially more serious foot conditions overtime. Therefore, students need to invest in well-fitted shoes with adequate arch support andcushioning to minimize the risk and maintain foot health, especially considering the demandingphysical requirements of university life. Additionally, regular assessment of footwear andtimely replacement of worn-out shoes can further prevent unnecessary strain on the heels andpromote overall comfort and well-being for students on campus (Braunstein et al., 2010; Hardinet al., 2004).
Participation in physical activities, particularly those involving repetitive impact on the heelssuch as running or jumping, can significantly increase the risk of heel pain among universitystudents. When engaging in sports or exercises that require frequent and forceful heel striking,the tissues and structures in the heel area are subjected to repetitive stress, which can lead tooveruse injuries and subsequent pain (Escamilla-Martínez et al., 2013; Letafatkar, 2013).Onecommon condition associated with such activities is plantar fasciitis, which occurs when theplantar fascia—the band of tissue connecting the heel to the toes—becomes inflamed due toexcessive strain. Runners, basketball players, and athletes involved in other high-impact sportsare particularly susceptible to this condition due to the repetitive nature of their activities andthe constant pressure placed on the heels (DiCesare et al., 2019; Rokkedal-Lausch et al., 2013).
Additionally, activities like long-distance running or intense jumping exercises can alsocontribute to the development of heel spurs, which are bony protrusions that form on theunderside of the heel bone in response to chronic irritation. These spurs can further exacerbateheel pain and discomfort, especially when engaging in weight-bearing activities. Furthermore,improper footwear or inadequate shock absorption during physical activities can increase therisk of pain (Alahmari et al., 2021; Jandacka et al., 2017). Shoes with insufficient cushioningor poor arch support fail to absorb the impact of each stride effectively, placing greater stresson the heels and surrounding tissues. This can lead to microtrauma and inflammation, furtherpredisposing individuals to heel pain and related conditions. For university students whoparticipate in sports or engage in regular physical activity, it is essential to prioritize injuryprevention and proper biomechanics. This includes wearing appropriate footwear designed forthe specific activity, maintaining proper form and technique, gradually increasing exercise intensity, and incorporating adequate rest and recovery periods into their training regimen.
Moreover, early recognition of symptoms such as heel pain, stiffness, or swelling is crucial forprompt intervention and treatment to prevent the progression of underlying conditions.

Seekingguidance from a healthcare professional or a sports medicine specialist can help studentsmanage heel pain effectively and safely continue their participation in physical activities whileminimizing the risk of further injury or discomfort (Kobayashi et al., 2020; Luque-Suarez etal., 2014; Martínez-Nova et al., 2014).

LITERATURE REVIEW:

Manoj Kumar Vashisth et al 2023 - The way a person lives and their capacity to manage their weight might be impacted by flatfoot, or the collapse of the foot arches. Therefore, its Incidence among young adults is unknown. This study set out to determine the prevalence of flatfoot among 18 to 25-year-old university students and look into possible risk factors. Things and Methods: In a cross-sectional study involving 875 university students, the anatomy of the foot arches was measured and the styles of footwear were assessed using the Staheli arch index. The data were examined using chi-square testing and multivariate logistic regression. Results: Overall, 29.37% of pupils had flat feet; however, there were variations among Tanzanian students (15%), Indian students (26.54%), and Chinese students (31.79%). Gender and shoe type were not significant factors in univariate analysis; on the other hand, shoe type, age, BMI, and nationality were in multivariate regression. In conclusion, the research shows that the incidence of flatfoot is adversely connected with age and that it affects 30% of college students between the ages of 18 and 25. Plans for managing and preventing flatfoot in young people can be aided by a deeper comprehension of these factors (Vashisth et al., 2023).

Sevim Çelik et al 2023 - Standing for long periods of time during clinical practice may cause pain and swelling in the legs and feet for nursing students. Tensions in the classroom only serve to exacerbate the problem. Finding out if these symptoms were alleviated after receiving foot washes following clinical practice sessions was the goal of this randomized controlled experiment including second-year nursing students. The right tibia's edema levels dropped significantly on days one and two after the foot bath, whereas the left tibia's levels dropped significantly on weeks one and four. Foot baths significantly reduced pain levels, in contrast to the first increase seen after clinical practice. These findings emphasise the potential of foot baths as a simple and effective intervention, suggesting that their inclusion in nursing education programs might enhance student well-being during clinical training by lowering foot pain and leg edema (Çelik et al., 2023).

G. Pavan Kalyan Reddy et al 2021 - The purpose of this study is to look into the frequency of pes planus, or flat foot, in medical students and how it relates to other factors. One common deformity among adults is flat feet. Out of the 300 kids in the cohort, 11.6% had bilateral flat feet, with a higher frequency in females. Students' ages ranged from 17 to 23. One-third of children exhibited unilateral flat feet. Weight and body mass index (BMI) revealed strong correlations with flat feet, but not age or gender. Foot length and height did not turn out to be important predictors, despite some small associations. It's intriguing that having flat feet has been associated with decreased functionality and a worse standard of living, particularly instudents with higher body mass indices. These findings emphasize the need for preventive management strategies as well as the need of understanding the prevalence and effects of flat foot in young people (Reddy &Kishve, 2021).

María Reina-Bueno et al 2021 - This cross-sectional study examined the link between the time of disease onset and foot morphology, pain, and function in 66 patients with rheumatoid arthritis (RA). Assessments included foot prints, the Foot Posture Index, the frequency of hallux valgus,

foot discomfort, and foot function. Hallux valgus, low-arched imprints, and pronated and extremely pronated feet were common. With an adjusted odds ratio of 4.9 (1.2- 19.7) for the prevalence of hallux valgus, toe deformities, and the Foot Function Index (a measure of functional impairment) were all substantially correlated with the amount of time since RA diagnosis. Pain was prevalent and foot function was reduced. Metatarsophalangeal stability and foot function declined with a longer history of RA, indicating the need for early management in RA patients to reduce foot-related problems (Reina-Bueno et al., 2021).

KefaleGetie, et al 2021 - Both patients and healthcare systems are impacted by the significant issue of ankle-foot pain experienced by nurses. Although it is an extremely important subject, very little is known about the prevalence or origins of ankle-foot pain among Ethiopian nurses. To fill that informational need, this study surveyed nurses working at the Ayder Comprehensive Specialized Hospital in Tigray, Ethiopia, to learn more about their encounters with foot and ankle pain. In this institutional cross-sectional study, 366 nurses participated by filling out a standardized Nordic questionnaire. At some time throughout their employment, over half of the nurses polled (43.7%) reported suffering ankle-foot pain. There was a correlation between ankle-foot pain and working night shifts, physically demanding jobs, advancing age, wearing uncomfortable shoes, a history of foot issues, and working in an intensive care unit. Based on these findings, nurses should make preventing ankle-foot pain a top priority via education and the creation of treatments. Encouraging appropriate footwear and addressing workplace characteristics that contribute to ankle-foot discomfort can help reduce the prevalence and impact of this ailment among nurses. Longitudinal investigations are necessary to determine the temporal trends of ankle-foot pain in this population (Getie et al., 2021).

Kamalakannan M et al 2020 - This therapeutic intervention study looked at the impact of jumping rope on the foot arches of individuals with bilateral flat feet. Flat feet, which may hinder everyday activities, can develop if the foot arch does not normally form, which often happens around the age of 5 or 6. The study included forty participants, all of whom hadbilateral flat feet. Participants were split into two groups. While one set conducted more conventional foot exercises, the other set jumped rope without shoes. In terms of correcting their arches and improving lower limb functional activities, the barefoot jumping rope group demonstrated statistically significant improvement compared to the other group. These findings provide fresh insight into alternative methods of treating flat feet and suggest that jumping rope may be useful in this regard (Priya, 2020).

Saima Jabbar et al 2020 - This study set out to quantify the frequency with which female students and staff members at several Faisalabad universities experienced forefoot pain due to their everyday use of high-heeled shoes. Despite the fact that high heels are associated with several foot problems, research on the specific ways in which they may irritate the forefoot is few. Based on a basic random sample technique and a cross-sectional survey methodology, the study polled 200 students from several Faisalabad universities. Analysis of the data using frequency distribution bar charts revealed that 77.5% of the study's participants suffered from forefoot pain due to their frequent use of high-heeled shoes. Some people said they also had discomfort in the ball of their foot or heel, while others said they didn't have any pain all. This study's findings highlight the need of further research into the reasons and potential remedies for the prevalent issue of forefoot pain suffered by women who often wear high heels(“Prevalence of Forefoot Pain among High Heel Wearing Female Teachers and Students of Different Universities in Faisalabad,” 2020).

Ana María Jiménez-Cebrián et al. 2020 - This cross-sectional descriptive study examines the relationship between childhood overweight/obesity and lower limb/foot pain in elementary school kids. According to study findings, 12.7% and 15.3%, respectively, of 150 kids in Malaga, Spain, between the ages of 9 and 12, were obese. Additionally, the study found that 27.3% of the children reported lower limb discomfort and 10.7% of the children had foot pain. Evaluations of the foot posture index and knee alignment were paired with anthropometric and demographic data. A statistical analysis revealed a strong link between overweight/obesity and lower limb and foot pain. These findings demonstrate the impact of juvenile obesity and overweight on musculoskeletal health, emphasizing the need of interventions and preventative measures in the management of foot and lower limb pain in young individuals (Jiménez- Cebrián et al., 2020).

Elvira Nikši et al 2019 - The purpose of this study was to compare the frequency and severity of foot abnormalities in children living in urban and rural regions, as well as to see whether anintervention program might improve the situation. One hundred and twelve primary school pupils from eleven different schools in Sarajevo made up the sample. Their ages ranged from five to twelve. To evaluate the instep, lithography and Thomson's techniques were used. We used chi-square tests to assess the statistical data. Initial findings indicate that urban schools have a higher frequency of foot abnormalities, especially second-degree ones. Consequently, compared to schools in urban areas, rural schools had a much lower percentage of first-degree and second-degree anomalies. This research suggests that students living in urban areas are more likely to have bad posture. Because they participate in sports more often, children living in rural regions may be less likely to acquire postural anomalies, according to the research. In order to decrease the prevalence of foot abnormalities in educational settings, the study emphasizes the necessity of early diagnosis and the adoption of appropriate corrective procedures (Nikšić et al., 2019).

Anam Mahmood et al 2019 -This study looked at women who wore 5 cm high stiletto heels for lower back and calf pain. Techniques: Eighty-seven female students and working women put on high heels and used a treadmill for twenty minutes at a speed of four kilometers per hour. Both before and after the assessment, the Modified McGill Questionnaire was utilized to measure pain. Results: Significant muscle discomfort in the lower back (24.7%) and lower limbs (29.6%) was brought on by wearing high heels. In conclusion, 9.9% and 8.6% of cases, respectively, were related to lower limb and back muscular discomfort. A paired sample t-test revealed a significant increase in discomfort both before and after the test (p-value 0.000), highlighting the negative effects of high heel wear on musculoskeletal health (Khan & Qureshi, 2019).

Mieko Yokozuka et al 2019 - The goal of this study was to find out whether there's a correlation between the size and shape of a woman's toe muscles and her performance in college. Among the 103 participants that were assessed were their shoe habits, body weight, toe muscle strength, and foot morphology. When the hallux valgus angle was more than 16 degrees, the findings demonstrated a high link between the arch height to angle ratio. An inverse relationship between the hallux valgus angle and the arch height ratio was observed, but it was minor. Additionally, a weak correlation between arch height ratio and toe flexor strength was seen in feet with a hallux valgus angle below 16 degrees. Research suggests that maintaining a strong grip on your toe flexor muscles might help you prevent hallux valgus by counteracting the natural propensity for certain foot bones to slip downhill. Factors including BMI and the frequency of high-heeled shoe use did not seem to influence hallux valgus angle.

According to these findings, healthy feet among college-aged women depend on strong toe muscles (Yokozuka et al., 2019).

Imam Ramdhani Abdurrahman et al 2018 - The anthropometric data collected from the feet of Bandung, Indonesia, high school students was intended to contribute to the development of more comfortable footwear. Because there is a dearth of data in Indonesia, it is critical to understand foot measurements so that orthotics and shoes may be made with enough support and comfort. In all, 81 students (aged 16–18) from three different Bandung high schools took part in the descriptive observational study. A variety of foot and ankle measurements were averaged out, including: instep height, navicular height, diagonal foot width, outside ball of foot length, heel breadth, instep height, heel to lateral malleolus, and foot length. Since each student's foot is unique, this information is vital for the Indonesian shoe industry to create shoes that fit the students at Bandung High School. In the end, we hope that this information will help shoe designers make shoes that are easier on the feet and less prone to foot pain from a misfit (Abdurrahman et al., 2018).

Iqra Nadeem et al 2018 - This cross-sectional study, which included fifty female GCU Faisalabad university students with ages ranging from 18 to 28, aimed to ascertain if wearing high heels was linked to low back pain (LBP). They averaged 5.1 feet in height and 21.1 years of age. Methods: In addition to deliberate sampling, a conventional self-reporting questionnaire was employed. Out of the fifty students, twenty-eight (or fifty-six percent) said they had experienced lower back pain. High heels and LBP showed a significant correlation ($p=0.001$) according to the Pearson Chi-Square test, with an intermediate degree of association indicated by the coefficient of contingency of 0.567. The study concludes that among female university students, wearing high heels—especially for extended periods of time—is linked to a higher incidence and severity of low back discomfort (Nadeem et al., 2018).

Gordon J. Hendry et al 2018 - Foot pain is a common issue that reduces one's quality of life and ability to operate physically. The purpose of this cross-sectional study was to identify the characteristics of foot discomfort in an adult population with education and look into any correlations. An online survey was completed by 593 Glasgow Caledonian University alumni in the months of February and March 2018. 39.8% of respondents reported having moderate- to-severe foot discomfort, according to the study. An independent relationship was discovered between foot pain and conditions like hip pain, poor occupation class, bunions, back pain, and a high body mass index. Furthermore, foot soreness has been linked to a lower quality of life in terms of foot function and health. These findings, which demonstrate the incidence and effects of foot pain in a population with greater levels of education, suggest that education level is not a protective factor against foot pain. Understanding these relationships can help direct therapies meant to lessen foot pain and improve overall health (Hendry et al., 2018).

David Rodríguez-Sanz et al 2017 - The study's objective was to assess the relationship between the foot health and overall quality of life of university students. It was conducted at the University of Coruña's Podiatric Medicine and Surgery Clinic in Spain. The observational trial had 112 participants, with a median age of 22. The results showed that while university students, both male and female, performed better in the areas of foot function and foot pain, they performed worse in the areas of general foot health and footwear. Additionally, they performed better in the areas of social skills and physical activity, but they performed worse in the areas of general health and vigor. Gender disparities were statistically significant in areas like footwear and overall foot health. The findings suggest that university students' quality of life in relation to foot health was lacking, maybe as a result of their time in college. This highlights how important it is to treat young adults' foot health issues in order to improve their overall health and mobility (Rodríguez-Sanz et al., 2018).

Anita AR et al 2017 - The aim of this study was to examine the effects of heel height and shoe inserts on step counts and subjective comfort in female college students. A total of 64 respondents participated, divided into groups based on their experience wearing heels. With increasing heel heights, the experienced group—wearing both low and high heels—showed a significant increase in subjective discomfort. Those with more experience typically had higher step counts, even though there was no discernible difference in step counts between the groups. It was demonstrated that using various shoe inserts reduced the step counts per minute for both groups. When wearing full contact inserts and flat-heeled shoes, experienced people's step counts and subjective discomfort ratings were generally lowest. These findings highlight how important it is to consider shoe design and inserts to help people, especially those who frequently wear heels, feel less pain and maybe avoid musculoskeletal issues (Ar et al., 2015).

Krishnan V et al 2017 - Ankle and foot issues may result from the musculoskeletal system being overworked due to obesity-related increased loading on connective tissue structures. Within five institutions on the MGM campus in Kamothe, Navi Mumbai, this cross-sectionalstudy (N = 100) examined the association between adult obesity and self-reported foot discomfort. The participants were individuals between the ages of 18 and 25. A BMI and demographic data, including age, height, and weight, were recorded for the individuals who reported foot pain. The Foot Health Status Questionnaire (FHSQ) was utilized to compare BMI with its four dimensions using Pearson's correlation analysis. Foot discomfort ($p=0.82$), foot function ($p=0.63$), foot wear ($p=0.59$), and foot health ($p=0.30$) were found to have statistically significant positive correlations with BMI. Women were also found to be more likely than men to be obese. When it comes to the FHSQ indicators of general foot health, function, shoe comfort, and foot discomfort, weight gain has a substantial negative correlation. A person's quality of life and the health of young people's feet might be adversely affected by being overweight or obese, according to the study. It can potentially lead to functional restrictions (Krishnan & Krishnan, 2017).

In Hyouk Hyong et al 2016 - This study set out to examine the differences and similarities in the dynamic balancing capacities of three types of undergraduate foot types: normal, pronated, and supinated. For each pair of feet, fourteen volunteers were recruited using the navicular drop test. The star excursion balance test (SEBT) was used to assess dynamic balance in three distinct orientations. It came as no surprise that the three types of foot forms did not differ significantly in their ability to maintain dynamic balance. The findings suggest that the medial arch height—a measure of foot form—may have no effect on the dynamic balance of healthy college students. It seems that there may be additional, less apparent factors involved in determining dynamic balance ability than the form of the foot. The potential implications for young adults' knowledge of dynamic balancing performance from this research are intriguing (Hyong & Kang, 2016).

Hiroto Okuda et al 2014 - This cross-sectional study aimed to examine the frequency of hallux valgus (HV) and its associated features among Japanese college women. Involvement was low for those with severe cases among the 343 participants (nearly 30% of the total). It was observed that those with HV were more likely to report big toe pain and that the illness ran in families, especially among mothers. Based on the results, it seems that genetics have a role in how HV develops. Finding and treating HV is important, particularly among young women showing symptoms or having a family history of the disease, according to the findings of this research. Efficiently identifying and treating HV may reduce pain and avoid possible consequences. Given the high prevalence of the virus among college-aged women, it is recommended that medical professionals begin testing for HV in all patients who exhibitsymptoms or have a known family history of the

disease. The illness and its preventative methods should be better understood with further study on the risk factors for HV in this group (Okuda et al., 2014).

Gonul Babayigit Irez et al 2014 - The participants in this study were 113 healthy students who willingly agreed to have their balance, foot size, and foot posture measured. Finding potential correlations between anthropometric measurements, balancing assessments, the Foot Posture Index (FPI-6), and other pertinent variables was the goal of this research. Statistical analysis revealed a slight inverse relationship ($r = -.22$, $n = 113$, $P < .005$) between static balance and foot position. The findings indicated that static balance was marginally positively correlated with heel breadth ($r = -.19$, $n = 113$, $P < .005$) while dynamic balance was modestly negatively correlated with foot length ($r = -.13$, $n = 113$, $P < .005$). These findings suggest that populations characterized by poor foot alignment, including athletes and the elderly, are at increased risk for injury. If we can deduce these connections, we can enhance balance and make injuries less likely (Gonul, 2014).

Rauf Iqbala et al 2012 - This study looked at the link between female lumbar kinematics and heel heights to see whether it may reveal a risk factor for Low Back Disorder (LBD). Nineteen female university students were enrolled in the investigation, with an average age of 24.5 ± 3.36 years. An Industrial Lumbar Motion Monitor (iLMM) was used to capture the patients' lumbar kinematics. We had the subjects walk 50 meters in three different shoe heights: barefoot (Heel 0), flat-heeled (Heel 1), and high-heeled (Heel 2). In contrast to Heel 2, whose height was 5.5 ± 1.70 cm, Heel 1 was 1.5 ± 0.84 cm in height. Three kinematic parameters related to the lumbar spine were examined: mean sagittal force (MSF), mean lumbar velocities (MLV), and average twisting velocity (ATV). Higher heel heights were associated with an increased risk of lower back pain (LBP) in all three lumbar kinematics studies (ATV, MSF, and MLV). The mean percentage of LBP risk was $16.79 \pm 6.04\%$ with Heel 0, $19.00 \pm 7.38\%$ with Heel 1, and $22.11 \pm 6.98\%$ with Heel 2. Wearing high heels increases the risk of lower-body dysplasia among shorter persons, contrary to common assumption. The importance of considering heel height in minimizing the prevalence of lower limb dysplasia (LLD) is emphasized by these data, particularly for shorter individuals (Iqbal et al., 2012).

Carsten Mølgaard et al 2011 - The goal of this study was to determine how often high school students experience patellofemoral pain syndrome (PFPS) and to compare various ankle and foot measurements between PFPS patients and healthy control participants. Of the 299 Danishhigh school students that participated in the study, 299 were in the 16-18 age range. There was a prevalence rate of 6% for PFPS, with thirteen out of twenty-four students reporting knee pain on the surveys actually having the condition. When contrasted with the control group, the PFPS group had greater increases in passive ankle dorsiflexion, navicular drift, and navicular drop. The average navicular drop and drift in the PFPS group was 4.2 mm, compared to 2.6 mm in the control group (2.9 mm vs. 1.4 mm). Furthermore, there was an increase in passive ankle dorsiflexion in the PFPS group. It is important to consider foot posture in connection to PFPS, and our data demonstrate that PFPS in high school children may be caused by anomalies in ankle and foot features (Mølgaard et al., 2011; Yi et al., 2011).

Tae Im Yi, et al 2011 - The purpose of this retrospective research was to identify the root causes of plantar heel discomfort and to differentiate between two common conditions, plantar fasciitis (PF) and fat pad atrophy (FPA), by reviewing the medical records of 250 patients. Of the patients surveyed, 53.2% had PF and 14.8% had FPA; the average age was 43.8 years and the average duration of pain was 13.3 months. When diagnosing PF, look for symptoms including first-step morning pain and soreness on the medial calcaneal tuberosity. On the other hand, FPA is marked by pain on both sides of the foot, especially at night, and pain that becomes worse when you

stand. One prominent biomechanical issue is heel cord tension. Also, X-rays often showed that PF patients had heel spurs. The research highlights the need of making a correct differential diagnosis in order to successfully manage plantar heel pain, which has several causes and diverse symptoms in PF and FPA (Yi et al., 2011).

Li-Wei Chou et al 2008 - This study set out to quantify the prevalence of four foot abnormalities among Taichung County primary school students: flexible flatfoot, high-arch foot, hindfoot valgus, and hallux valgus. Analysis of footprints was used to calculate the arch index, hallux valgus angle, and hindfoot valgus angle from a dataset consisting of 18,006 kids (8883 males and 9,123 girls) from 14 separate schools. Flexible flatfoot had a general prevalence rate of 13.88%, high-arch foot of 1.32%, hindfoot valgus of 3.33%, and hallux valgus of 1.40%. Girls in fifth and sixth grade were more likely to say they had flexible flat feet than boys. Hallux valgus was shown to be more prevalent in older females, flexible flatfoot in boys, and hindfoot valgus in girls. Age was found to be the primary predictor of all abnormalities. The study sheds light on the foot health of Chinese elementary school students and highlights the need of routine follow-up for children with foot abnormalities in order to prevent musculoskeletal diseases (Chou & Kao, 2009).

Eman Abahussain et al 2004 - The purpose of this study was to characterize and evaluate drug use behaviors among Kuwaiti teens, accounting for differences in usage according to gender and age, and to find resources that provide information about drugs to these young people. A cross-sectional study was carried out in Kuwait including 1,110 randomly chosen male and female students (14–21 years old) from 10 public schools. With a frequency of 87% among 14-year-olds and 95% among 18-year-olds, the results showed that self-medication was prevalent among high school students (92%). The majority of prescriptions (65%), were for pain medicine. The next most common categories, with 39%, were respiratory (54%), allergies (39%), and skin-related (37%). The proportion of prescriptions for dietary supplements was 22%, yet it varied among categories. The most popular things among male youths were antidandruff and athlete's foot preparations, while the most popular items among female teens were respiratory, hair, and pain medicines. To everyone's surprise, parents were the ones who brought their children to pharmacies when they had queries about their medications. This shows how important it is for pharmacists to have a more active role in educating teenagers in Kuwait about medicine (Abahussain et al., 2005).

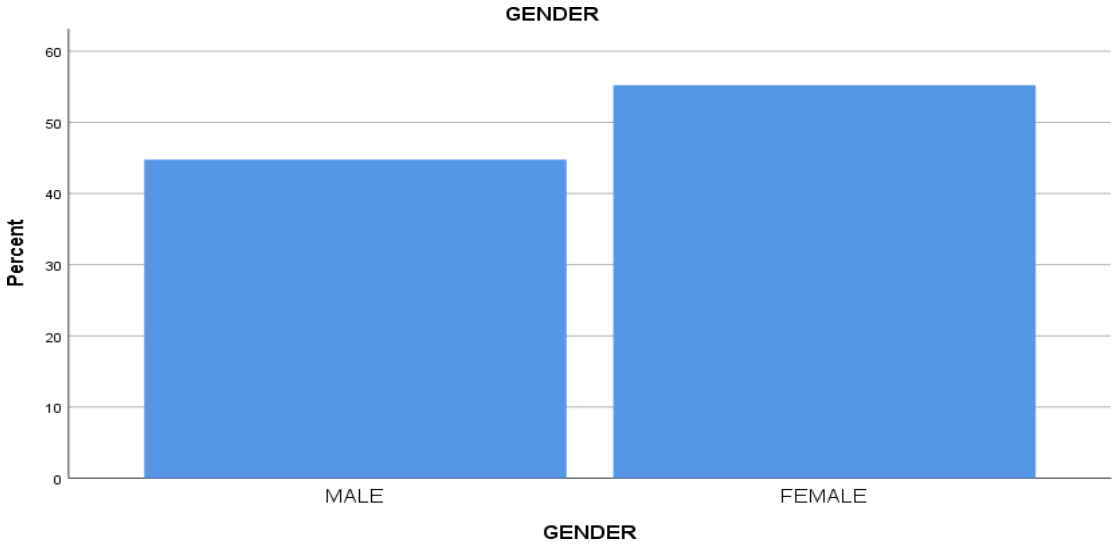
RESEARCH AND MEDTHODOLOGY:

TABLENO 4.1-ShowstheGenderratio of thestudents

		Frequency	Percent	ValidPercent	Cumulative Percent
Valid	**MALE**	30	44.8	44.8	44.8
	FEMALE	37	55.2	55.2	100.0
	Total	67	100.0	100.0	

Table No. 4.1 presents the gender distribution of the participants. The table indicates that outof the 67 students participating in the study, 30 are male and 37 are female, accounting for44.8% and 55.2% of the sample respectively. These percentages are consistent across theFrequency,ValidPercent,andCumulativePercentcolumns,reflectingastraightforwarddemographic breakdown. The cumulative percentage for males stands at 44.8%, and with theadditionoffemales,itreaches100.0%,indicatingthatthetablesuccessfullycapturestheentiresamplew

ithout anymissinggender data.



TABLENO 4.2-ShowstheDemographicdetailsof theSubjects

	AGE	HEIGHT(CM)	WEIGHT(KG)	BMI
Mean	21.78	168.51	62.96	22.1774
N	67	67	67	67
Std.Deviation	2.194	4.054	7.797	2.71454

The table includes 67 participants, as indicated by the consistent count (N=67) across allvariables. The mean age of the subjects is 21.78 years with a standard deviation of 2.194,reflectingarelativelyyoungandslightlyvariedagegroup.Theaverageheightreportedis 168.51 cm with a standard deviation of 4.054, suggesting moderate height variation amongparticipants. The mean weight is observed at 62.96 kg, with a standard deviation of 7.797,indicatingaspreadofdifferentbodyweights.TheaverageBMIofthesubjectsiscalculatedtobe22.1774,withastandarddeviationof2.71454,placingtheaverageparticipantinthehealthyweightrange, but showingsomevariabilityin bodycomposition.

TABLE NO 4.3 – Shows the General NPRS and Foot Function Index scores of thesubjects

	NPRS	FootFunctionIndex
Mean	3.03	27.89
N	67	67
Std.Deviation	1.370	4.8443

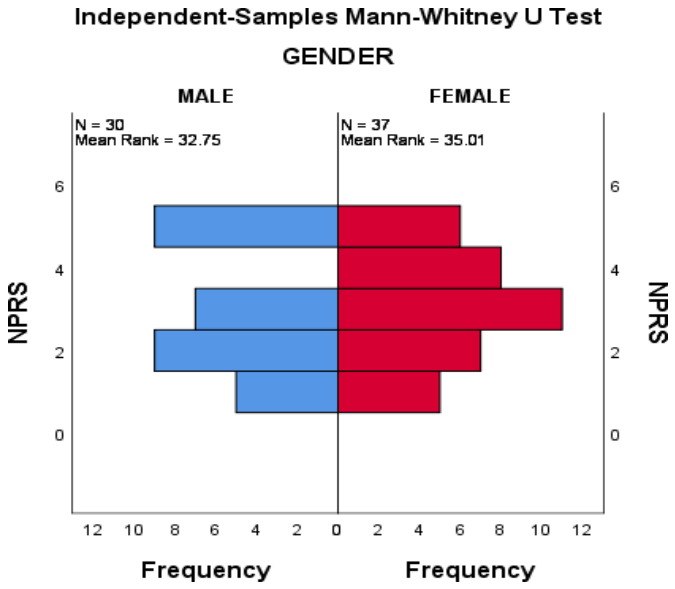
The table indicates that both the NPRS and Foot Function Index were measured across all 67participants, as shown by the count (N=67) for both variables. The average Numeric PainRatingScalescore,whichassessespainintensity,standsat3.03,withastandarddeviationof1.370. This suggests a low to moderate level of heel pain among the participants, with somevariability in pain perception across the group. The Foot Function Index, which evaluates theimpactof foot-relatedissues on function,has anaveragescoreof 27.89,with astandarddeviation of 4.8443. This score indicates a mild to moderate degree of foot dysfunctionamongthe students,also with notable variability.

TABLE NO 4.4- Shows the Gender comparison of the NPRS and Foot Function Indexscores

		N	Mean	Std. Deviation	Std. Error	P VALUE
NPRS	MALE	30	2.97	1.497	.273	0.682
	FEMALE	37	3.08	1.278	.210	
	Total	67	3.03	1.370	.167	
FootFunctionIndex	MALE	30	28.05	4.833	.882	0.845
	FEMALE	37	27.75	4.915	.808	
	Total	67	27.89	4.844	.591	

Table No. 4.4 in the study provides a gender-based comparison of the Numeric Pain RatingScale (NPRS) and Foot Function Index scores, critical in understanding potential differencesin pain perception and foot functionality between male and female participants. The analysisincluded a

total of 67 participants, divided into 30 males and 37 females. The NPRS scores,whichassesstheintensityofpainexperiencedbytheparticipants,reportedameanvalueof2.97for males,withastandarddeviationof1.497,indicatingarangeofpainexperienceswithinthis group. Females reported a slightly higher mean NPRS score of 3.08, with a standarddeviation of 1.278, suggesting a similar but slightly broader spread of pain intensity amongfemale participants. However, with a p-value of 0.682, these differences in NPRS scoresbetween genders were not statistically significant, indicating that gender does not play adecisiveroleinthelevelofpainexperiencedbystudents.IntermsoftheFootFunctionIndex,which evaluates the impact of foot-related issues on overall functionality, the mean score formales was 28.05 with a standard deviation of 4.833, compared to a mean of 27.75 for femaleswithastandarddeviationof4.915.Theseresultsshowaverycloseali gnmentinfootfunctionality between genders, with both groups experiencing mild to moderate levels ofdysfunction.Thestandarderrorsof0.882formalesand0.808forfemalesindicatetheprecisionof these estimates. The p-value of 0.845 further supports that there is no significant differenceinfoot function scores between maleand femaleparticipants.



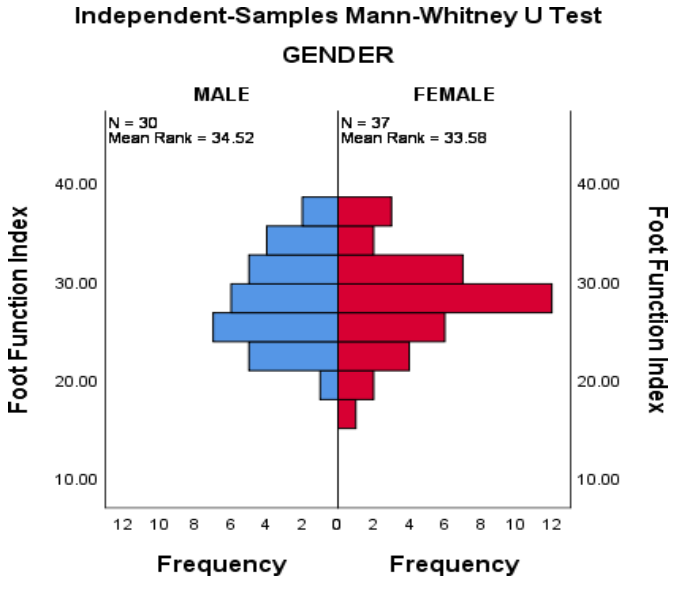


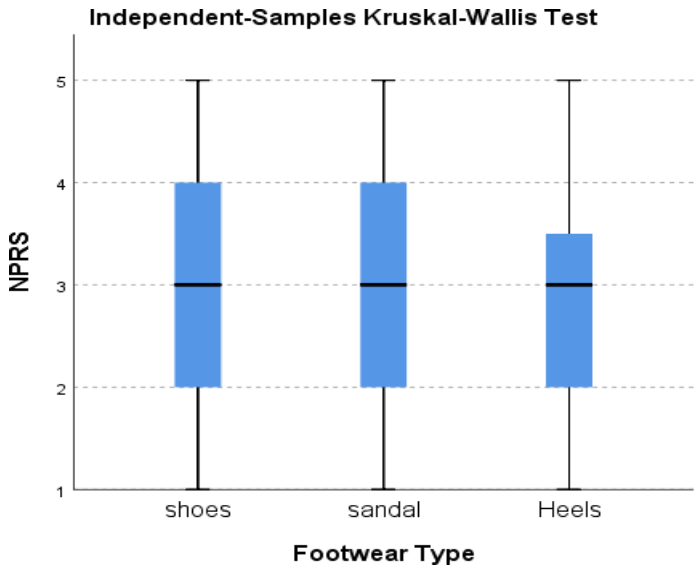
TABLE NO 4.5- Shows the Type of footwear comparison of the NPRS and FootFunctionIndex scores

		N	Mean	Std. Deviation	Std. Error	P VALUE
NPRS	Shoes	34	3.00	1.393	.239	0.046
	Sandal	18	3.22	1.353	.319	
	Heels	15	2.87	1.407	.363	
	Total	67	3.03	1.370	.167	
FootFunctionIndex	shoes	34	27.7682	4.75637	.81571	0.043
	sandal	18	29.1503	4.76273	1.12259	
	Heels	15	26.6667	5.10719	1.31867	
	Total	67	27.8929	4.84438	.59184	

Table No. 4.5 in the provides an analysis of the Numeric Pain Rating Scale (NPRS) and FootFunctionIndexscores based onthe typeof footwearworn bythe participants.

The NPRS results indicate a difference in mean pain scores across the three categories offootwear: shoes, sandals, and heels. For shoes, the mean NPRS score is 3.00 with a standarddeviation of 1.393 and a standard error of 0.239, while sandals exhibit a slightly higher meanpainscoreof3.22withastandarddeviationof1.353andastandarderrorof0.319.Heelsshowthelowestmeanscoreat2.87withastandarddeviationof1.407andastandarderrorof0.363.Despite these variations, the total mean NPRS score across all types is 3.03. Notably, the p-value of 0.046 suggests a statistically significant difference in pain levels among the differentfootweartypes.

IntermsoftheFootFunctionIndex,whichmeasurestheimpactoffootissuesonfunctionality,the mean scores also vary by footwear type. Participants wearing shoes have a mean score of27.7682 (SD = 4.75637, SE = .81571), while those wearing sandals score higher at 29.1503(SD=4.76273,SE=1.12259),andthosewearingheelshavethelowestmeanscoreat26.6667(SD = 5.10719, SE = 1.31867). The total mean score for all participants is 27.8929. The p-value of 0.043 indicates significant differences in foot functionality scores between differenttypesoffootwear.



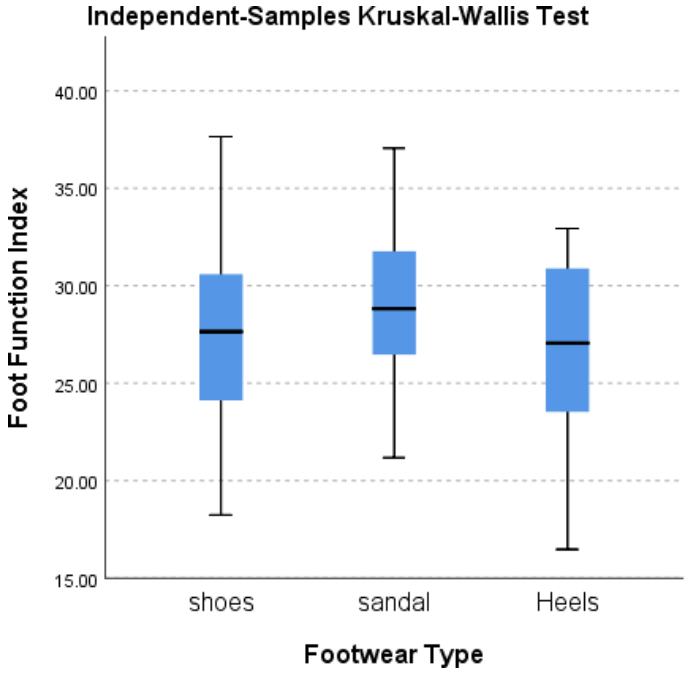
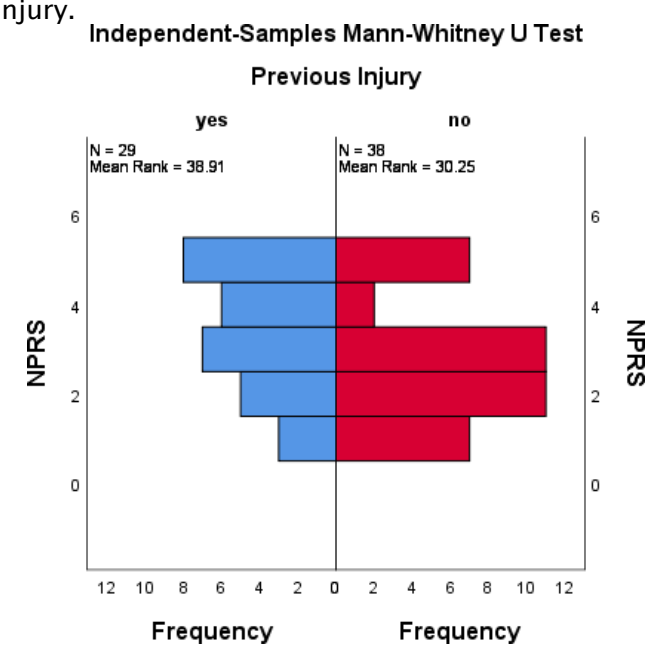


TABLE NO 4.6- Shows the Preview history of the accident comparison of the NPRS andFoot Function Index scores

		N	Mean	Std. Deviation	Std. Error	P VALUE
NPRS	Yes	29	3.38	1.347	.250	0.042
	No	38	2.76	1.344	.218	
	Total	67	3.03	1.370	.167	
FootFunctionIndex	Yes	29	28.0730	4.11734	.76457	0.046
	No	38	27.7554	5.38407	.87341	
	Total	67	27.8929	4.84438	.59184	

The table compares these outcomes between students who have had a previous injury ("Yes")andthosewhohavenot("No").FortheNPRS,theresultsshowanoticeabledifferencebetweenthetwogroups.Studentswithahistoryofpreviousinjuryreportahighermeanpainscoreof
3.38 with a standard deviation of 1.347 and a standard error of 0.250. In contrast, studentswithoutsuchahistoryreportalowermeanpainscoreof2.76,withastandarddeviationof
1.344 and a standard error of 0.218. The overall mean NPRS score for the total sample (67participants) stands at 3.03. The p-value of 0.042 indicates that the difference in pain scoresbetweenthosewithandwithoutapreviousinjuryisstatisticallysignificant.RegardingtheFootFunctionIndex,whichmeasurestheimpactoffoot-relatedissuesonfunctionality,thereisalsoa discernible difference between the two groups. Students with a previous injury have a meanFoot Function Index score of 28.0730, with a standard deviation of 4.11734 and a standarderrorof0.76457.Thosewithoutapreviousinjuryhaveaslightlylowermeanscoreof27.7554,with a higher standard deviation of 5.38407 and a standard error of 0.87341. The total meanFoot Function Index score for all participants is 27.8929. The p-value of 0.046 reinforces thefinding

that the differences in foot functionality scores are statistically significant betweenstudentswith and without ahistoryof injury.



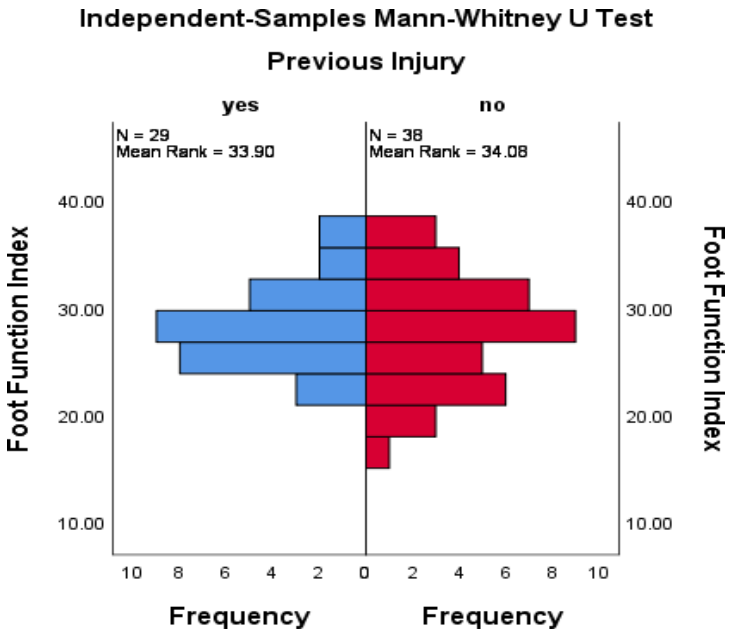
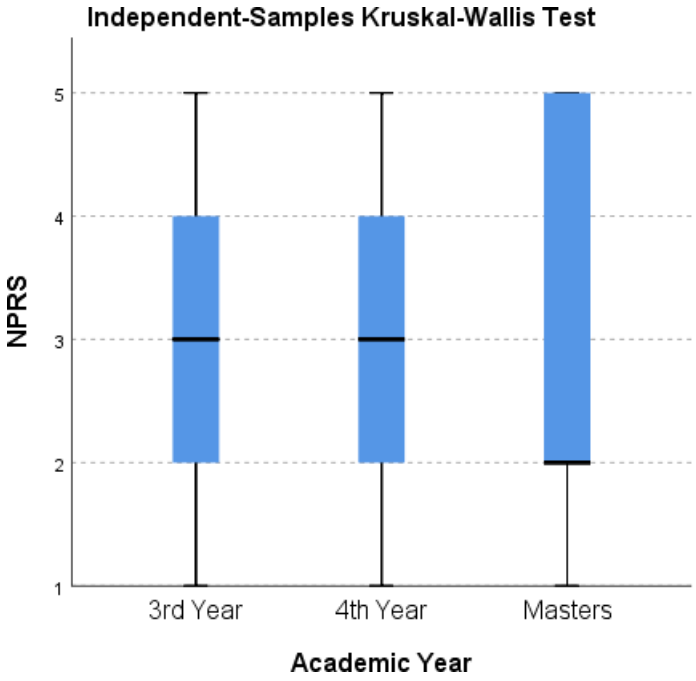


TABLE NO 4.7- Shows the year in collage comparison of the NPRS and Foot FunctionIndexscores

		N	Mean	Std. Deviation	Std. Error	P VALUE
NPRS	3rdYear	23	3.17	1.193	.249	0.832
	4thYear	27	3.04	1.372	.264	
	Masters	17	2.82	1.629	.395	
	Total	67	3.03	1.370	.167	
FootFunctionIndex	3rdYear	23	27.85	4.754	.991	0.653
	4thYear	27	27.51	4.399	.846	
	Masters	17	28.54	5.793	1.405	
	Total	67	27.89	4.844	.591	

Thetablecategorizesparticipantsbasedontheiracademicyear:3rdyear,4thyear,andMastersstudents.Among3rd-yearstudents,themeanNPRSscoreis3.17,withastandarddeviationof1.193, indicating a moderate level of pain. For 4th-year students, the mean NPRS score isslightly lower at 3.04, with a standard deviation of 1.372. Masters students report the lowestmean NPRS score at 2.82, with a higher standard deviation of 1.629. However, the p-value of0.832 suggests that there are no statistically significant differences in pain levels acrossdifferentacademicyears.

Regarding the Foot Function Index, 3rd-year students have a mean score of 27.85, with astandard deviation of 4.754. Similarly, 4th-year students have a mean score of 27.75, with aslightly higher standard deviation of 4.915. Masters students have a mean score of 26.6667,withastandarddeviationof5.10719.Thep-valueof0.653indicatesthattherearenostatisticallysignificant differencesin footfunctionalityscoresacrossacademic years.



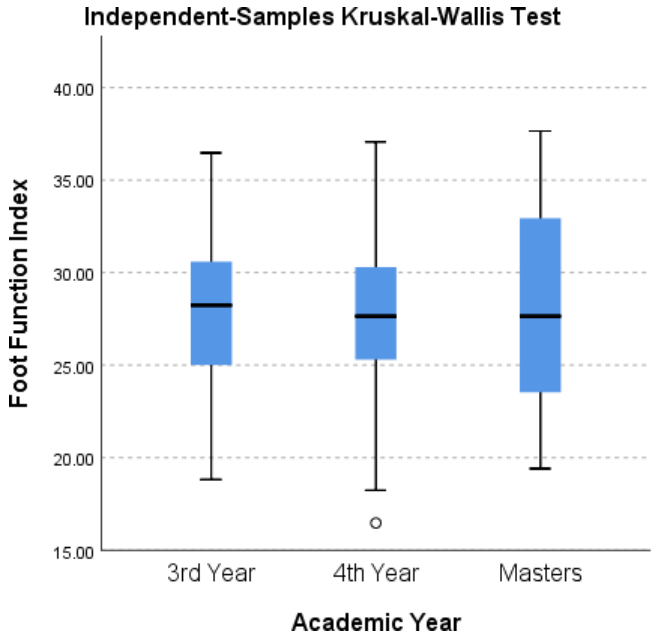
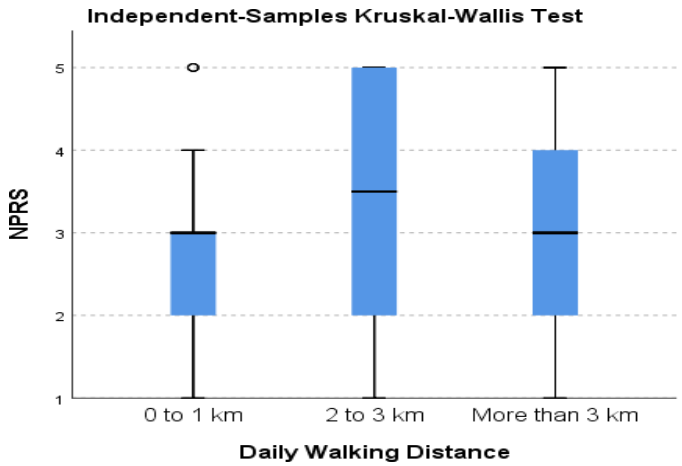


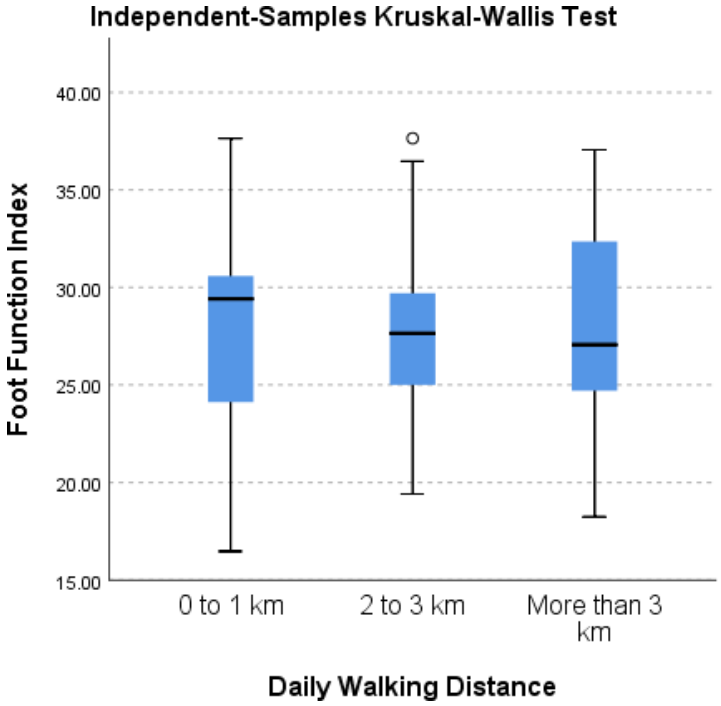
TABLE NO 4.8- Shows the Daily walking comparison of the NPRS and Foot FunctionIndexscores

		N	Mean	Std. Deviation	Std. Error	P VALUE
NPRS	0 to 1 km	25	2.64	1.186	.237	0.041
	2 to 3 km	20	3.50	1.573	.352	
	Morethan3 km	22	3.05	1.290	.275	
	Total	67	3.03	1.370	.167	
FootFunctionIndex	0 to 1 km	25	28.0000	5.091	1.018	0.042
	2 to 3 km	20	27.9706	4.530	1.013	
	Morethan3 km	22	27.7005	5.050	1.076	
	Total	67	27.8929	4.844	.5918	

Participantsaredividedintothreegroupsbasedontheirdailywalkingdistance:0to1km,2to3 km, and more than 3 km. Among those walking 0 to 1 km daily, the mean NPRS score is2.64, with a standard deviation of 1.186, indicating a relatively lower level of pain. Forparticipants walking 2 to 3 km daily, the mean NPRS score increases to 3.50, with a standarddeviation of 1.573, suggesting a higher level of pain. Similarly, for those walking more than 3kmdaily,themeanNPRSscoreis3.05,withastandarddeviationof1.290.Thep-valueof 0.041 indicates a statistically significant difference in pain levels among the three walkingdistance groups.

IntermsoftheFootFunctionIndex,participantswalking0to1kmdailyhaveameanscoreof28.0000, with a standard deviation of 5.091. Those walking 2 to 3 km daily have a slightlylower mean score of 27.9706, with a standard deviation of 4.530. Participants walking morethan 3 km daily report a mean score of 27.7005, with a standard deviation of 5.050. The p-valueof0.042indicatesastatisticallysignificantdifferenceinfootfunctionalityscoresamongthedifferent walkingdistancegroups.





TABLENO4.9–ShowsthePearsoncorrelationcoefficientscoresbetweenthevariables

VARIABLES	NPRS	FOOT FUNCTIONALINDEX
AGE	0.363	0.552
WEIGHT	0.728	0.325
HEIGHT	0.242	0.621
BMI	0.536	0.234

RESULTS AND FINDINGS:

The NPRS scores, which gauge pain intensity, exhibit varying degrees of positive correlationwith the demographic variables. Age demonstrates a moderate positive correlation of 0.363,indicating that older students tend to report higher levels of heel pain. Weight exhibits thestrongest positive correlation of 0.728, suggesting that heavier studentsexperience morepronounced pain. BMI also shows a substantial positive correlation of 0.536, indicating thatindividuals with higher BMI scores tend to report greater pain intensity. Conversely, heightdisplays a weaker positive correlation of 0.242, suggesting a less pronounced relationshipbetweenheightand painlevels reported on theNPRS.

In contrast, the Foot Function Index scores, which assess foot functionality, reveal distinctcorrelations with the demographic variables. Age exhibits the strongest positive correlation of0.552, indicating that older students tend to experience more impaired foot function. Heightdemonstratesasubstantialpositivecorrelationof0.621,suggestingthattallerstudentsmayalsoexperience decreased foot functionality. Weight displays a weaker positive correlation of0.325, indicating a less pronounced relationship with foot function scores. BMI shows theweakest positive correlation of 0.234, suggesting a relatively minor association with footfunctionalityamonguniversitystudents.

The results of the present study on the "Incidence of Heel Pain in University Students" offer valuable insights into the multifaceted nature of heel pain and foot functionality among university

students, shedding light on potential predictors and contributing factors. These findings provide a comprehensive understanding of the complex interplay between demographic variables, pain perception, and foot function within this demographic. Total of 67 participants were included in the study, with the mean age of the subjects is 21.78 years with a standard deviation of 2.194. The average height reported is 168.51 cm with a standard deviation of 4.054 with the mean body weight of 62.96 kg, with a standard deviation of 7.797.

The average Numeric Pain Rating Scale score, which assesses pain intensity, stands at 3.03, with a standard deviation of 1.370. This suggests a low to moderate level of heel pain among the participants, with some variability in pain perception across the group. The Foot Function Index, which evaluates the impact of foot-related issues on function, has an average score of 27.89, with a standard deviation of 4.8443. This score indicates a mild to moderate degree of foot dysfunction among the students, also with notable variability.

The findings from this study underscore the multifactorial nature of heel pain and foot-related issues among university students, influenced by a range of demographic and lifestyle factors. Understanding these factors is crucial for developing targeted interventions and preventive measures to address heel pain and improve foot function effectively within the student population. Further research is warranted to explore additional factors contributing to heel pain and foot-related issues and to develop comprehensive strategies for managing and preventing these conditions in university settings.

Our study findings, in comparison to the study conducted by Reda et al., provide valuable insights into the Incidence and risk factors of plantar fasciitis in different settings. While Reda et al. focused on patients attending primary health care centers, our study specifically targeted university students, offering a unique perspective on heel pain incidence within this demographic. Reda et al. reported a prevalence rate of 57.8% among patients with heel pain attending primary health care centers. In contrast, our study found a lower prevalence rate of heel pain among university students. This variance in prevalence rates could be attributed to differences in sample characteristics and settings. While primary health care centers may attract individuals with more severe or chronic heel pain, university students may experience heel pain less frequently due to their relatively younger age and potentially different lifestyle factors.

Both studies identified risk factors which were common associations with plantar fasciitis, such as obesity, inappropriate footwear, and lifestyle factors. Reda et al. highlighted a sedentary lifestyle as the most significant risk factor, which was also echoed in our study findings. This consistency reinforces the importance of lifestyle modifications, such as regular physical activity and appropriate footwear choices, in the prevention and management of plantar fasciitis across diverse populations. However, it is essential to recognize the limitations of our study in comparison to Reda et al.'s research. While our study focused on university students, Reda et al. included a broader range of patients from primary healthcare settings, potentially capturing a more representative sample of the general population. Additionally, differences in methodology, sample size, and data collection tools may contribute to variations in findings between the two studies.

The Numeric Pain Rating Scale (NPRS) and Foot Function Index scores based on the type of footwear worn by the participants to determine if different footwear types contribute to variations in pain perception and foot functionality among university students. The NPRS results indicate a difference in mean pain scores across the three categories of footwear: shoes, sandals, and heels. For shoes, the mean NPRS score is 3.00 with a standard deviation of 1.393 and a standard error of 0.239, while sandals exhibit a slightly higher mean pain score of 3.22 with a standard deviation of

1.353 and a standard error of 0.319. Heels show the lowest mean score at 2.87 with a standard deviation of 1.407 and a standard error of 0.363, and the p-value of 0.046 suggests a statistically significant difference in pain levels among the different footwear types. In terms of the Foot Function Index, which measures the impact of foot issues on functionality, the mean scores also vary by footwear type. Participants wearing shoes have a mean score of 27.7682 (SD = 4.75637, SE = .81571), while those wearing sandals score higher at 29.1503 (SD = 4.76273, SE = 1.12259), and those wearing heels have the lowest mean score at 26.6667 (SD = 5.10719, SE = 1.31867). The total mean score for all participants is 27.8929. The p-value of 0.043 indicates significant differences in foot functionality scores between different types of footwear.

The current study also examined the relationship between daily walking distance and reported pain levels, as well as foot functionality, as measured by the Numeric Pain Rating Scale (NPRS) and Foot Function Index, respectively. Participants are divided into three groups based on their daily walking distance: 0 to 1 km, 2 to 3 km, and more than 3 km. Among those walking 0 to 1 km daily, the mean NPRS score is 2.64, with a standard deviation of 1.186, indicating a relatively lower level of pain. For participants walking 2 to 3 km daily, the mean NPRS score

increases to 3.50, with a standard deviation of 1.573, suggesting a higher level of pain. Similarly, for those walking more than 3 km daily, the mean NPRS score is 3.05, with a standard deviation of 1.290. The p-value of 0.041 indicates a statistically significant difference in pain levels among the three walking distance groups. In terms of the Foot Function Index, participants walking 0 to 1 km daily have a mean score of 28.0000, with a standard deviation of 5.091. Those walking 2 to 3 km daily have a slightly lower mean score of 27.9706, with a standard deviation of 4.530. Participants walking more than 3 km daily report a mean score of 27.7005, with a standard deviation of 5.050. The p-value of 0.042 indicates a statistically significant difference in foot functionality scores among the different walking distance groups.

It is imperative for students to be aware of the impact of footwear on their foot health, particularly in the context of heel pain. Proper footwear plays a crucial role in providing support, cushioning, and stability to the feet, thereby reducing the risk of developing heel pain. Students should be educated about the importance of wearing shoes that fit well, provide adequate arch support, and cushion the heel. Additionally, they should be aware of the potential harm caused by wearing improper footwear, such as high heels or worn-out shoes, which can contribute to the development or exacerbation of heel pain. By promoting awareness of appropriate footwear choices, students can take proactive steps to maintain their foot health and reduce the risk of heel pain.

Our study sheds light on the incidence and risk factors of Heel pain among university students, offering valuable insights into this common condition within a younger demographic. While our findings align with previous research highlighting factors such as obesity, inappropriate footwear, and sedentary lifestyle as significant contributors to plantar fasciitis, further investigation is warranted to elucidate the complexities of this condition across diverse populations. By addressing modifiable risk factors and promoting healthy lifestyle habits, healthcare providers can play a pivotal role in preventing and managing plantar fasciitis, ultimately improving the quality of life for individuals affected by this ailment.

5.1 Limitations

1. The main limitation of the present study was sample size is low, with respect to the rarity of events.

2. The study may lack diversity in its sample composition, potentially overlooking variations in demographic characteristics, lifestyles, and health conditions among university students.

5.2 Future Scope

Future research in this area could explore the effectiveness of educational interventions aimed at promoting awareness of appropriate footwear among university students. Longitudinal studies could assess the impact of such interventions on the incidence of heel pain and other foot-related issues. Additionally, research could investigate the role of foot biomechanics and gait analysis in identifying individuals at risk for heel pain, which could inform targeted preventive strategies.

5.3 Clinical Implications

The findings of this study have several clinical implications for healthcare providers working with university students. Firstly, healthcare providers should emphasize the importance of wearing proper footwear and provide guidance on selecting shoes that offer adequate support and cushioning. They should also educate students about the potential consequences of wearing improper footwear, such as high heels or worn-out shoes.

Furthermore, healthcare providers should be aware of the impact of lifestyle factors, such as prolonged standing or walking, on foot health. They should inquire about students' footwear choices and provide advice on how to prevent heel pain and other foot-related issues. Additionally, healthcare providers should be prepared to offer appropriate treatment options for students experiencing heel pain, such as orthotic devices, physical therapy, or referral to a specialist if needed.

CONCLUSION:

In conclusion, this study provides valuable insights into the incidence of heel pain amonguniversity students and its association with various demographic and lifestyle factors. Despitethe identified limitations, the findings contribute to the existing body of knowledge on foothealthinthispopulation.Movingforward,addressingtheselimitationsandconductingfurtherresearch will be instrumental in developing targeted interventions to mitigate heel pain andimprove foot function among university students and other demographic groups. This workunderscores the importance of prioritizing foot health within the broader context of studentwellness and underscores the need for comprehensive approaches to prevent and manage heelpaineffectively.

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