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Original Article

Prevalence and Association of Iliotibial Band Tightness with Daily Sitting Hours and Type of Sitting Surface Among Tailors of Sahiwal, Pakistan

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Abstract

Background: The IT band is a thick band of connective tissues along the outside of the thigh, that stabilizes the knee during movement. Tailors spend long hours sitting in fixed positions while working leading to tightness in the IT band. It causes pain mostly around the lateral thigh, mobility, and flexibility issues. Ober's test was used to evaluate tightness in the band.

Objective of study: To determine the Prevalence and Association of Iliotibial Band Tightness with daily sitting hours and type of sitting surface among tailors of Sahiwal, Pakistan.

Materials & Methods: A descriptive cross-sectional study was conducted from various setups of Sahiwal. A non-probability convenient sampling technique was used. A total of 300 (male and female) tailors were evaluated by an Ober's test, self-designed questionnaire, NPRS, and. Data was analyzed by using SPSS version 26.

Results: Findings exposed that the prevalence of IT band tightness was 48.3%. out of which 35.00% had hard sitting surfaces and 13.33% had soft surfaces. 48.33% showed positive Ober's test in which 26.00% were males, and 22.33% were females. 54.3% were sitting for 6-7 hours while 45.7% were sitting for 8-10 hours. NPRS scoring showed (49.7%) had no pain, (21.7%) had mild pain, (21.0%) had moderate pain, and (7.7%) participants had severe pain. A significant association of Iliotibial band tightness was found with daily sitting hours and type of sitting surfaces having a p-value of 0.022 and 0.001 respectively.

Conclusion: Iliotibial band tightness is a frequent condition encountered by tailors. Its occurrence is significantly influenced by the duration and type of sitting surface. Sitting for more than 6 hours daily on a hard surface critically increases the risk of IT band tightness among tailors.

1 Introduction

The Iliotibial band is a non-elastic collagen thick band composed of connective tissue that crosses laterally along both the hip and knee joints. (1) The IT band originates from the two main muscles tensor fascia lata(TFL) and Gluteus. The tensor fascia lata attaches to the tibia bone while the Gluteus Maximus is located in the hip. The IT band supports and stabilizes the knee joint during activities such as running, cycling, and in a prolonged sitting position.

IT band tightness at the lateral femoral condyle is the result of repeated flexion and extension of the knee joint. (2) Muscular weakness in Hip Abductors is considered to be responsible for the establishment of IT band syndrome in runners. (3, 4) It also occurs due to anatomical factors and poor biomechanics such as excessive foot pronation and poor knee alignment. Reduced medial joint space develops genu Varus deformity which exerts tension on the IT band. (5)

Sitting surfaces also contribute to IT band tightness. Soft, sagging chairs encourage slouching so avoid them. Sitting on a firm, supporting chair with good lumbar support and adjustable height can help maintain proper posture and minimize stress on the IT band.

ITBFS causes about 15% of all knee overuse injuries. (6) IT band tightness develops in runners, rowers, bikers, field hockey, skiers, cyclists, and players due to repetitive knee motion.(7) Iliotibial band tightness is quite common in ballet dancers. The dancers twist their knees outward to compensate for extreme hip external rotation and abduction. This pulls the iliotibial band posteriorly over the lateral femoral epicondyle.(8)

For diagnosis of IT band tightness, along with the physical examination and the patient's medical history. Imaging studies such as X-rays and MRIs rule out other related conditions in the associated area but these tests are not necessary for the diagnosis of the IT band tightness Lateral knee soreness, above the line of the joint, and below the epicondyle is observed by physical examination. (7) The most commonly used tests to assess IT band tightness are Ober's test, and the modified Thomas and Trendelenburg test.(9)

The treatment protocol includes oral NSAID, Corticosteroids via phonophoresis, stretching of the IT band, Fascia Latae, and Gluteus Medius. (10) IT band shortening causes lower back pain. (11) Limited flexibility may cause neuromuscular symptoms that can reduce strength, stability, and endurance. (12)Treatment for IT band tightness involves RICE (Rest, Icing, Compression, Elevation) therapy. This therapy is usually used during the acute phase to reduce inflammation and pain. In physical therapy stretching and strengthening exercises are also recommended. Gentle stretching improves flexibility and reduces inflammation around surrounding muscles.(13)

Prevention and management reduce the risk of IT band tightness such as stretching the IT band and surrounding muscles to reduce tightness and improve flexibility. Take breaks and move around 30-60 minutes to break up static sitting and improve circulations. Strengthening exercises of the glutes, core, and hip muscles can provide better support and reduce stress on the IT band. Maintain good posture and avoid crossing legs for an extended period. (14)

Various Bio-mechanical factors are associated with IT band syndrome that are: Weak hamstring muscle strength as compared to quadriceps muscle strength on the ipsilateral side, increased knee internal rotation and landing forces, and hyper-extension of the knee joint. Greater Hip adduction is considered to increase ITB strain but biomechanics rationale suggests that hip strengthening for ITBS is ineffective.(15, 16)Central pain and local hyperalgesia can be reduced by performing loading exercises such as Intensive hip strengthening exercises and hip strengthening exercises also reduce pain in individuals with iliotibial band syndrome. (17)

In tailors, IT band tightness can be caused by prolonged sitting, the type of sitting surface, and limited leg and hip movement. Tightness and tension in hip flexors develop due to sitting for an extended period ultimately affecting the IT band. Moreover, sitting cross-legged or with the legs in a bent position can lead to imbalances in the hips and legs, which can lead to Iliotibial band tightness. In tailors, the risk of IT band tightness can be minimized by maintaining and taking frequent breaks from sitting.

The study focused to investigate the prevalence and association of IT band tightness with daily sitting hours and type of sitting surfaces in tailors. Exploring the association between sitting surface, sitting hours, and IT band tightness in tailors can provide insights into ergonomic considerations in their work environment. Research findings can inform the development of targeted interventions and ergonomic guidelines aimed at reducing IT band tightness and mitigating associated health risks among tailors.

2 Material and Methods

A descriptive Cross-Sectional Study was conducted. The Data was collected from tailors' centers of Sahiwal. Six months were taken after the acceptance of the synopsis. According to the inclusion criteria, a sample of male and female tailors were included in the study. 300 individuals were calculated by using the 47% prevalence of IT band tightness from the former study. (7)The sample size was calculated using the epitool sample size calculator at a confidence level of 95% at a desired precision of 0.05. A non-probability convenient sampling technique was used. Both male and female tailors of the age range between 25-60 years who sit 5-6 hours daily:(7) Exclusion Criteria comprised of tailors with diabetes mellitus, hip arthroplasty, pressure sores, and recent fracture of lower limb(7)

Two outcome measuring tools were used, the numeric pain rating scale and Ober's test. The numerical Pain Rating Scale (NPRS) is a commonly used tool in healthcare to measure and assess pain intensity. NPRS is straightforward and helps individuals rate their pain on a numerical scale rating from 0 to 10. Zero presents no pain while 10 represents the worst pain. NPRS shows showed high reliability for total score ICC (inter-class correlation coefficient) of 2.1- 95% and CI (confidence interval) of 0.86-0.96.(18, 19)

Ober's test is used in Physical Examination to identify tightness of the iliotibial band. During this test patient lies on his/her side with the unaffected leg on the bottom with their shoulder and pelvis in line. The lower hip and knee can be flexed position to take out any Lordosis of the lumbar spine. If the patient cannot adduct his leg toward a neutral position then the test is positive.(20) Researchers have approved Ober's test as an indirect method of measuring ITB length and also assess the reliability of the measurements obtained. Data were evaluated using the intraclass correlation coefficient (ICC). The ICC values were analyzed as 0.94 for Intraclass, and 0.73 for inter-class(21)

Data was collected after obtaining informed consent from the patient. For Data Analysis SPSS 26.0 was used for evaluating and tabularizing Data.

3 Results

This study involved 300 tailors from Sahiwal, Pakistan, with an age range of 25-60 years and a mean age of 35.48 ± 13.583 years. The study found a significant prevalence of iliotibial (IT) band tightness among tailors, linked to their sitting habits and type of seating surface. Among the participants, 48.3% showed positive results for Ober's test, indicating the prevalence of IT band tightness.

Table 1: Sitting Habits and Pain Location

Category	Frequency	Percent
Sitting Surface Adopted		
Hard	188	62.7%
Soft	112	37.3%
Number of Sitting Hours		
6-7 hours	161	53.7%
8-10 hours	137	45.7%
Location of Pain		
Lateral leg	95	31.7%
Anterior leg	47	15.7%
Posterior leg	52	17.3%
None	106	35.3%
Nature of Pain		
Intermittent	66	22.0%
Constant	35	11.7%
Episodic	48	16.0%
None	151	50.3%

Table 2: Level of Pain Among Participants

Level of Pain	Frequency	Percent
No Pain	149	49.7%
Mild Pain	65	21.7%
Moderate Pain	63	21.0%
Severe Pain	23	7.7%

Table 3: Association Between Sitting Surface and Ober's Test

Sitting Surface	Positive Ober's Test	Negative Ober's Test	P-value
Hard	105	83	0.001
Soft	40	72	
Total	**145**	**155**	

A significant association was found between the type of sitting surface and IT band tightness, with a p-value of 0.001. Tailors sitting for longer durations were more likely to have IT band tightness, as shown by a significant association between sitting hours and IT band

tightness with a p-value of 0.022. The study also reported a range of pain levels, from no pain to severe pain, highlighting the impact of IT band tightness on the quality of life of the participants.

Table 4: Association Between Sitting Hours and Ober's Test

Sitting Hours	Positive Ober's Test	Negative Ober's Test	Total	P-value
6-7 hours	70	93	163	0.022
8-10 hours	77	60	137	
Total	**147**	**153**	**300**	

Table 5: Association Between BMI and Ober's Test

BMI	Positive Ober's Test	Negative Ober's Test	P-value
Underweight	13	16	0.001
Healthy weight	80	105	
Overweight	52	34	
Total	**145**	**155**	

These results indicate a strong association between IT band tightness and prolonged sitting hours, particularly on hard surfaces. The data suggest that tailors who sit for extended periods, especially on hard surfaces, are at a higher risk of developing IT band tightness, which may contribute to discomfort and pain. Proper ergonomic interventions and regular breaks are recommended to mitigate these risks.

4 Discussion

This study was conducted to find the Prevalence and Association of Iliotibial Band Tightness with Daily Sitting Hours and Type of Sitting Surface among Tailors of Sahiwal, Pakistan. 300 tailors were involved in the current study in which 48.3% showed positive Ober's test while 51.7% showed negative results. IT band tightness is characterized as a friction syndrome and is usually present in musculoskeletal patients. When ITB rolls over alongside the lateral femoral then it causes friction syndrome. (22)

In 2023, Pakeeza Seemal, Tooba Ashraf, and Fiasal Mubeen conducted an observational study to determine the prevalence of IT band tightness in bankers of Sargodha. 382 bankers (40.58% males, and 59.42% females) were examined for IT band tightness using Ober's test, NPRS, and a self-designed questionnaire. The result showed that 43.5% of bankers had IT band tightness. 43.6% of the participants showed positive obers test. In our study, 300 tailors were observed using Ober's test, NPRS, and a self-designed questionnaire, 145 (48.33%) showed positive Ober's test. In this previous study, cross-tabulation of the sitting surface and Ober's test showed a p-value of 0.001. Our research stands in agreement with this previous study because a similar association is found between the sitting surface and the ITB tightness with a p-value of 0.002. In analyzing the outcome of this study, it was observed that there is a high prevalence of IT band tightness in tailors. Current research clarified a high prevalence (48.3%) in tailors due to prolonged sitting hours. Previous studies revealed that there was a 1.6%-52% incidence of this syndrome. (23)

In 2022, Iqra Arif, and Nadeem Asghar, conducted an observational study to determine IT band tightness in office workers in Gujranwala. 383 office workers, (61.88% male, 38.12 female) were observed using Ober's test. Both genders aged 20-60 years were included in this study, with 5-8 sitting hours and 10-15-minute breaks.(7) In this study 383 office workers, 45.69% showed positive Ober's test in which 68 females while 107 were male participants. 54.51% showed negative results in which 130 were male participants and 78 were female office workers. The P-value was < 0.05 which showed the study was significant. 51% of workers had 6 sitting hours of which 6.78% showed IT band tightness. 33.15% of workers sat for 7 hours in which 10.70% suffered IT band tightness. 53.52% of participants had 8 sitting hours of which 34.20% of these had tight IT bands. The correlation between sitting hours and IT band tightness showed a significant p-value (p=0.000). The present study shows a strong association between sitting hours and Ober's test with a p-value of 0.022. Most of the tailors experienced dull and cramping pain at the lateral aspect of the knee. (24)

In 2014, Bhura, Paras A.; Bhagat, an observational study was conducted on IT band tightness in low back pain. 200 participants were divided into two groups age in which Group B had 100 normal healthy participants while Group A had 100 participants with low back pain between 20-45 years. Ober's test was used to assess IT band tightness. Abnormal body mechanics are usually caused by defective postures leading to IT band tightness. IT band tightness in turn results in low back pain. Tightness in an iliotibial band in males with low back pain

was more common than in females due to their working environment such as restaurants, offices, hospital wards, etc. The current study also agreed that IT band tightness in male tailors (26.00%0 is high in contrast to female tailors (22.33%).

In 2018, Panse, Rasika; and Diwakar conducted a cross-sectional study on impairments and risk factors of ITBFS among basketball players.12 players out of 60partcipants had ITBFS between ages 12-23 years (male, female). The prevalence of this syndrome was 16.66%. Risk factors of ITBFS include improper warm-up and cool-down routines, running on hard surfaces, change in intensity, and inadequate stretching. while a recent study shows a 48.3% prevalence of IT band tightness in tailors which means that the prevalence of IT band tightness in tailors is higher than in basketball players.

5 Conclusion

The study concluded that the incidence of ITB tightness is significantly influenced by the duration and type of sitting surface. Sitting for more than 6 hours daily on a hard surface critically increases the risk of IT band tightness among tailors. Sitting on a firm, supporting chair with good lumbar support and adjustable height can help maintain proper posture and minimize stress on the IT band.

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