Knowledge and awareness of plantar fasciitis in the Saudi population

Waleed Awwad,1 Abdullah Almousa,2 Fahad Alotaibi,3 Fahad Al-Sultan,4 Noura Almajed,5 Najla Alsaikhan,6 Marwan Zamzami,7 Ahlam Al-Moawi,8 Abdulaziz Almaawi9

Abstract

Objectives: To evaluate and assess the knowledge and awareness level of lay people about plantar fasciitis (PF).

Methods: The cross-sectional study was conducted at a shopping mall in Riyadh, Saudi Arabia, from May to July 2017, and comprised random individuals busy shopping in the area. Data was collected through a self-administered questionnaire, and was analysed using SPSS 22.

Results: Of the 176 subjects, 101(57.4%) were females and 75(42.6%) were males. The age range was 18-55 years, and 153(87%) belonged to urban population. Overall, 60(34%) subjects had never heard of plantar fasciitis. Also, 148(84%) subjects thought that specialised medical shoes can be used as possible treatment for plantar fasciitis (p<0.001). Females had significantly higher knowledge regarding plantar fasciitis than males (p=0.009).

Conclusion: Over 30% subjects did not have any knowledge about plantar fasciitis.

Keywords: Plantar fasciitis, Awareness, Foot pain, Heel pain. (JPMA 69: 1838; 2019) DOI:10.5455/JPMA.298471

Introduction

Heel pain is one of the most common pathologies of the musculoskeletal system.1-2 Plantar fasciitis (PF) contributes to a large portion of musculoskeletal complaints affecting two million Americans,1 and costing an estimated US$192-376 million.3 In many forms, PF is defined as sharp pain in the heel elicited after walking or standing up,3-5 and felt more on the medial aspect of the heel, especially with the first step in the morning and while progressing throughout the day.4

Unfortunately, there is no clear aetiology in most cases. Overweight, flat foot or high-arched feet may lead to PF.4,5 Damage due to PF could also be attributed to mechanical, thermal or chemical changes.6 However, there are some known risk factors for PF, the most important being gender, with women carrying a higher risk, especially between the ages of 45 and 64.3,4

Diagnosing PF does not necessarily require imaging, but magnetic resonance imaging (MRI) could help in ruling out other differentials. Clinical presentation of sharp heel pain at the insertion of Plantar fascia with mobilisation is the main diagnostic criteria.3,4 Conservative treatment is usually the mainstay for management that includes non-steroidal anti-inflammatory drugs (NSAIDs), footwear modification and stretching,4 along with laser therapy, shockwave therapy and orthotics.1

There is a lack of scientific literature on the knowledge and awareness of PF in the general population. The current study was planned to evaluate and assess the knowledge of Saudi population about PF. In addition to measuring public’s awareness of PF, an evaluation of its causes, symptoms, diagnosis, and management, as perceived by the population, was also planned to be estimated.

Subjects and Methods

The cross-sectional study was conducted at a shopping mall in Riyadh, Saudi Arabia, from May to July 2017, and comprised random individuals busy shopping in the area who were enrolled using convenience sampling. After approval was obtained from the review board of the College of Medicine, King Saud University, Riyadh, a pilot study was conducted comprising 30 subjects, and it was found that only 4(13%) knew about PF. As such, the sample size for detecting the true population proportion of people who knew about PF was determined based on 95% confidence interval (CI) and 5% margin of error. It was calculated using Gpower.7 The subjects were enrolled regardless of gender, age, nationality and educational level. After getting informed consent from the subjects, a 25-item self-administered questionnaire regarding knowledge of PF from literature and proven hypotheses3,4,8-11 was handed to each subject. Expert orthopaedic surgeons had conducted a face validity examination of the questionnaire in order to ensure that the questions included in it covered the concept that they purported to measure. The measurement used a paper-
based survey comprising three main domains. The first domain collected the respondent’s demographic characteristics, like gender, age, educational level, nationality, residency, place of birth as well as other information such as the weight (kg) and height (cm). The second domain comprised a multiple option series of questions that measured the PF knowledge of the respondents including the risk factors and management. The response options were either, 'Yes', 'No', or 'Do not know'. The first part of the second domain assessed risk factors like standing for a long time, overweight, doing sudden exercise, walking barefoot, wearing high-heeled/stiletto shoes, lack of exercise, flat foot, advancing age, bearing a heavy load, exposure to fractures in the joints of the foot, and arthritic disorders etc.

As for the knowledge part of the second domain, it explored possible PF treatments, like elongation exercises, rinsing the foot in iced water, oral cortisone replacement, intravenous / intramuscular (IV/IM) cortisone treatments, wearable night-time leg cast, and specialised medical shoes etc. Score from the two domains were subsequently calculated.

Additionally, the questionnaire asked whether the respondents had ever been made aware of PF or if whether they had ever been diagnosed with PF, and, if so, were they familiar with the methods of diagnosis used. As the diagnosis for PF is based mainly on an individual’s clinical history, the last section of the questionnaire was used to ask some leading questions that could strongly suggest a PF diagnosis. Firstly, whether the patient had ever suffered a chronic heel pain or not. Secondly, had the heel pain ever interfered with daily activities, and, thirdly, did the pain increase when they took their first step in the morning or after periods of inactivity. Lastly, if the pain improved upon further movement, did it then get worse after a period of sustained activity. The extent of their perceived sources of information on this syndrome and its usefulness was questioned.

SPSS 22 was used for data analysis. Data was presented as Mean ± standard deviation (SD), and frequencies and percentages. Chi-squared Goodness-of-Fit test was used to assess the distribution of people’s answers in relation to PF knowledge questions. Next, the summative and recoding features in the analytical programme were used to compute a total knowledge score by computing the correctly answered questions after awarding each correct answer two points which resulted in a total score of 0-44.

Associations between variables were measured with Pearson’s correlation as a bivariate effect size statistics. Moreover, a one-way analysis of variance (ANOVA) as well as an independent samples t-test were employed in order to explore the main effects of key patient demographic data, such as health and disease characteristics, age, gender, educational background, economic factors, as well as the participants’ previous disease history and several other key factors that we believed were relevant to the subjects’ knowledge on PF according to background research and evidence.

Finally, multivariate linear regression analysis was employed to understand the individual and joint relationship between patients’ demographic characteristics such as age, gender, education, PF Knowledge score, and disease history along with their heel pain experiences when these independent variables were set as a variate against their measured knowledge score on PF as a dependent variable.

Results
Of the 176 subjects, 101(57.4%) were females and 75(42.6%) were males. The age range was 18-55 years; 153(87%) belonged to urban population; 157(89.2%) were Saudi nationals; and 124(70.4%) were university graduates (Table-1).

Social media was the most common source of knowledge for 71(40.3%) respondents followed by communication.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>101</td>
<td>57.4</td>
</tr>
<tr>
<td>Male</td>
<td>75</td>
<td>42.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24 Years</td>
<td>43</td>
<td>24.4</td>
</tr>
<tr>
<td>25-34 Years</td>
<td>45</td>
<td>25.6</td>
</tr>
<tr>
<td>35-44 Years</td>
<td>41</td>
<td>23.3</td>
</tr>
<tr>
<td>45-55 Years</td>
<td>34</td>
<td>19.3</td>
</tr>
<tr>
<td>&gt;55 Years</td>
<td>13</td>
<td>7.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than High School</td>
<td>15</td>
<td>8.5</td>
</tr>
<tr>
<td>High School Level</td>
<td>37</td>
<td>21</td>
</tr>
<tr>
<td>University Degree</td>
<td>106</td>
<td>60.2</td>
</tr>
<tr>
<td>Post-Graduate Degree</td>
<td>18</td>
<td>10.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Saudi</td>
<td>19</td>
<td>10.8</td>
</tr>
<tr>
<td>Saudi</td>
<td>157</td>
<td>89.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residence</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Area</td>
<td>18</td>
<td>10.2</td>
</tr>
<tr>
<td>City</td>
<td>153</td>
<td>86.9</td>
</tr>
</tbody>
</table>

| Weight (Kg) mean(SD) | 78.5 (23.8) |
| Height (cm) mean(SD)  | 164.8 (10.7) |

SD: Standard Deviation.
with physicians 31(17.6%). Only 14(8%) participants relied on websites as the primary source of information.

Overall, 60(34.15%) subjects had never heard of PF, while 72(40.9%) confirmed they had previously been diagnosed with PF. The mode of diagnosis was clinical for 31(17.6%) subjects, MRI 4(2.3%) and others 3(1.7%). Besides, 34(19.3%) subjects said they had self-diagnosed the condition (Table-2).

In terms of knowledge, 140(79.5%) subjects thought that prolonged standing was responsible for PF; 129(73.3%) identified obesity (p<0.001), 120(68.2%) wearing high heels (p<0.001), and 92(52.3%) identified walking barefoot (p<0.001). Additionally, 84(47.7%) subjects attributed increase in the level of activity (p<0.001), 82(46.6%) ageing (p<0.001), 80(45.5%) pregnancy (p<0.001), and 73(41.5%) identified joint disorders (p<0.001) as causes for PF (Table-3).

Regarding knowledge about PF treatment options 130(73.9%) subjects thought that PF need not be treated (p<0.001). Also, 148(84.1%) knew that specialized medical shoes could help to treat PF and soothe the pain (p<0.001). Overall, the participants’ knowledge indicated that elongation exercises was known to 121(68.8%) (p<0.001) and rinsing the foot in iced water to 100(56.8%) (p<0.001) subjects. However, only 69(39.2%) subjects thought that surgical intervention/interference could help, and 63(35.8%) thought IV/IM cortisone treatment could help in decreasing PF pain.

Female subjects had a significantly higher mean knowledge score 22.3±7.4 regarding PF than their male counterparts 18.6±10.1 (p=0.009). However, age did not influence the knowledge about PF with all age groups sharing similar scores, although the older age group subjects with a mean score of 23.2±8.6 had relatively better knowledge about the condition. Participants with higher education were substantially better aware of PF (p<0.04) and belonging to either rural or urban regions did
not influence the knowledge scores (p>0.05). The mean knowledge scores were significantly higher for people who experienced pain all day 25.6±7.2 (p=0.001) and those who had a history of PF 23.5±7.6 (p<0.001). People who claimed that they had some previous knowledge regarding PF tended to have a significantly higher knowledge score 22.0±7.6 than those who reported no previous knowledge 18.4±10.3 (p=0.011). Subjects who thought there was no interference of pain with activities of daily living (ADL) had significantly lesser knowledge score compared to those who thought there was a slight and/or complete interference with ADL (p=0.009).

Multivariate linear regression showed significant at least one or more of the tested predictor variables had a significant multivariate association with people’s knowledge about PF (p<0.05). People who reported having had some basic idea about PF had significantly greater knowledge score than those who had none (p=0.040). Moreover, there was a statistically significant difference between people who were exposed to education when compared to those who were not (p<0.001).

**Discussion**

A healthy population is possible only in the presence of important factors, such as knowledge, awareness and health literacy. Knowing the diagnosis of the disease and important factors, such as knowledge, awareness and physical performance.

Given the importance of health literacy, it is evident that there was a lack of knowledge regarding some aspects about PF among participants in the current study. More studies with larger sample sizes and with the inclusion of participants from across Saudi Arabia along with a
dedicated questionnaire measuring all facets of PF pain are needed for better understanding the phenomenon in the target population.

**Conclusion**

Almost one-third of the study population did not have any knowledge about PF. Amongst the people who knew about PF, the majority had obtained information from unreliable sources, such as social media or the internet.

**Disclaimer:** The study was presented as an Abstract at the 20th Asia Pacific Orthopaedic Association Congress, Antalya, Turkey, from April 10 to 14, 2018.

**Conflict of Interest:** None.

**Source of Funding:** The Deanship of Scientific Research, King Saud University through the Undergraduate Student’s Research Support Programme.

**Acknowledgment:** We are grateful to the College of Medicine Research Centre (CMRC), Deanship for Scientific Research, King Saud University.

**References**


10. Irving DB, Cook JL, Young MA, Menz HB. Obesity and pronated foot type may increase the risk of chronic plantar heel pain: a matched case-control study. BMC Musculoskelet Disord. 2007; 8:41.


