

Research Article

# Prevalence of Achilles Tendinopathy in Building Construction Workers

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## I N F O

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## A B S T R A C T

**Background:** Achilles tendinopathy is a common type of injury among building construction workers. Construction work is done by both young people and adults. They keep working until their point of exertion not realising the intensity of the injuries caused internally. This study aims to find the prevalence of Achilles pain among building construction workers.

**Objective:** To find the clinical severity of pain in the Achilles tendon among building construction workers.

**Method:** The study group consisted of 75 building construction workers (45 males and 30 females) aged between 22 and 45 years who had been working for 6 or more years and suffered from Achilles tendon pain. VISA-A questionnaire was used to analyse the severity of pain in the Achilles tendon. Each subject was given the questionnaire and according to the scores, the results were calculated.

**Result:** The findings revealed a significant relationship between building construction workers and Achilles tendon pain with p value < 0.0001.

**Conclusion:** The study showed that the building construction workers suffered from Achilles tendon pain.

**Keywords:** Building Construction Workers, Achilles Tendinopathy, Overuse Injury, VISA-A Questionnaire

## Introduction

The Achilles tendon is considered to be one of the most important parts of the body for building construction workers. They have to undergo excessive physical activity involving prolonged standing hours, repeatedly going upstairs and downstairs, etc. Given the high physical exertion, including repetitive, prolonged standing and walking, workers are prone to lower extremity musculoskeletal pathology.

Studies of Achilles tendinopathy in building construction workers are lacking. The main function of the Achilles tendon is plantar flexion of the foot at the ankle joint and it is used for pushing off during walking, running and jumping.<sup>1</sup>

Building construction workers experience various medical problems most of which are the same as those of other high-level athletes. Construction workers require extraordinary flexibility and movement ability, which in turn, need controlled power and endurance. They perform highly

demanding activities, with a lifetime injury incidence of up to 90%. Frequent occurrences of cumulative microtrauma may cause physiological changes that can damage the Achilles tendon.<sup>2</sup>

Though Achilles tendinopathy generally affects physically active middle-aged men, its occurrence has also been seen in men and women of different ages who have been actively working for many years.<sup>3</sup> It may cause pain during activities like walking and driving.<sup>4</sup>

Pain beginning with morning activity is the main symptom of Achilles tendinopathy. Discomfort and tenderness are accompanied by sharp pain and burning sensation in this condition. Pain is generally aggravated during activity and is relieved after rest. Local tenderness, swelling, tendon thickening, and warmth are common.<sup>5</sup>

Construction workers work for long hours with tasks that involve standing for a long duration of time and active movement of the lower leg, which makes them prone to lower extremity musculoskeletal problems. Achilles tendinopathy is known to be brought on by tendon pain, which is linked to diminished productivity and a lower quality of life. The assessment of the intensity of pain will help to decide the treatment for the workers which in turn will help to improve the quality of life.

### Materials and Method

This observational analytical study was conducted between March 2022 and February 2023 at Krishna Institute of Medical Sciences (Deemed to be University), Karad. The study included 75 participants. The inclusion criteria for these participants were building construction site workers who had been working actively for the last five-ten years and belonged to the age group of 22-45 years. Both male and female participants were included. Exclusion criteria were individuals with lower limb pain with or without radiating pain, any other congenital deformity in the lower limb or ankle, any history of being diagnosed with musculoskeletal conditions or any previous surgeries on the ankle, calf muscle, or Achilles tendon.

The study was conducted in the form of an online survey. The purpose and procedure were explained to the participants. An online survey form was created along with a consent form and the subjects were asked to fill out the provided questionnaire on their smartphones. The participants who gave informed consent for participation were included in the study. The standardised questionnaire VISA-A was used.<sup>6</sup> A link to the form was circulated on various social media platforms and was emailed to the participants. The participants were explained about the purpose of the study. Each participant filled out the questionnaire, after which the score was calculated and the data were recorded for

the individual workers. Questionnaires were collected online. The total score was calculated and analysed using Instat software.

### Ethical Committee Clearance

Ethical clearance was obtained from the Institutional Ethics Committee, Krishna Institute of Medical Sciences (Deemed to be University), Karad.

### Result

The age distribution of participants has been shown in Table 1. It shows that 46 subjects (26 male and 20 female) were symptomatic with Achilles tendinopathy. The gender distribution of participants has been described in Table 2 which reveals that the association between pain and gender was not significant.

**Table 1. Age Distribution of Participants (N = 75)**

Age Group (In Years)	With Achilles Tendinopathy	Without Achilles Tendinopathy
22-30	9	6
31-38	15	8
39-45	22	15

**Table 2. Gender Distribution of Participants (N = 75)**

Gender	n (%)	Pain		t Value	p Value
		Mean	SD		
Male	45 (60)	88.92	8.14	0.3939	0.6955
Female	30 (40)	89.90	8.92	0.3939	0.6955

**Table 3. Distribution of Participants as per the Number of Working Years (N = 75)**

Working Years	No. of Workers	No. of Workers Who Had Pain	Percentage of Workers Experiencing Pain
5	11	8	17.39
6	20	14	30.43
7	10	4	8.70
8	16	9	19.57
9	10	6	13.04
10	8	5	10.87

Table 3 shows the distribution of subjects on the basis of the number of years for which they had been working. The distribution of participants as per the pain intensity score calculated using the VISA-A Questionnaire has been shown in Table 4.

**Table 4. Distribution of Participants on the basis of the Intensity of Pain as per VISA Score (N = 75)**

VISA Score	Intensity of Achilles Tendon Pain	No. of Workers	Percentage of Workers with Achilles Tendon Pain
100	None	29	39
90-99	Mild	33	43
80-89	Moderate	8	11
< 80	Severe	5	7

**Table 5. Prevalence of Achilles Tendon Pain in Building Construction Workers**

Total No. of Workers	Pain		t Value	p Value
	Mean	SD		
75	89.36	8.41	72.78	< 0.0001

Table 5 revealed that there was an extremely significant relationship between construction work and Achilles tendon pain.

### Discussion

This study was carried out to determine the prevalence of Achilles tendinopathy in building construction workers in the city of Karad. Various studies have been conducted on ankle, sprain, and knee ligament injuries among workers but very few studies have been conducted on the clinical severity of Achilles tendinopathy pain among them.

The prevalence rate was highest in this observational analytical study. The observed results were statistically significant ( $p < 0.0001$ ). Similar research on Achilles tendon injuries among handball players revealed that 56% of participants reported no pain, 42% reported mild pain, and 2% reported moderate pain in the Achilles tendon.<sup>6</sup>

The ages of the participants were divided into three ranges: 22-30, 31-38, and 39-45 years. Out of the 75 subjects, 15 were in the age group of 22-30 years, 23 were in the age group of 31-38 years, and 37 were in the age group of 39-45 years. The prevalence of Achilles tendinopathy was higher in the age group of 39-45 years and the number of participants in this group was also more as compared to the other groups. 46 workers were suffering from Achilles tendon pain in total. The high prevalence was because of work involving long standing hours and strenuous physical activities as well as bad ergonomic habits.

Our study has shown that males were more affected by this condition as compared to females. A similar study has shown that males have stiffer tendons as compared to females, which may be the reason for a higher injury rate in males.<sup>7</sup>

In our study, pain was experienced by 8 workers working since 5 years, 14 workers working since 6 years, 4 workers

working since 7 years, 9 workers working since 8 years, 6 workers working since 9 years, and 5 workers working since 10 years.

The building construction workers are unaware of the right footwear for different ground surfaces. The workers in our study used a variety of shoe surfaces and worked on various surfaces, so it is likely that they experienced pain from many years of repetitive work.

This study will be useful for workers who work for longer durations and have work involving high-intensity activities of the lower limb.

### Conclusion

This study shows that Achilles tendinopathy is common among building construction workers, which is quite alarming. The workers must be made aware of ways in which they can reduce and manage the pain so that their quality of life is improved.

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