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Original Article

Association between Foot Health, Musculoskeletal Pain, and Quality of Life in Adults from Saudi Arabia: A Cross-Sectional Study

Zainah S. Alammari[1], Ibrahim S. Aljulaymi[1], Ibrahim M. Dewir[2]

[1]Department of Physical Therapy, College of Applied Medical Sciences, Taif University, Taif, Saudi Arabia;
[2]Department of Physical Therapy, Cairo University Hospitals, Egypt

Abstract

Objective: To investigate the association between foot health, musculoskeletal pain, and HRQoL in adults residing in the Makkah region, Saudi Arabia. **Methods**: A cross-sectional study was conducted between December 2024 and June 2025 among 396 adults aged 19–60 years. Participants completed an online survey including the Foot Health Status Questionnaire (FHSQ), the Arabic RAND-36 HRQoL survey, and the Nordic Musculoskeletal Questionnaire. Descriptive statistics, Spearman correlation analyses, and multivariable linear regression models were used to examine associations and predictors of foot health outcomes. **Results**: The 12-month prevalence of MSK pain was 90.2%, most commonly affecting the lower back (64.9%), shoulders (63.4%), and neck (51.3%). Significant positive correlations were observed between FHSQ domains ($p < 0.001$). General foot health was positively associated with social functioning and vigor. Male sex was associated with better foot health outcomes, while obesity and smoking were associated with poorer scores in several domains. **Conclusion**: MSK pain is highly prevalent and associated with poorer foot health and reduced aspects of HRQoL. Integrated assessment of foot and musculoskeletal health may improve functional outcomes and well-being in community populations.

Keywords: Cross-sectional Study, Foot Health, Musculoskeletal Pain, Quality of Life, Saudi Arabia

Introduction

Musculoskeletal (MSK) pain is one of the leading causes of disability worldwide and is associated with substantial functional limitations and reduced quality of life[1–4]. Chronic MSK conditions frequently affect multiple body regions and contribute to work limitations, increased healthcare utilization, and long-term disability[2,4].

Foot health plays a critical role in maintaining mobility and overall musculoskeletal function. Foot pain affects a considerable proportion of adults and has been shown to impair physical function, balance, and daily activities[5–9]. Previous studies have demonstrated that foot pain negatively affects both foot-specific and general health-related quality of life[11,12]. In addition, foot disorders have been associated with pain in other musculoskeletal regions, including the lower back, hips, knees, and shoulders, suggesting an interaction between foot health and multisite MSK pain[13].

Evidence indicates that foot pain and MSK disorders share common risk factors such as increasing age, female sex, and higher body mass index[7,27,29]. Population-based studies have shown that foot pain increases with age and is more prevalent among women[7,27]. Obesity has also been consistently associated with foot pain, altered foot biomechanics, and increased plantar loading[31,32].

In Saudi Arabia, previous studies have primarily examined either foot health or musculoskeletal disorders in clinical or occupational samples. However, there is

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Corresponding author: Ibrahim M. Dewir, PhD, Department of Physical Therapy, Cairo University Hospitals, Egypt
E-mail: i.dewir@tu.edu.sa
ORCID: 0000-0002-5077-6638

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limited community-based evidence investigating the combined association between foot health, multisite musculoskeletal pain, and health-related quality of life in the general adult population. This gap limits understanding of the broader functional and social implications of these conditions at the population level[14,16]. Therefore, this study aimed to examine the association between foot health, musculoskeletal pain, and health-related quality of life in a community-based adult population residing in the Makkah region, Saudi Arabia.

Methods

Study design and participants

This cross-sectional study was conducted in accordance with the STROBE guidelines for cross-sectional studies between December 2024 and June 2025 among adult residents of the Makkah region, Saudi Arabia. Individuals aged 19–60 years who were able to complete an Arabic-language questionnaire were eligible. Participants were excluded if they reported physician-diagnosed systemic diseases known to affect musculoskeletal health (e.g., rheumatoid arthritis, systemic lupus erythematosus, neurological disorders, or other chronic inflammatory conditions). These exclusions were assessed using a structured self-report checklist within the online questionnaire. Participants with a history of surgery, pregnancy, or professional athletic activity were also excluded.

Participants were recruited using a non-probability convenience sampling strategy through online distribution of the survey link via social media platforms (e.g., WhatsApp groups, X/Twitter, and other social media App.). The study did not employ probability-based sampling. The total number of individuals exposed to the survey link could not be determined; therefore, a response rate was not calculated. The first page of the survey included mandatory screening questions regarding age, residency, and exclusion criteria. Participants who did not meet eligibility criteria were automatically prevented from proceeding. As participation was voluntary and self-selected, the sample may over-represent individuals with musculoskeletal symptoms or higher health awareness.

Sample size

The minimum required sample size was calculated based on the estimated population of the Makkah region, using a 95% confidence level and a 5% margin of error. A minimum of 385 participants was required; 396 participants completed the survey and were included in the final analysis.

Outcomes measures

Sociodemographic variables

Data on age, sex, BMI, marital status, educational level, employment status, smoking status, and place of residence were collected. The primary outcomes were the FHSQ Foot Pain and FHSQ General Foot Health domain scores, selected a priori based on clinical relevance and the study hypothesis. All other FHSQ domains and RAND-36 domains were considered secondary exploratory outcomes.

Foot health and quality of life

Foot health was assessed using the Foot Health Status Questionnaire (FHSQ), a validated self-administered instrument. The first section of the FHSQ includes 13 items covering four foot-specific domains: foot pain (4 items), foot function (4 items), footwear (3 items), and general foot health (2 items). In the present study, the primary outcomes were the FHSQ Foot Pain and FHSQ General Foot Health domains. The Arabic version of the FHSQ has demonstrated excellent internal consistency (Cronbach's $\alpha = 0.91–0.92$), while the footwear domain showed good reliability ($\alpha = 0.70$).

The second section of the FHSQ assesses health-related quality of life across four domains: general health, physical activity, social capacity, and vigor. These domains were analyzed as secondary outcomes to examine the relationship between foot health and overall quality of life. All subscales demonstrated acceptable to high internal consistency (Cronbach's $\alpha = 0.71–0.90$). Domain scores range from 0 to 100, with higher scores indicating better health status[18–22].

Health-related quality of life was also evaluated using the RAND-36 questionnaire. RAND-36 domain scores were calculated using the standardized scoring algorithm provided by the instrument developers (version 1.03 scoring spreadsheet). Questionnaires with missing domain responses were excluded from the analysis (complete-case analysis).

Musculoskeletal pain

Musculoskeletal pain was assessed using the validated Arabic version of the Nordic Musculoskeletal Questionnaire (NMQ). Participants reported musculoskeletal pain in 9 body regions during the previous 12 months and the previous 7 days, as well as pain-related work or activity limitations[25,26].

Statistical Analysis

Statistical analyses were performed using SPSS version 23 (IBM Corp., Armonk, NY, USA). Normality was assessed using the Kolmogorov–Smirnov test. Continuous variables were summarized as mean ± standard deviation (SD) when approximately normally distributed and as median (interquartile range [IQR]) when non-normally distributed. Categorical variables were summarized as frequencies and percentages. For descriptive completeness, both mean ± SD and median (IQR) are presented for selected key variables

Table 1. Participant characteristics.

Sociodemographic variables		N	%
Age Mean ± SD 36.89±10.12 Median (IQR) 38.50 (18)	19-28 years	108	27.3
	29-38 years	90	22.7
	39-48	149	37.6
	≥48	49	12.4
Gender	Male	59	14.9
	Female	337	85.1
Marital status	Single	122	30.8
	Married	252	63.6
	Divorced	16	4.0
	Widowed	6	1.5
Residence	Makkah	66	16.7
	Jeddah	32	8.1
	Taif city	282	71.2
	Al Qunfudhah	2	.5
	Another place inside Makkah region	14	3.5
Educational level	Illiterate	1	.3
	Read and write	4	1.0
	Secondary	47	11.9
	Diploma	29	7.3
	Bachelor	264	66.7
	Master's degree or higher	51	12.9
Occupation	Unemployed	98	24.7
	Student	56	14.1
	Employed/part-time	11	2.8
	Employed/ full time	231	58.3
Chronic disease	No chronic diseases	396	100.0
Smoking status	Non-smoker	379	95.7
	Smoker	17	4.3
BMI levels• 25.98 ± 6.37 Median (IQR) 25 (7)	Obese	89	22.5
	Overweight	133	33.6
	Normal weight	140	35.4
	Under weight	34	8.6

• BMI: Body Mass Index; • Obese BMI ≥ 30; • Overweight: BMI 25–29.9; • Normal: BMI 18.5–24.9; • Underweight: <18.5.

(e.g., age and BMI). Group differences were examined using the Mann–Whitney U or Kruskal–Wallis tests, and associations were evaluated with Spearman's correlation coefficients. Statistical significance was set at $p < 0.05$.

The primary outcomes were the FHSQ Foot Pain and FHSQ General Foot Health. Separate multivariable linear regression models were developed for each domain to identify sociodemographic predictors. Continuous variables were entered as linear terms, while categorical variables were dummy-coded with predefined reference categories. Model assumptions were assessed using residual analysis, multicollinearity diagnostics (variance inflation factor), and homoscedasticity checks. Missing data (<5%) were handled using complete-case analysis.

Results

Participant characteristics

A total of 421 individuals accessed the survey link. Of these, 405 provided electronic consent. Nine individuals were excluded due to incomplete questionnaires, and 396 met eligibility criteria and were included in the final analysis. The mean age was 36.9 ± 10.1 years, and the majority were female (85.1%). Most participants were married (63.6%) and resided in Taif city (71.2%). Over half of the sample was either overweight (33.6%) or obese (22.5%). Additional sociodemographic characteristics are summarized in Table 1.

Table 2. FHSQ and HRQoL descriptive statistics.

		Mean± SD	Median	IQR	Minimum	Maximum
FHSQ	Foot pain	68.02±25.24	68.75	37.50	0.00	100.00
	Foot Function	85.11±18.99	93.75	25.00	6.25	100.00
	Footwear	57.36±27.48	58.33	41.67	0.00	100.00
	General Foot Health	74.55±23.42	75.00	50.00	0.00	100.00
HRQoL	Physical function	72.53±27.84	80.00	50.00	0.00	100.00
	Vigor	60.44±14.13	62.50	18.75	0.00	100.00
	Social Functioning	74.24±22.47	75.00	46.88	0.00	100.00
	General Health	64.96±13.89	66.66	16.67	33.33	100.00

Table 3. Prevalence of Musculoskeletal Pain by Anatomical Region.

Body region	Pain in the last 12 months n (%) (N=396)	Pain in the last 7 days n (%) (N=357)	Work prevention in the last 12 months n (%) (N=357)
Neck	203 (51.3)	114 (31.9)	69 (19.3)
Shoulder	251 (63.4)	130 (36.4)	75 (21.0)
Elbow	46 (11.6)	34 (9.5)	29 (8.1)
Wrist	121 (30.6)	56 (15.7)	46 (12.9)
Upper back	163 (41.2)	85 (23.8)	66 (18.5)
Lower back	257 (64.9)	151 (42.3)	111 (31.1)
Hip joint	129 (32.6)	70 (19.6)	47 (13.2)
Knee joint	177 (44.7)	95 (26.6)	69 (19.3)
Ankle joint	163 (41.2)	93 (26.1)	72 (20.2)

Note: N = 396 represents the total study sample for 12-month musculoskeletal pain prevalence. Analyses for pain in the previous 7 days and pain-related work or activity limitation were restricted to participants reporting musculoskeletal pain (N = 357).

Table 4. Spearman correlations between FHSQ domains and RAND-36 health-related quality-of-life domains.

Variable	Foot Pain	Foot Function	Footwear	General Foot Health	Physical Function	Vigor	Social Function	General Health
Foot Pain	–	0.641**	0.274**	0.645**	0.020	0.005	0.265**	0.105*
Foot Function	0.641**	–	0.330**	0.610**	0.046	-0.027	0.309**	0.085
Footwear	0.274**	0.330**	–	0.323**	0.012	-0.091	0.177**	0.055
General Foot Health	0.645**	0.610**	0.323**	–	0.000	0.099*	0.257**	0.006
Physical Function	0.020	0.046	0.012	0.000	–	0.015	0.039	0.094
Vigor	0.005	-0.027	-0.091	0.099*	0.015	–	0.101*	0.161**
Social Function	0.265**	0.309**	0.177**	0.257**	0.039	0.101*	–	0.164**
General Health	0.105*	0.085	0.055	0.006	0.094	0.161**	0.164**	–

** Statistically significant at $p \leq 0.05$. ** Statistically significant at $p \leq 0.01$.*

Table 5. Multivariate regression predictors of foot health outcomes.

The predictors	Foot pain domain				Foot function domain			
	B	Sig.	95% Confidence Interval for B		B	Sig.	95% Confidence Interval for B	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Age	-0.387	0.053	-0.779	0.005	-0.144	0.348	-0.446	0.157
Male (ref: female)	13.965	0.000	6.390	21.540	6.663	0.025	0.836	12.491
Marital status: single	-4.962	0.422	-17.092	7.167	3.222	.498	-6.109	12.554
Marital status: married	-5.344	0.335	-16.237	5.548	0.101	0.981	-8.279	8.481
Occupation student	-4.123	0.394	-13.622	5.375	-6.071	0.103	-13.378	1.236
Occupation: part-time	-8.3550	0.290	-23.866	7.155	2.949	0.627	-8.983	14.881
Occupation: full-time	-3.568	0.274	-9.969	2.832	-4.109	0.102	-9.032	0.815
Residence: Makkah	7.574	0.315	-7.232	22.381	5.472	0.346	-5.919	16.862
Residence: Jeddah	16.356	0.040	0.783	31.929	6.435	0.292	-5.546	18.415
Residence: Taif	9.668	0.170	-4.147	23.483	4.961	0.359	-5.667	15.588
Residence: Al Qunfudhah	9.303	0.619	-27.447	46.052	11.483	0.425	-16.789	39.755
Smoker (ref: non-smoker)	-10.843	0.106	-24.000	2.313	-8.329	0.106	-18.451	1.792
BMI: Obese	-14.235	.010	-25.089	-3.381	-9.279	.029	-17.629	-0.929
BMI: Overweight	-5.617	.274	-15.700	4.465	-3.898	.324	-11.654	3.859
BMI: Normal weight	-8.613	.076	-18.142	0.915	-5.340	.153	-12.670	1.990
R2 (adjusted R2)		(.080)	.115			(.038)	.075	
	Footwear domain				**General foot health**			
The predictors	**B**	**Sig.**	**95% Confidence Interval for B**		**Bs**	**Sig.**	**95% Confidence Interval for B**	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Age	-0.275	0.218	-0.714	0.164	-0.408	0.028	-0.772	-0.044
Male (ref: female)	-4.486	0.299	-12.964	3.991	10.703	0.003	3.675	17.731
Marital status: single	2.534	0.714	-11.039	16.108	-1.136	0.843	-12.390	10.117
Marital status: married	0.499	0.936	-11.690	12.689	-2.905	0.572	-13.011	7.201
Occupation student	-2.080	0.701	-12.709	8.549	-6.139	0.172	-14.951	2.673
Occupation: part-time	-2.556	0.772	-19.913	14.802	8.692	0.236	-5.698	23.082
Occupation: full-time	5.422	0.137	-1.741	12.584	-0.300	0.921	-6.238	5.638
Residence: Makkah	13.446	0.111	-3.123	30.016	5.844	0.403	-7.893	19.581
Residence: Jeddah	20.959	0.019	3.531	38.386	6.114	0.406	-8.334	20.562
Residence: Taif	4.773	0.544	-10.686	20.233	3.826	0.558	-8.990	16.643
Residence: Al Qunfudhah	-2.256	0.914	-43.381	38.870	3.051	0.860	-31.044	37.146
Smoker (ref: non-smoker)	-9.023	0.229	-23.746	5.700	-15.889	0.011	-28.095	-3.682
BMI: Obese	-8.152	0.188	-20.298	3.994	-10.964	0.033	-21.033	-0.894
BMI: Overweight	-4.725	0.218	-16.009	6.558	-3.568	0.454	-12.922	5.787
BMI: Normal weight	-6.998	0.299	-17.66	3.665	-1.763	0.695	-10.602	7.077
R2 (adjusted R2)		(0.028)	0.065			(0.080)	0.115	

Foot health and quality-of-life scores

Median RAND-36 scores indicated moderate foot pain and high foot function, while footwear and general foot health domains demonstrated greater variability. Health-related quality-of-life scores were highest for physical function and social functioning, with lower median scores observed for vigor and general health (Table 2).

Female participants demonstrated significantly lower scores for foot pain and general foot health compared with males ($p < 0.01$). Younger age groups and individuals with lower BMI levels showed significantly better foot pain, foot function, and general foot health scores.

Table 6. Comparison of FHSQ and HRQoL scores according to musculoskeletal pain during the previous 12 months.

Variables	MSK pain Yes (n = 357) Median (IQR)	MSK pain No (n = 39) Median (IQR)	Mann–Whitney U (p-value)
FHSQ scales			
Foot pain	68.75 (37.50)	87.50 (37.50)	<0.001**
Foot function	93.75 (31.25)	100.00 (6.25)	<0.001**
Footwear	58.33 (41.67)	66.66 (33.33)	0.303
General foot health	75.00 (50.00)	100.00 (5.00)	<0.001**
HRQoL scales			
Physical function	80.00 (50.00)	80.00 (45.00)	0.799
Vigor	62.50 (18.75)	62.50 (25.00)	0.525
Social functioning	75.00 (50.00)	100.00 (25.00)	<0.001**
General health	66.66 (16.67)	66.66 (25.00)	0.842

*** p < 0.001.*

Prevalence of musculoskeletal pain

Musculoskeletal pain prevalence is presented in Table 3. All participants (N = 396) completed the Nordic Musculoskeletal Questionnaire for musculoskeletal symptoms during the previous 12 months. Overall, 357 participants (90.2%) reported musculoskeletal pain in at least one body region during the previous 12 months. Therefore, analyses of pain during the previous 7 days and pain-related work or activity limitation were restricted to this subgroup (N = 357). The most commonly affected regions during the previous 12 months were the lower back (64.9%), shoulders (63.4%), and neck (51.3%). Lower back pain was also the most frequently reported cause of work or activity limitation (31.1%). The distribution of musculoskeletal pain across anatomical regions is summarized in Table 3.

Association between foot health and quality of life

Spearman correlation analysis showed significant positive correlations between foot pain, foot function, footwear, and general foot health domains (all p < 0.001). General foot health was positively correlated with social functioning and vigor, while weak correlations were observed between foot pain and general health (Table 4).

Correlation and regression analyses

Significant positive correlations were observed between the foot pain, foot function, footwear, and general foot health domains (all $p < 0.001$). General foot health was positively correlated with social functioning and vigor, while weak correlations were observed between foot pain and general health.

In the multivariable regression analysis for the foot pain domain, male sex (B = 13.965, 95% CI 6.390–21.540, $p < 0.001$) and residence in Jeddah (B = 16.356, 95% CI 0.783–31.929, $p = 0.040$) were significant predictors of higher foot pain scores (better outcomes), whereas obesity was associated with lower scores (B = −14.235, 95% CI −25.089 to −3.381, $p = 0.010$). Age was not statistically significant ($p = 0.053$).

For the foot function domain, male sex was associated with higher scores (B = 6.663, 95% CI 0.836–12.491, $p = 0.025$), whereas obesity was associated with lower scores (B = −9.279, 95% CI −17.629 to −0.929, $p = 0.029$).

In the footwear domain, residence in Jeddah was a significant predictor of higher footwear scores (B = 20.959, 95% CI 3.531–38.386, $p = 0.019$).

For the general foot health domain, older age (B = −0.408, 95% CI −0.772 to −0.044, $p = 0.028$), smoking (B = −15.889, 95% CI −28.095 to −3.682, $p = 0.011$), and obesity (B = −10.964, 95% CI −21.033 to −0.894, $p = 0.033$) were associated with poorer scores, while male sex was associated with better general foot health (B = 10.703, 95% CI 3.675–17.731, $p = 0.003$) (Table 5).

Association between musculoskeletal pain and foot health

Participants who reported musculoskeletal pain during the previous 12 months demonstrated significantly poorer foot health outcomes compared with those without musculoskeletal pain (Table 6). Median scores for the FHSQ foot pain, foot function, and general foot health domains were significantly lower among participants with musculoskeletal pain (all p < 0.001). In contrast, the footwear domain did not differ significantly between groups (p = 0.303).

Regarding HRQoL domains, a significant difference was observed for social functioning, with participants without musculoskeletal pain reporting higher median scores (p < 0.001). No statistically significant differences were

observed for physical function, vigor, or general health (all $p > 0.05$).

Discussion

The present study examined the association between foot health, musculoskeletal (MSK) pain, and health-related quality of life (HRQoL) in a community-based adult population in the Makkah region of Saudi Arabia. The findings indicate a high prevalence of musculoskeletal pain (90.2%), with the lower back, shoulders, and neck being the most frequently affected regions. These findings are consistent with global epidemiological studies identifying these anatomical areas as the most common sites of musculoskeletal complaints and disability worldwide[1–4].

Significant positive correlations were observed among the Foot Health Status Questionnaire (FHSQ) domains, suggesting that improvements in one aspect of foot health tend to be associated with improvements in other foot-related outcomes. In addition, general foot health demonstrated positive associations with aspects of HRQoL, particularly social functioning and vigor. These findings support previous research indicating that foot pain and dysfunction can negatively affect daily activities, mobility, and overall wellbeing[5–9,11,12].

The prevalence of musculoskeletal pain observed in this study appears higher than that reported in many population-based investigations[1,27]. However, this finding should be interpreted cautiously. The use of an online convenience sampling strategy may have introduced self-selection bias, whereby individuals experiencing musculoskeletal symptoms were more likely to participate. Nevertheless, the anatomical distribution of pain identified in this study—particularly the predominance of lower back and shoulder pain—is consistent with previous international and regional epidemiological reports[1,16].

Obesity emerged as an important predictor of poorer foot health outcomes in several regression models. Excess body weight may increase plantar loading and alter foot biomechanics, leading to foot discomfort and functional limitations. Previous studies have demonstrated that higher body mass index is associated with increased plantar pressure and a greater likelihood of foot pain and foot-related disability[31,32]. These biomechanical changes may partially explain the association between obesity and reduced foot health scores observed in the present study.

Sex-related differences were also observed, with female participants demonstrating poorer foot health scores compared with males. Similar findings have been reported in earlier studies showing a higher prevalence of foot pain and disability among women[7,29]. These differences may reflect variations in pain perception, footwear habits, occupational exposures, or biological factors influencing musculoskeletal health[30]. However, interpretation of sex-related findings should be approached with caution in the present study because female participants constituted the majority of the sample.

Interestingly, associations between foot health and HRQoL were more pronounced for social functioning and vigor than for general health or physical functioning. This pattern may suggest that foot-related symptoms influence energy levels and social participation even when general health perceptions remain relatively stable. Previous community-based studies have similarly reported that musculoskeletal symptoms can affect participation in social and recreational activities more strongly than routine physical tasks[29].

Overall, the findings highlight the importance of considering foot health within the broader musculoskeletal health framework. Given the high prevalence of musculoskeletal pain and its potential relationship with foot health and wellbeing, integrated preventive strategies targeting modifiable risk factors—particularly obesity and lifestyle factors—may contribute to improved functional outcomes and quality of life in community populations.

Limitations

This study has several strengths, including the use of validated Arabic versions of the FHSQ and NMQ, a relatively large community-based sample, and the simultaneous assessment of foot-specific and general quality-of-life domains across multiple musculoskeletal regions. Nevertheless, several limitations should be considered when interpreting the findings.

First, the cross-sectional design precludes causal inference. Although significant associations were identified between musculoskeletal pain and foot health outcomes, the temporal directionality of these relationships cannot be determined. Longitudinal studies are needed to clarify whether musculoskeletal pain contributes to impaired foot health, vice versa, or whether shared risk factors underlie both conditions.

Second, the use of an online convenience sampling strategy introduces potential selection bias. Individuals experiencing musculoskeletal symptoms or those with greater health awareness may have been more likely to participate, potentially inflating prevalence estimates. In addition, the predominance of female participants (85%) limits representativeness and may affect sex-based comparisons. Therefore, the findings should be interpreted as reflective of this self-selected sample rather than the broader adult population of the Makkah region.

Third, data were based on self-reported questionnaires, which may introduce recall bias, reporting bias, and uncertainty regarding undiagnosed or subclinical conditions. Although missing data were minimal and handled using complete-case analysis, the potential impact of unmeasured confounders cannot be excluded. Furthermore, clinical examinations were not performed to objectively verify musculoskeletal or foot pathologies.

Fourth, while primary outcomes were predefined, multiple secondary exploratory comparisons were

conducted. This increases the possibility of type I error due to multiplicity, and therefore secondary findings should be interpreted cautiously.

Finally, although analytic and reporting inconsistencies identified during peer review were corrected prior to final analysis, careful interpretation of subgroup and secondary associations remains warranted.

Future research employing probability-based sampling, longitudinal designs, and objective clinical assessments would strengthen causal inference and improve generalizability.

Conclusion

Musculoskeletal pain is highly prevalent and is significantly associated with poorer foot health and reduced social functioning in this community-based adult population. These findings underscore the importance of integrated assessment of foot health and musculoskeletal pain in preventive and clinical practice. Multidisciplinary approaches targeting both foot and musculoskeletal conditions may contribute to improved functional outcomes and quality of life

Ethics Approval

The study was approved by the Ethics Committee of Taif University (approval number: 46-109; December 9, 2024).

Consent to Participate

Informed consent was obtained electronically from all participants.

Authors' Contributions

Zainah S. Alammari: Conceptualization, data collection, writing—original draft. Ibrahim S. Aljulaymi: Methodology, formal analysis, writing—review & editing. Ibrahim M. Dewir: Study supervision, data interpretation, writing—review & editing. All authors read and approved the final version of the manuscript.

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