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FREQUENCY AND ASSOCIATED FACTORS OF PLANTAR FASCIITIS AMONG PATIENTS ATTENDING RHEUMATOLOGY CONSULTATION CLINICS IN MOSUL CITY

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ABSTRACT

Background: Plantar heel pain is a highly prevalent condition that significantly limits physical activity and impairs health- related quality of life. Plantar fasciitis (PF) is recognized as a primary cause of musculoskeletal mechanical heel impairment rather than an acute systemic inflammatory condition. **Objectives:** To estimate the frequency of plantar fasciitis and investigate its sociodemographic, biomechanical, and medical associated risk factors among patients presenting to tertiary rheumatology consultation clinics in Mosul City, Iraq. **Subjects and Methods:** A cross-sectional descriptive study was carried out across 5 months (February to June 2025) involving 200 patients diagnosed with plantar fasciitis by standard physical criteria and history across clinical units at Al-Salam Teaching Hospital, Ibn-Sina Teaching Hospital, and Mosul General Hospital. Systematic structured interview sheets tracked epidemiological indices, body mass index, occupational requirements, clinical pain parameters, and diagnostic imaging characteristics. **Results:** A statistically significant age distribution peak was observed in patients aged 41–60 years (47.0%; $p < 0.001$) alongside a high female predominance of 81.5% (female-to-male ratio of 4.4:1; $p < 0.001$). Urban residents constituted 86.5% of the cohort. Biomechanical markers demonstrated that 57.5% of patients were obese (BMI > 30 kg/m²) and 33.0% were overweight. Prolonged job-related standing of 3–6 hours daily was present in 57.0% of the sample, with housewives (33.5%) and healthcare workers (27.0%) being the most frequent occupational categories. Radiographic calcaneal spurs were verified in 60.5% of participants, and 23.0% presented with foot architecture deformities (15.5% flat feet; 7.5% high arch). Clinical presentation was predominantly unilateral (61.5%), with structural mechanical pain localized directly to the bottom of the heel (64.0%). **Conclusions:** Plantar fasciitis in Mosul City is closely tied to multi-factorial parameters including female gender, middle age, elevated BMI, low background physical activity level, and structured occupational hazards involving prolonged hard-surface weight bearing. Target multi-sectoral awareness regarding appropriate specialized footwear, functional weight optimization, and workplace ergonomics is recommended.

KEYWORDS: Plantar Fasciitis, Body Mass Index, Calcaneal Spur, Mosul City, Biomechanical Strain.

1. INTRODUCTION

Plantar heel pain is an exceptionally common musculoskeletal disorder with significant global clinical and structural implications, affecting upwards of one in three individuals over the age of 65 years. In the primary outpatient sector, plantar fasciitis (PF) accounts for millions of clinical provider consultations annually. Histopathological evaluations have demonstrated that despite its traditional nomenclature, the disorder represents a chronic localized degenerative mechanical pathomechanics (fasciosis) characterized by myxoid fragmentation, collagen matrix micro- tears, and architectural layout deterioration rather than primary local systemic cellular inflammatory infiltration.

Pathological irritation originates predominantly at the

medial calcaneal tuberosity. The plantar fascia structure is split into three structural strands supporting the structural longitudinal arch and executing structural shock distribution via a windlass mechanism. Identified risk factors include age-related alterations in gait dynamics, decreasing ankle dorsiflexion, anatomical variations like pes planus or pes cavus, high systemic body mass index (BMI), and prolonged hard-surface static weight-bearing tasks linked to explicit manual or operational professions. This study aims to delineate the operational frequency and exact multi-factorial baseline parameters defining patients in Mosul City to enhance therapeutic insights.

2. PATIENTS AND METHODS

This cross-sectional descriptive evaluation was conducted within the outpatient rheumatology consultation clinics across three major medical institutions in Mosul City: Al-Salam Teaching Hospital, Ibn-Sina Teaching Hospital, and Mosul General Hospital. The study period commenced on January 2, 2025, with structured data collection running from February 17, 2025, through June 30, 2025. Institutional administrative permission and ethical approval were authorized via the Nineveh Health Directorate Research Ethics Committee (Approval No. 9695, dated 23 February 2025).

A non-probability convenience sampling framework gathered data from 200 individuals. This surpassed the minimum sample parameter of 139 derived via the prevalence formula $n = [Z^2 \times P(1 - P)] / e^2$ based on a standard global reference level of 10.0%, 95% confidence interval ($Z = 1.96$), and 5.0% absolute precision margin. Inclusion required definitive diagnosis of plantar fasciitis via clinical focal tenderness on the anteromedial calcaneal insertion coupled with characteristic "start-up" morning pain. Data collection utilized custom multi-part diagnostic sheets covering: (1) Sociodemographics and background fields; (2) Anthropometric measurements and active sports hours; (3) Relevant medical co-morbidities and historical therapies; (4) Footwear layout and concrete deformities; and (5) Specific pain severity profiles.

Data was analyzed via SPSS version 27. Categorical distributions are presented as rates and absolute frequencies. The Chi-square test for goodness of fit assessed proportional statistical discrepancies with structural thresholds set at $p < 0.05$. Anthropometric parameters utilized standard international BMI brackets $[BMI = ext{Weight (kg)} / ext{Height (m)}^2]$ defining obesity above 30.0 kg/m².

3. RESULTS

Table 3.1: Distribution of cases of plantar fasciitis in different age groups of the study sample (n=200).

This table outlines the frequency and proportion of plantar fasciitis cases across different age stratifications within the evaluated sample population.

Age Groups	Frequency	Percentage (%)	p-value
Under 20 years	1	0.5%	**<0.001***
20–40 years	82	41.0%	
41–60 years	94	47.0%	
Over 60 years	23	11.5%	
Total	**200**	**100.0%**	

Table 3.2: Number of cases of plantar fasciitis in each gender of the study sample (n=200).

This table demonstrates gender distribution, highlighting a prominent statistically significant female presentation.

Gender	Frequency	Percentage (%)	p-value
Male	37	18.5%	**<0.001***
Female	163	81.5%	
Total	**200**	**100.0%**	

Table 3.3: Residence of cases of plantar fasciitis of the study sample (n=200).

This table exhibits the geographical background profile of the patients, revealing high rates among urban dwellers.

Residence	Frequency	Percentage (%)	p-value
Urban	173	86.5%	**<0.001***
Rural	27	13.5%	
Total	**200**	**100.0%**	

Table 3.4: Body mass index of cases of plantar fasciitis of the study sample (n=200).

This table tracks the distribution of participants across established body mass index diagnostic categories.

BMI Brackets (kg/m²)	Frequency	Percentage (%)	p-value
Underweight (<18.5)	3	1.5%	**<0.001***
Normal Weight (18.5–24.9)	16	8.0%	
Overweight (25.0–30.0)	66	33.0%	

Obese (>30.0)	115	57.5%	
Total	**200**	**100.0%**	

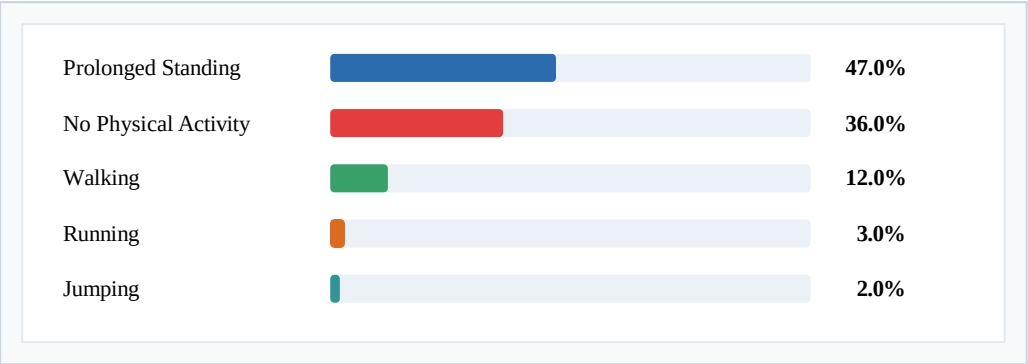

Figure 3.1: Daily physical activity distribution of evaluated patients (n=200).
Horizontal bar representation of the direct daily mobility modalities reported by study participants.

Table 3.5: Medical co-morbidities and past constitutional diseases reported by participants (n=200).
Proportional distribution tracking specific background constitutional variables across the patient sample.

Reported Clinical Brackets	Frequency	Percentage (%)
History of Obesity	50	25.0%
Thyroid Function Disorders	31	15.5%
Diabetes Mellitus	31	15.5%
Hypertension	27	13.5%
Rheumatoid Arthritis	12	6.0%
Parkinson's Disease	2	1.0%
Migraine	2	1.0%
Multiple Sclerosis	1	0.5%
Others	3	1.5%

Table 3.6: Reported structural history of past local corticosteroid administration (n=200).
Tabulated distribution matching the incidence of prior local visual diagnostic steroid therapies.

History of Previous Steroid Injection	Frequency	Percentage (%)
Yes	47	23.5%
No	153	76.5%
Total	**200**	**100.0%**

Table 3.7: Presentation of supportive radiographic structural diagnostic features (n=200).
Proportion of patients with confirmed imaging indicators such as calcaneal spurs on baseline conventional X-rays.

Radiographic Configurations Evaluated	Frequency	Percentage (%)
Radiographic Calcaneal Spur Confirmed	121	60.5%
No Calcaneal Spur Identified	37	18.5%
Diagnosed Exclusively via Clinical Pathways (No X-ray)	42	21.0%
Total	200	100.0%

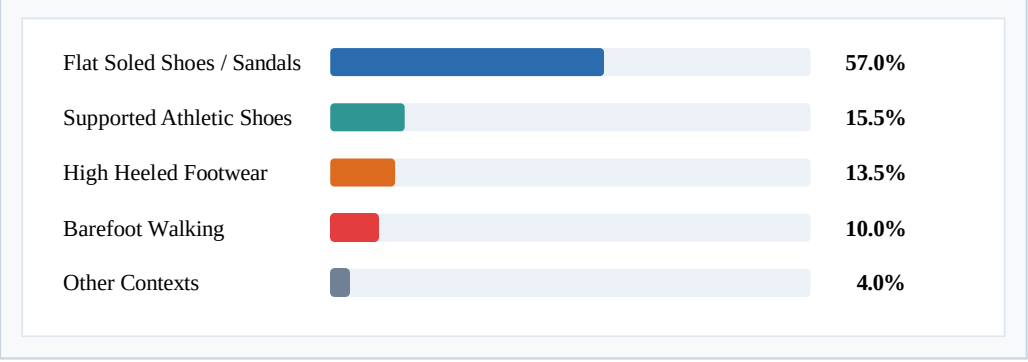

Figure 3.2: Custom distribution of routine footwear configurations used by patients (n=200).

Structural visual matching of traditional or standard daily footwear selection choices.

Table 3.8: Familial background history of plantar fasciitis conditions (n=200).
Distribution of genetic trends and background family occurrence indicators.

Family History of Plantar Fasciitis	Frequency	Percentage (%)
Yes	64	32.0%
No	107	53.5%
Unaware / Do Not Know	29	14.5%
Total	**200**	**100.0%**

Table 3.9: Structural presentation of baseline structural foot architecture deformities (n=200).
Detailed alignment isolating specific structural variants such as pes planus within the cohort.

Anatomical Arch Categories	Subfrequency	Subpercentage (%)	Total Deformity Frequency	Total Cohort Percentage (%)
Pes Planus (Flat Feet)	31	15.5%	**46**	**23.0%**
Pes Cavus (High Arch)	15	7.5%		
No Structural Deformity	154	77.0%	154	77.0%
Total	**-**	**-**	**200**	**100.0%**

Table 3.10: Categorized clinical description of mechanical pain distribution (n=200).
Comprehensive review matching pain localization, laterality, frequency, and functional impairment levels.

Clinical Parameter	Structural Categories	Frequency	Percentage (%)
Pain Localization	Bottom of the Heel	128	64.0%
	Midsole Region	45	22.5%
	Ball of the Foot	19	9.5%
	Toes	8	4.0%
Pain Position / Laterality	Unilateral	123	61.5%
	Bilateral Presentation	77	38.5%
6-Week Pain Interval Recurrence	Once Weekly	29	14.5%
	Once Daily	94	47.0%
	Multiple Times Daily	77	38.5%
Elapsing Awakening Recovery Duration	No Time Lag Required	36	18.0%
	Less than 10 Minutes	70	35.0%
	11 to 30 Minutes	77	38.5%
	Exceeds 30 Minutes	17	8.5%
Lifestyle / Architectural Limitation Rating	No Functional Limitation Imposed	61	30.5%
	Specific Core Activities Avoided	120	60.0%
	All Standard Functional Activities Avoided	19	9.5%

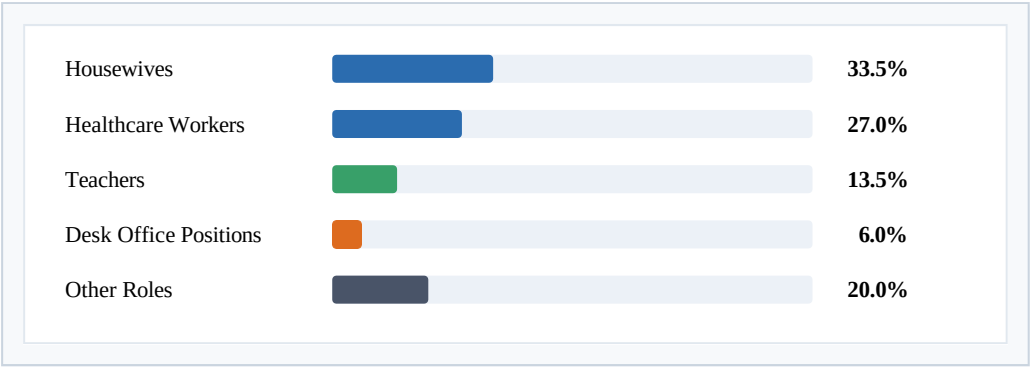

Figure 3.3: Functional distribution of participant occupational classifications (n=200).
Visual outline tracking occupational settings linked to plantar fasciitis presentations.

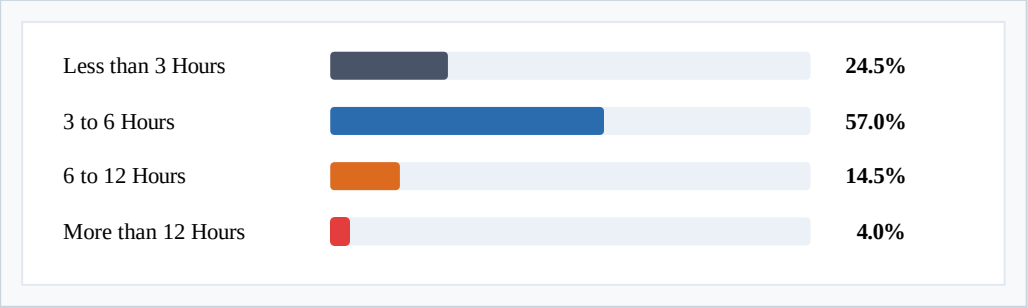

Figure 3.4: Job-related walking or standing duration per day (n=200).
Daily hard-surface structural weight-bearing allocations reported across the cohort.

4. DISCUSSION

This structural study highlights the complex, multi-factorial factors underlying mechanical heel impairment in Mosul City. Proportional clustering peaks in individuals aged 41–60 years (47.0%), consistent with international tracking indicating age-related atrophy of the protective calcaneal fat pad. A notable female presentation of 81.5% was observed. This distribution is linked across literatures to modified footwear preferences, structural foot biomechanics, and distinct home obligations. Obesity (57.5%) and overweight (33.0%) statuses are prominent, demonstrating that increased mechanical loads exacerbate tissue injury along the proximal aponeurosis attachment.

A lack of habitual active sports hours was reported by 36.0% of the sample, while 47.0% faced prolonged static occupational standing. These findings align with regional epidemiological datasets linking mechanical heel conditions to low active baseline scores and manual tasks. Calcaneal spurs were verified via imaging in 60.5% of the sample, and architectural variants like flat feet (15.5%) were common, contributing to elevated fascial stress during ambulation. The predominance of unilateral pain localized to the bottom of the heel aligns with diagnostic profiles of primary focal load injuries. Targeted clinical and ergonomic adaptations are needed to address these factors within the community.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS: Plantar fasciitis in Mosul City presents as a prevalent mechanical impairment linked to clear clinical and physical risk profiles. It displays a clear middle-age distribution peak (41–60 years), highly significant female predominance (4.4:1 ratio), and strong correlation with structural body weight acceleration (90.5% combined overweight/obese). Extended daily hard-surface weight bearing (3–6 hours minimum) represents a clear occupational risk, with housewives and healthcare professionals most frequently affected. Imaging confirms a high incidence of calcaneal spurs (60.5%) alongside structural arch variants like flat feet (15.5%). Pain remains primarily localized to the bottom of the heel and presents unilaterally in 61.5% of cases.

5.2 Recommendations: Broad healthcare education is essential to enhance community awareness regarding lifestyle improvements, target weight management, and routine active physical tracking. Workplace layout transformations are advised to reduce excessive static standing through cushioned floor matting and modified positioning. Patients should avoid flat unsupportive footwear, preferring specialized orthotics to distribute mechanical stress. Routine conventional radiography remains a useful diagnostic aid in local settings, and further clinical tracking of functional outcomes across diverse treatment approaches is recommended.

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