

## ORIGINAL ARTICLE

## Prevalence of Achilles Tendinopathy in Female Nurses in Lahore-Pakistan

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## ABSTRACT

**Background:** The Achilles tendon is the largest & longest tendon in the body. Although Achilles tendinopathy is chiefly a runner's problem but can affect other populations exposed to a prolonged standing position.**Aim:** To assess the prevalence of Achilles tendinopathy in nurses due to long standing position and its association with other factors resulting in symptoms.**Study design:** Cross-sectional study.**Methodology:** The information was gathered using a standardized VISA-A scale. The study's sample size was 110 subjects. The VISA A questionnaire had eight items for assessing the condition. Over the course of six months, data was collected from female nurses in Lahore. The data from the questionnaire was organized. Data was analyzed by SPSS software, version 19 as qualitative variables were expressed as mean  $\pm$  SD. Frequencies and percentages were calculated for individual items.**Results:** In this study, 39(35.5%) nurses have mild pain, 49(44.5%) nurses have moderate pain & 21(19.1%) nurses have severe pain after walking on flat ground for 30 minutes. The Cross tabulation of Visa- A scale showed that there was a weak or frail relationship between Achilles tendinopathy and prolong standing position.**Conclusion:** We concluded that there is a weak or frail relationship in Achilles tendinopathy in nurses due to prolong standing position. Most of the population falls in between no pain to mild pain.**Keywords:** Achilles tendinopathy, Nurses, VISA-A questionnaire and Pakistan.

## INTRODUCTION

Tendon injuries, which can range from repetitive strain injuries to total ruptures, are now one of the most common health problems affecting the adult population<sup>1</sup>. Musculoskeletal diseases (MSD's) are common among nurses<sup>2</sup>. The occurrence of Achilles tendinitis in nurses was investigated, as well as its relationship to the risk factor of lengthy standing positions<sup>3</sup>. Pain is felt at the onset of any physical activity and subsides with rest; it can also be felt in the morning<sup>4</sup>. Even when walking, there may be persistent agony in the advanced stages<sup>5</sup>. The Achilles tendon is subjected to the highest loads in the body with tensile loads of up to ten times of body weight during running, jumping, roping, and skipping<sup>6,7</sup>. Foot pronation, dorsiflexion, range of motions, altered gait kinematics & kinetics, rheumatological disease, training errors & activity level changes can be causing factors<sup>8</sup>. Tendinosis, peritonitis, retro cranial bursitis & flank rupture can cause pain around the Achilles tendon to intermix with Achilles tendonitis<sup>9</sup>. Some other disorders also give just like pain and signs & symptoms includes Haglund's deformity, posterior talofibular ligament injury<sup>10</sup>. Treatment of Achilles tendinitis depends on how severe your pain and symptoms are and if there is weakness<sup>11</sup>. Non-operative care is first line approach for treating Achilles tendinitis<sup>12</sup>.

Ahmad et al conducted retrospective research in 2017 to examine the fact of obesity in the surgical treatment of Achilles tendon rupture<sup>13</sup>. One researcher investigated the prevalence of work-related musculoskeletal disorders<sup>14</sup>. Randeep Aujla et al conducted a cohort design research to investigate whether there was any difference in functional outcomes between two dynamic regimes of differing duration for acute Achilles tendon rupture<sup>15</sup>.

The objective of the study was to assess the prevalence of Achilles tendinopathy in nurses due to long standing position and its association with other factors resulting in symptoms.

## METHODOLOGY

After approval from Institutional Ethical Review Board, this cross-sectional study was conducted after taking data from the nurses in

different hospitals in Lahore (Mayo Hospital, Services Hospital, General Hospital, Shahdara Teaching Hospital). The sample size was estimated through ROASOFT with a 96% confidence interval and a 5% margin of error. After ethical approval, 110 Nurses from Lahore were recruited for the research. Written informed consent forms were taken from each participant prior to inclusion in the study. Female outdoor & emergency Nurses with Ages between 25-50 years, Job Appointments for more than 3 years in Lahore City were included in the study. Male nurses suffering from systemic illnesses like rheumatological, malignant, or vascular diseases of heel &/or foot, and ICU nurses with a history of trauma, fracture, and surgery were excluded from research. A total of 110 nurses from Lahore hospitals were included in the research. After finding their suitability as per inclusion and exclusion criteria, written consent was obtained from them. Victorian Institute of Sports Assessment-Achilles (VISA-A) Scale was used as an outcome measurement tool<sup>16</sup>. VISA A score ranges from 0-100, the higher the score, there will be least symptoms and vice versa.

**Statistical analysis:** Data was entered into SPSS version 19.0 as qualitative variables were expressed as mean  $\pm$  SD. Frequencies and percentages were calculated for individual items.

## RESULTS

There were 110 female nurses of age range 25-50 years, in which majority were from 25-30 years old. Results show that, 6(5.4%) nurses were able to walk for 11-20 mins, 13(11.7%), 21-30 mins, and 20(18%) could walk more than 30 mins with mild pain. Results show that there were 5(4.5%) nurses can walk 1-10 mins, 9(8.1%) nurses can walk 11-20 mins, 18(16.2%) nurses can walk 21-30 mins, 27(15.3%) can walk more than 30 mins with moderate pain. Results of the case summary show that 39(35.5%) nurses have mild pain, 49(44.5%) nurses have moderate pain & 21(19.1%) nurses have severe pain after walking on flat ground for 30 minutes. Severity of symptoms in terms of likert scale are summarized as table-1. Status of physical activity was given in table-2.

Table 1: Severity of Symptoms with Different Activities

Target activities under consideration	0-2 Severe	3-5 Moderate	6-8 Mild	9-10 No Pain
For how many minutes do you have stiffness in the achilles region on first getting up?	5(4.54%)	18(16.36)	22(20.00%)	65(59.09%)
Once you are warmed up for the day, do you have pain when stretching the achilles tendon fully over the edge of a step?	4(3.63%)	12(10.90)	19(17.27%)	75(68.18%)
After walking on flat ground for 30 minutes, do you have pain within the next 2 hours?	7(6.36%)	22(20.00%)	37(33.63%)	44(40.00%)
Do you have pain walking downstairs with normal gait cycle?	6(5.45%)	15(13.63)	20(18.18%)	69(62.72%)
Do you have pain during or immediately after doing 10 heel raises from a flat surface?	3(2.72%)	13(11.81%)	22(20.00%)	72(65.45%)
How many single leg hops can you do without pain?	5(4.54%)	17(15.45%)	19(17.27%)	69(62.72%)

Table-2: Undertaking sport or other physical activity

Status of Physical Activity	Frequency	Percent
(0)-Not at all	89	80.9%
(4)-Modified training ± modified competition	18	16.4%
(7)-Full training ± competition but not at same level as when symptoms began	2	1.8%
(10)-Competing at the same or higher level as when symptoms began	1	0.9%
Total	110	100%

Total score was classified in table-3 that showed that there was a weak or frail relationship in Achilles tendinitis in nurses due to prolong standing position.

Table-3: Total &amp; Mean Score VISA-A

VISA A Score	Frequency (Percent)
96-100	Healthy 71(64.54%)
61-95	Mild 24(21.81%)
25-50	Moderate 12(10.90%)
0-24	Severe 3(2.72%)
Mean±SD	79.89±3.02

## DISCUSSION

The aim of the study was to gain a better understanding to inspect the prevalence of Achilles tendinopathy in nurses of government hospitals in Lahore. From our investigation, it is found that musculoskeletal issues of lower limbs are common among nurses mainly because of postural default where achilles tendinopathies problems are commonly reported<sup>17</sup>. Prolong working hours & poor work ergonomics badly affect their health condition. There are various questionnaires that can be used for Achilles tendinitis, but in our study, we used VISA-A scale. This questionnaire is reliable and have been used in different languages<sup>16</sup>. Our research results show that 39(35.5%) nurses have mild pain, 49(44.5%) nurses have moderate pain & 21(19.1%) nurses have severe pain after walking on flat ground for 30 minutes. Data indicated that there were 110 total participants, and all were female nurses 110(100%). The range of age from 25-50 years old thus nurses were categorized into three groups, 25-30, 31-40, and 41-50. Most nurses fall into the 1<sup>st</sup> group of age 25-30. Nurses were at a high risk of musculoskeletal disorders (MSDs). Although the prevalence of MSDs of the lower back, upper limbs, neck & shoulders have been reported previously in nursing, few studies have evaluated MSDs of the foot & ankle<sup>18</sup>.

The cross tabulation of Visa- A scale shows that there is a weak or frail relationship in Achilles tendinitis in nurses due to prolong standing position. Mostly falls in the class of no pain to mild pain<sup>13</sup>. Achilles tendinopathy is not always due to prolong standing position, it can be due to running, physical activity, overuse, or other factors, so correction is recommended<sup>19</sup>. We have observed that there were mainly work related thus it is compulsory to know the importance of effective & proper ergonomics design in nurses' practice in order to prevent Achilles tendinitis & other problems that grow with time & can later cause long term disability. After understanding the need of adopting ergonomics principles in daily life, we can easily know, how to prevent pain or injury<sup>20</sup>.

There are some studies which have reported the findings about plantar fasciitis from Pakistan. Hashmi et al reported in 2020, the prevalence of plantar fasciitis using, plantar fasciitis pain scale (PFPS) in female teaching professionals. They found no significant relation between BMI, standing hours and Plantar fasciitis. Physical activities were affected by the condition<sup>21</sup>.

**Limitations:** This study was not applicable worldwide because data collection was done in selected hospitals of Lahore, so there can be information assortment inclination. The examination was directed in a constrained region & restricted time so the outcomes could be consented effectively.

## CONCLUSION

We concluded that there was a weak relationship in Achilles tendinopathy in nurses due to prolong standing position. Most of the population falls between mild to moderate pain categories. There was a weak association among age & duration of pain among the female nurses.

**Authors' Contribution: ML&WP:** Conceptualized the study, analyzed the data, and formulated the initial draft, **DH&MAA:** Contributed to the histomorphological evaluation, **MA,ZMB&FA:** Contributed to the analysis of data and proofread the draft

**Conflict of Interest:** None to declare

**Financial Disclosure:** None

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