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Prevalence of Iliotibial Band Tightness in the Tailors

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ABSTRACT

Background: Musculoskeletal disorder are group of disorder that affects the musculoskeletal system involving nerve, tendon muscles. Muscle tightness leads to an imbalance in acting joints and long term leads to pain. Tightness in muscles leads to reduce range of motion so there is need to aware people about risk factors due to sedentary lifestyle. Tailors have to sit in sitting posture for many hours with sitting in awkward posture with flexion of neck, lumbar and hip flexion lateral rotation and abduction and ITB mainly helps in hip flexion lateral rotation and abduction, so hence aim is find out the percentage of iliotibial band tightness in tailors.

Objectives: to determine the iliotibial band tightness in tailors

Methodology: in this observational study, 171 tailors aged between 25-45 years from latur were taken by convent sampling. Ober's test is used to assess the iliotibial band tightness.

Results: Out of 171 participants, 133 (78.8%) had tightness including 106 males and 33 females, while 38 (22.2%) showed negative for ITB tightness in tailors with 6 female and 32 male.

Conclusion: This study discovered that tailors who were sitting for more than eight hours a day, 78.8% of them had iliotibial band tightness.

INTRODUCTION

Musculoskeletal disorder (MSD) ensuing from exposure to various workplace factors is amongst the chronic public health challenges, and it mainly affects global workforces. Many employees report potential adverse health outcomes related to the situation, such as physical injury, disability [1-3]and decline in quality of life.[1,4,5] The 2016 Global Burden of Disease (GBD) report also indicates that musculoskeletal disorders were the leading cause of disability-adjusted life years (DALYs) (61.6%)[6] which is the second potential reason for years lived with disability.[7]

A study reported neck, shoulder, waist wrist, elbow, thigh, knee, and ankle musculoskeletal disorder to involve 49.7%, 41.6%, 55%, 46%,11.4%, 25%, 43% 42.66% of tailors respectively. MSD were found to involve pain in the waist 65% of the participants and neck of 64.4% the lowest frequency of complaints was associates with elbow pains [12% of the sample] pain in the shoulder observed is 56% of the cases ,wrist in the 53.33%, knee in the 53.33%, ankle in the 43.33% and thigh in the 31.33%.[8]

Postural faults have their origin in the misuse of capacities provided by the body not in the structure and function of the normal body however, postural faults that persist can give rise to discomfort pain or disability[9-13]. Many musculoskeletal complaints can be attributed to stress that occurs from repetitive or sustained activities when in habitual faulty postural alignment non ergonomic work posture can cause many disorder such as back pain and other disorders of skeletal muscles[14-17]

The tensor facia late [TFL] muscle originates laterally than the Sartorius muscle. Its starts on the anterolateral lip of the iliac crest. The muscle fibres extend only about one fourth of the way down the lateral aspect of the thigh before inserting into the iliotibial band [IT band]. The IT band or IT tract is the thickened lateral portion of the fascia late of the hip and thigh. . The IT band attaches proximal to the iliac crest laterally to the TFL muscle. After there the it band attaches proximally to the iliac crest lateral to TFL muscle. . After the tensor attaches to the IT band, the IT band continues distally on the lateral thigh to insert into the lateral condyle of the tibia. The tensor attaches to the IT band, the IT band continues distally on the lateral thigh to insert into the lateral condyle of the tibia. The TFL muscle is considered to flex, abduct, and medially rotate the femur at the hip[18], although the TFL's contribution to hip abduction may be dependent on simultaneous hip flexion. The most primarily contribution of the TFL muscle may be in maintaining tension in the IT band. The IT band assists in relieving the femur of some of the tensile stresses imposed on the shaft by weight-bearing forces[19,20].Because bone more effectively resists compressive than tensile stresses, reduction of tensile stresses is important in maintaining integrity of the bone. Although the importance of tensor facia lata and iliotibial band is controversial evidence suggest they contribute to hip stability[21].

A tight IT band has been implicated in several problem related to knee, including patellofemoral syndrome and iliotibial band friction syndrome. The ober's was described in 1935 as to assess the relation between ITB tightness and low back pain and sciatica. As described by Ober[22].

Tailoring involves monotonous, highly repetitive tasks like cuing, assembly, pressing and finishing, performed in a sitting working posture with upper back curved and head bent over the sewing machine. Working in this awkward posture for a long duration increases the chance of developing work related musculoskeletal disorder [WRMSD] in them[23]. The tailoring industry of India is an unorganized sector, mostly run by private establishments. It provides employment for both men and women, majority from the lower socioeconomic classes. The employees of this industry hardly ever benefit from occupational health-and-safety provisions They lack any type of social security, so their ill-health and poverty go hand-by-hand and create a stupendous pressure from which they can hardly come out[24] when WMSD developed in tailors then they experience pain swelling, stiffness tightness leads to reduce mobility and difficulty in ADLS[25]

Tightness is thecommonly used in the clinical and fitness setting to describe restricted motion due to adaptive shortening of soft tissue, in a particular mild muscle shortening. Muscle tightness is also used to denote adaptive shortening of the contractile and non contractile elements of muscle.[26]

Numerous studies have demonstrated the significant prevalence of muscular tightness in individuals with sedentary lifestyles and extended sitting hours Being sedentary or not participating in any physical activities lead to tighten and shorten muscle. Muscle become sore when tension occurs in under used muscle, which result in muscle shortening elongation of muscle by providing oxygenated blood by them can alleviate the tightness[27]. Physical activities lead in the circulatory system to provide oxygen reach blood throughout the whole body muscle when sedentary the muscle can go into the tightness due to lack of oxygen.[27]

NEED OF STUDY

There are many work related activities like working in same position for longer period, working in awkward posture may lead to musculoskeletal disorder among the tailors. The nature of tailors is closely related to working in sitting position for prolonged time at least 7-8 hours per day. Muscle become sore when tension occurs in under used muscle which result in muscle shortening. Tailoring involves regular and highly repetitive task performed in sitting posture, so they are more prone to musculoskeletal disorder sitting posture contains hip flexion, abduction and medial rotation, TFL is considered to flex, abduct, medial rotation of femur at hip. Prolonged this posture may leads to tightness which leads to decrease in their work performance. Postural faults occurs due to in the misuse of capacities provided by the body, not in the structural and functional however, postural fault that can persist give rise to discomfort pain or disability. Many musculoskeletal complaints can be attributed to stress that occurs from repetitive activities when in habitually faulty postural alignment. As there are less literature found on specific it tightness in tailors this study aimed to find out prevalence of ITB tightness in tailors.

REVIEW OF LITERATURE

1. **AnkitaMane;Trupti Yadav conducted a study on "prevalence of liiotibial band tightness in prolonged sitting"** in this study 60 subjects were taken with working 7 hours or more per day between age group 20-60 years, were included which considered of 42% of female and 58% of male respectively. Thus tests such as ober's test straight leg raise test were performed. By this study it was concluded that there was 47% of prevalence of ITB tightness in subject who were being sedentary for more than 7 hours per day with p value of <0.0001.
2. **Tesfaye Hambias Mekonnen, Dawit Getachew Yenealem et al conducted study on physical environment and occupational factors including work –related neck and shoulder pains among self-employment tailors of informal sectors in Ethiopia 2019: result from community based cross sectional study** who conducted a cross sectional survey on 422 tailors selected with systemic random sampling technique. nordic musculoskeletal scale was used to measure pain in neck and/or shoulder, and the questionnaire are pretested and administered by interviewers work related factors such as working posture, rest break training in safety and health and the availability of adjustable chairs at work place were assessed and concluded that Work-related neck and/or shoulder pain induced by physical factors of the work environment among self-employed tailors is pervasive in Ethiopia. Work experience, working posture, prolonged sitting, lack of adequate light and rest break were risk factors associated with neck and shoulder pain. Efforts to curb the conditions, therefore, need to impalement diverse approaches addressing the physical environment and occupational factors. We also promote the integration of schemes for the effective use of rest breaks into health and safety programs in the workplace.
3. **William E. Melchione, M. Scott Sullivan, conducted a study on Reliability of Measurements Obtained by Use of an Instrument Designed to Indirectly Measure Iliotibial Band Length** Ten consecutive patients between the ages of 16 and 43 years who were experiencing anterior knee pain and were being treated. The modified Ober's test utilized the hip and knee positions that occur during the push-off phase of the gait cycle and concluded that method to indirectly quantify the length of the ITB using a modified version of Ober's test. A pelvic level, a fluid-filled monometer, and two universal goniometer were used to maintain subject position and to record the measurement. Repeated measurements obtained by the described method demonstrated good reliability between testers and excellent reliability within testers when taken on patients with anterior knee pain.
4. **Paras ABhura; Camy A Bhagat conducted study on a study of iliotibial band tightness in postural low back pain**. In which there were two groups. GroupA included 100 subjects with postural low back pain with age group between 20-45 years and B included normally healthy individual. Both group were asses for bilateral ITB tightness using modified ober's test in the hip abduction angle was measured using bubble inclinometer. The data was collected and analyzed conclusion of the study shows ITB tightness is present significantly in postural low back pain. Therefore ITB tightness assessment should be always included in the assessment format of low back pain.

5. **Pakeeza Seemal , Tooba Ashraf , Faisal Mubeen , et.al,conducted study on determining the Prevalence and Association of Iliotibial Band Tightness with daily sitting hours and type of sitting surface among Bankers of Sargodha, Pakistan**. In this descriptive cross-sectional study, 382 bankers were selected from various setups of Sargodha through convenient sampling technique from May to August 2022.A self-designed questionnaire, NPRS andOber's test were used to estimate the prevalence and associated risk factors of ITB tightness. Data was analyzed by using SPSS version21.and the conclusion is Iliotibial band tightness is a common condition experienced by bankers. Duration and type of sitting surface significantly influences its occurrence. Sitting for more than 6hours daily on an office chair greatly increases the risk of developing ITB tightness among bankers. Inducing short breaks during sitting hours and modifying the sitting surface will be helpful to improve working ability of bankers.
6. **Iqra Arif, Nadeem Asghar, Farooq Islam,et,al,conducted a study on Prevalence of iliotibial band tightness in office workers**. in this study 383 office workers aged between 20 – 60 years from district Gujranwala, Pakistan were included using non probability judgmental sampling technique. Validated proforma was used for demographic information. Ober's test was applied to check ITB tightness. Data were analyzed on SPSS 21 and the conclusion is : Office workers had high prevalence of ITB tightness and was higher in males than females. Association between occupation, duration of work of participants and Ober's test was significant while the association between surgical and medical history was not significant.
7. **Brian Noehren, Anne Schmitz, Ross Hempel, et.al conducted a study on Assessment of Strength, Flexibility, and Running Mechanics in Men With Iliotibial Band Syndrome**. In this study thirty-four men participated (17 healthy, 17 ITBS). Hip strength was measured with a handheld dynamometer, and iliotibial band length was assessed using an inclinometer while performing the Ober's test. Kinetic and 3-D kinematic data were obtained during running. Kinematic variables of interest included frontal and transverse plane hip and knee joint angles and the conclusion is Our results suggest that intervention strategies that target neuromuscular control of the hip and knee may be indicates for male with ITBS.

AIMS AND OBJECTIVES

AIM

- To find out the percentage of grade of tailors affected by iliotibial band tightness.

OBJECTIVES

- To find out iliotibial band tightness in tailors by using Ober's test.

RESEARCH QUESTION

What is the percentage of grade of iliotibial band tightness in tailors?

MATERIAL AND METHODOLOGY

- **Study design**- observational study
- **Sampling technique**- convenient sampling
- **Study area**- tailoring shops in and around latur.
- **Study duration**-6 months study.
- **Sample size**- n= 171
- $n = \frac{Z^2 P(1-P)}{d^2}$

$$N = \frac{1.96 \times 0{,}05 (1 - 0.050.)}{0.010}$$

$$\frac{3.8 \times 0.10 \times 0.045}{0.010}$$

$$\frac{}{171}$$

MATERIAL

- Pen
- Screening form

- Yoga mat
- Consent form

OUTCOME MEASURES

OBER'S TEST[28,29]

- It assesses the tensor fascia late (Iliotibial band) for tightness.
- The patient will lie in side lying position with lower leg flexed at the hip and knee for stability.
- The examiner then will passively abduct and extend the patient upper leg with knee straight or flexed to 90 degrees.
- The examiner slowly lowers the upper leg and if contracture is present the leg will remain abducted and does not fall on the table.
- When doing this test it is important to extend the hip slightly so that iliotibial band passes over the greater trochanter of femur.
- To do this examiner stabilizes the pelvis at the same time to stop pelvis from falling backward Reliability---- 0.94[10]

INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA:

- Gender both male and female.[8]
- Working duration more than 3 months[8].
- Tailors who work on pedal chair
- Age group 20-45 years.[8]
- More than 8 working hours per day.[8]

EXCLUSION CRITERIA:

- Recent fracture of lower limb.[8]
- Any pain due to pathology in lower limb.[8]
- radicular pain in lower limb.[8]
- Soft tissue injury of lower limb.[8]
- History of fracture and implant.

PROCEDURE

The study permitted by institutional ethics committee of SVSS Latur College of physiotherapy for the use of human subjects in research. Informed consent was taken from all the participants. After explaining the procedure.

The subjects were taken from tailoring shops in and around Latur. Subjects were screened according to inclusion and exclusion criteria. These subjects were tailors and they had been informed about the study and procedure.

Iliotibial band tightness of dominant leg was assessed using ober's test. The patient will lie in side lying position with lower leg flexed at the hip and knee for stability. The examiner then will passively abduct and extend the patient upper leg with knee straight or flexed to 90 degrees. The examiner slowly lowers the upper leg and if contracture is present the leg will remain abducted and does not fall on the table. When doing this test it is important to extend the hip slightly so that iliotibial band passes over the greater trochanter of femur. To do this examiner stabilizes the pelvis at the same time to stop pelvis from falling backward. . Data was collected and analysed and statistical analysis was done.

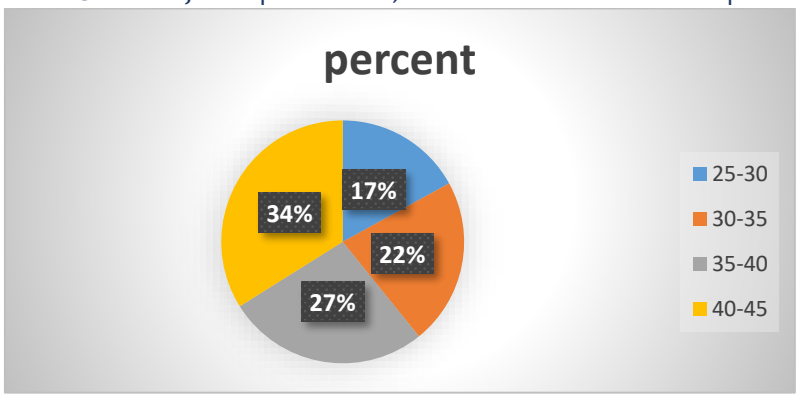
DATA ANALYSIS AND INTERPRETATION

Data was analysed by using descriptive statical analysis.

Age	Frequency	Percent
25-30	29	17
30-35	38	22.2
35-40	46	26.9
40-45	58	33.9
Total	171	100

TABLE 1 : no. of participants as per age

Table 1 shows no of participants included in this study as per the age . in 25-30 year of age total 29 participants were included which is 17% participants .in 30-35 years of age 38 participants were included which is 22.2%. in 35-40 years of age 46 participants ere included which is 26.9%. in 40-45 years of age 58 participants were inciuded which is 33.9%.

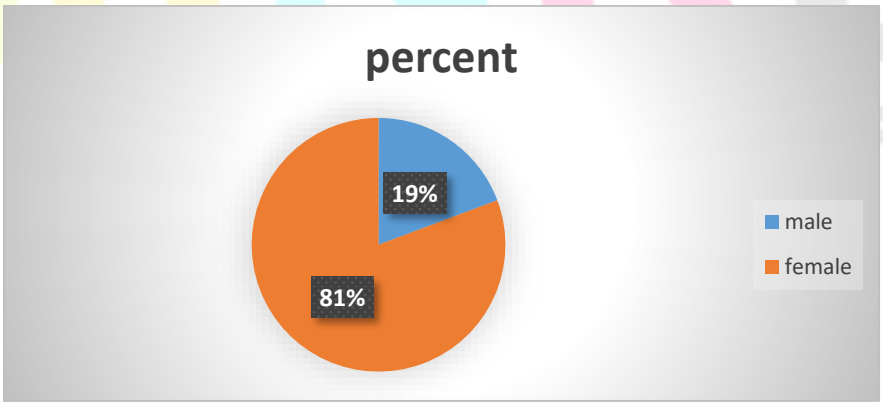


GRAPH 1 ; no of participants as per age

Gender	Frequency	Percent
Female	33	19.3
Male	138	80.7
Total	171	100

TABLE 2: no of participants as per gender

Participants included in this study as per gender is male and female. Male participants are 138 which is 80.7% and female participants were 33 which is 19.3%.



GRAPH 2: no of participants as per gender

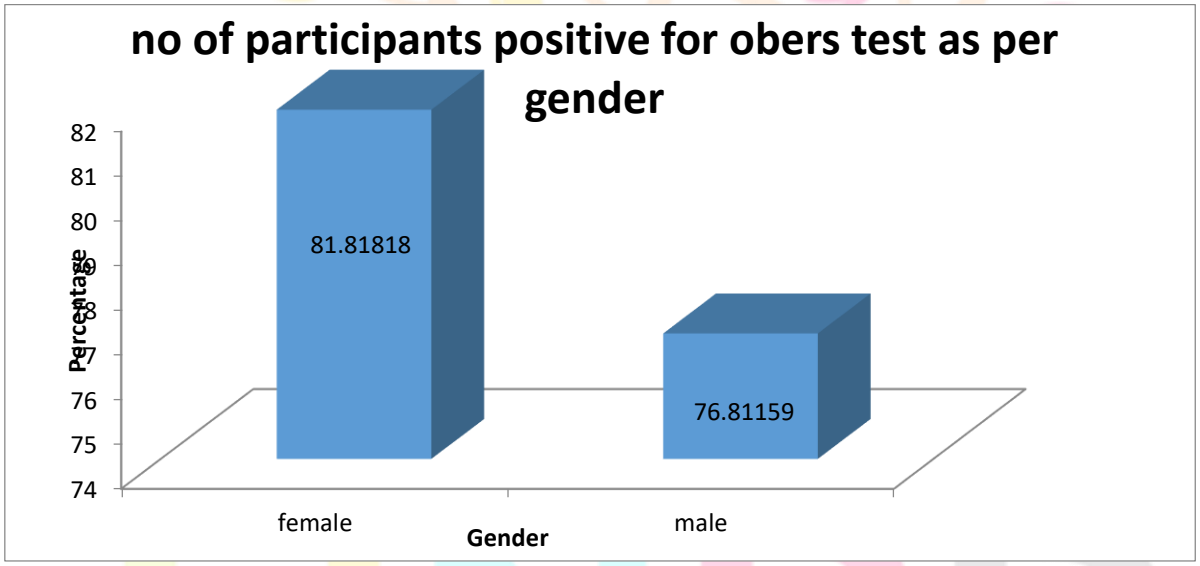
Gender		positive	Total
Female	Count	27	33
	%	81.81818	19.30%
Male	Count	106	138
	%	76.81159	80.70%

TABLE 2.1:no of participants positive for ober's test as per gender

Table shows out of 171 participants 33 are female and 138 are male.

And out of 33 female participants 27 are positive to ober's test .

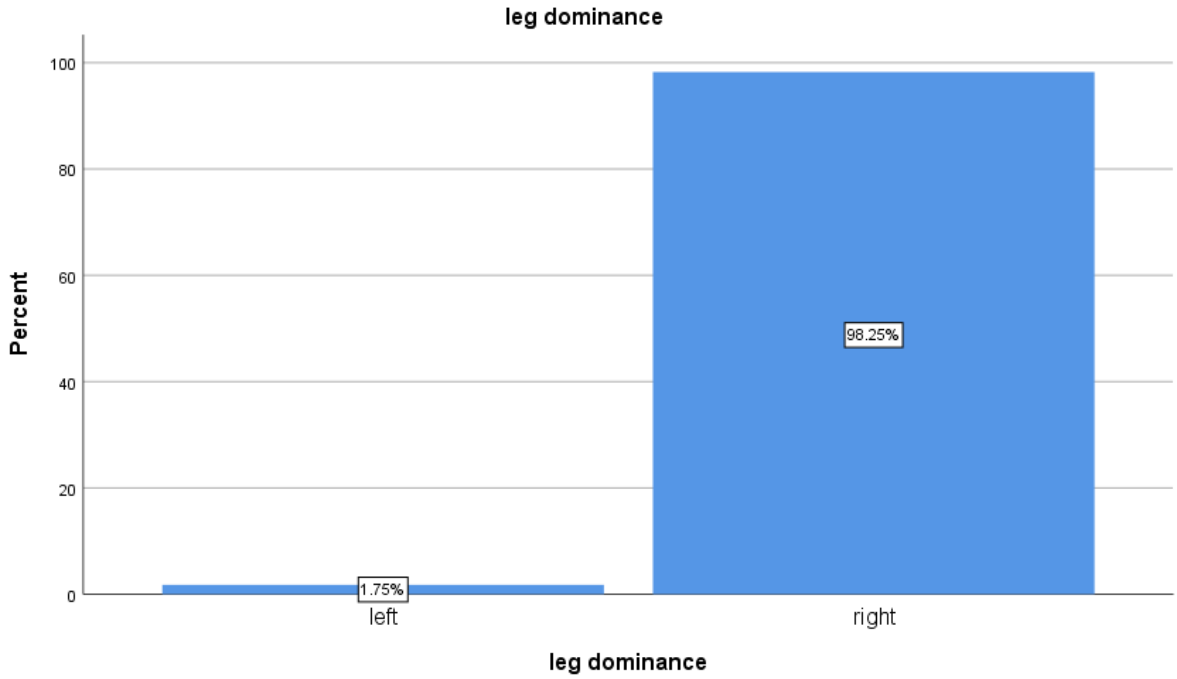
As well as out of 138 male participants 106 are positive to ober's test



GRAPH 2.1 : no of participants positive for ober's test as per gender

leg dominance	Frequency	Percent
Right	168	98.2
Left	3	1.8
Total	171	100

TABLE 4: no. of participants as per leg dominance

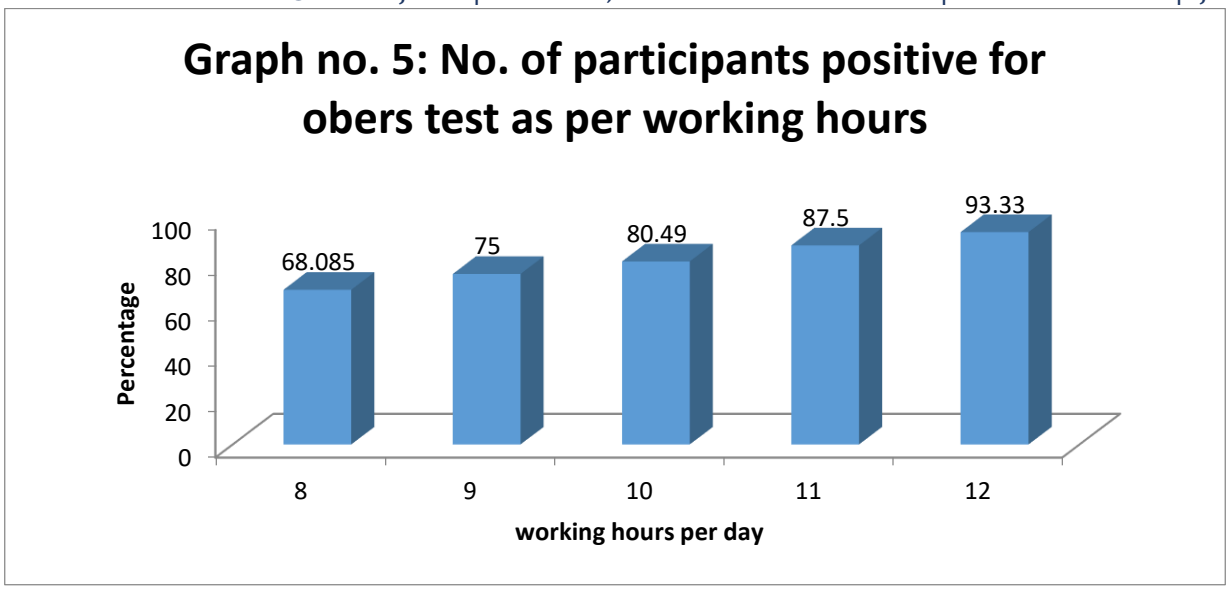


GRAPH 4: no of participants as per leg dominance

among 171 population 168 ie..98.2% population shows right dominance. While 3 that 1.8% shows left dominance.

working hours per day		positive	Total
8	Count	32	47
	%	68.08510638	27.50%
9	Count	33	44
	%	75	25.70%
10	Count	33	41
	%	80.48780488	24.00%
11	Count	21	24
	%	87.5	14.00%
12	Count	14	15
	%	93.33333333	8.80%

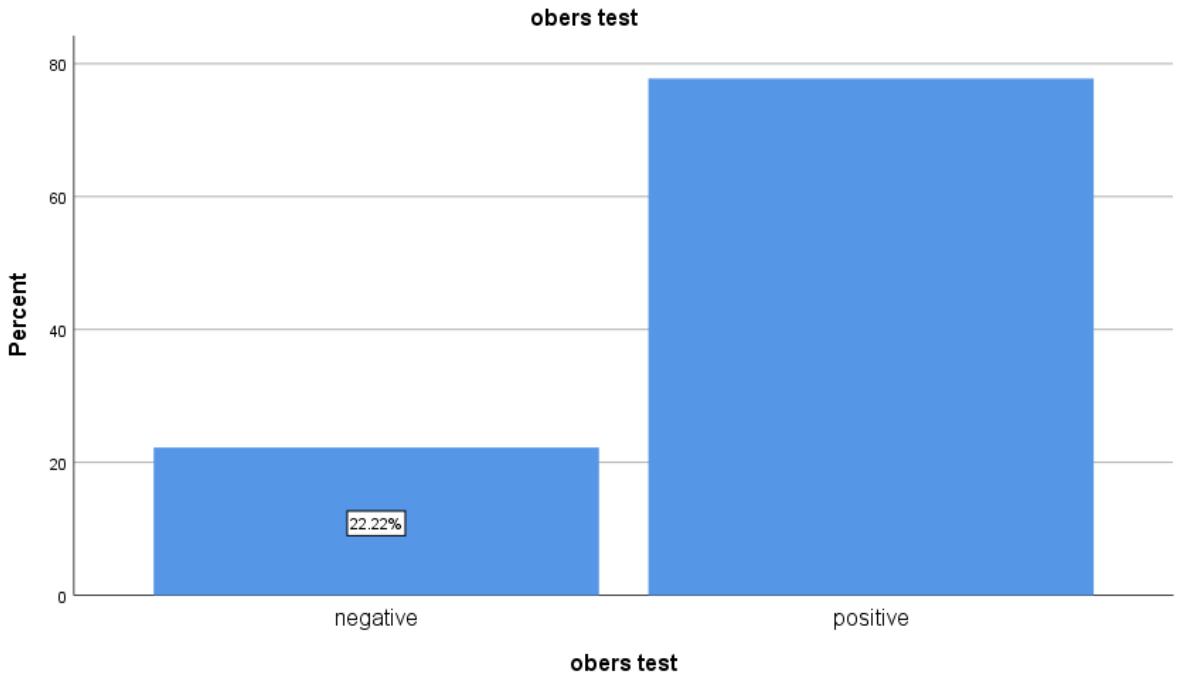
TABLE 5: no.of participants positive for obers test as per working hours per day



GRAPH 5: shows out of 171 participants 47 people are 8 hours per day and out of them 32 are positive to obers test which is 68%. Similarly 44 people work for 9 hours and 33 among them shows 75% positive. 41 people are working 10 hours daily and 33 out of them shows positive ie..80.49%. 24 people are working for 11 hour ,21 among them shows 87.5% positive . and 15 people working for 12 hours per day out of them 14 people that is 93.33% shows positive to obers test

.obers test	Frequency	Perc\]\ent
Positive	133	77.8
Negative	38	22.2
Total	171	100

TABLE 8: No of Participants positive for obers test

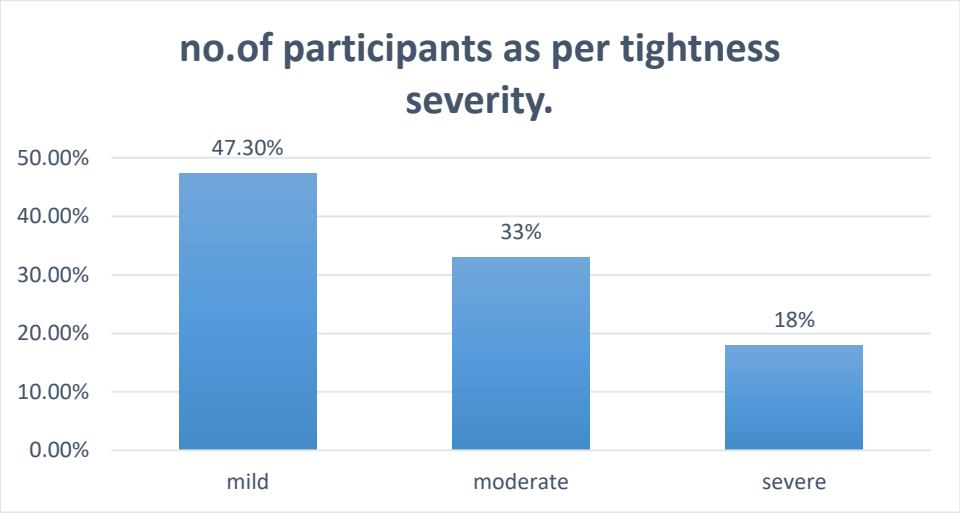


GRAPH 8: No of Participants positive for obers test

As per study 171 participants were taken, out of them 133 were positive that is 77.8% for obers test,and 38 were ngative which is 22.22%.

tightness grade	frequency	percentage
mild	65	47.30%
moderate	44	33%
severe	24	18

TABLE 9 :shows no. of participants as per tightness severity



GRAPH 9: shows out of 171 participants were taken out of them 65 people have mild tightness that is 47.30%, 44 people have moderate tightness that is 33% and 24 have severe tightness that is 18%.

DISCUSSION

The discussion attempts to find out the iliotibial band tightness in tailor population. Total 171 participants were selected.

The tensor facia late [TFL] muscle originates more laterally than the Sartorius muscle. Its starts on the anterolateral lip of the iliac crest. The muscle fibres extend only about one fourth of the way down the lateral aspect of the thigh before inserting into the iliotibial band [IT band]. The IT band or IT tract is the thickened lateral portion of the fascia late of the hip and thigh

The study shows tailoring involves the monotonous repetitive task like cutting cuing, assembly, pressing and finishing, performed in a sitting work posture with upper back curved and head bent over the sewing machine. Working in this awkward posture for a long duration increases the chances of developing work related musculoskeletal disorder [WRMSD] in them

Work related musculoskeletal disorder is group of painful disorders and complaints due to 2overuse for days, months or years and those affect bones, muscle and joints, ligaments, bursa, tendon. In this study tightness leads in reduction of joint mobility and this is decreasing the muscle strength due to lack of mobility

Sabreen Asadullah Jamro, Mumhaad shaikh Etal. Found that there was increase prevalence of musculoskeletal disorder in 72% due to their high sitting posture. In this study most of the respondent suffering from musculoskeletal disorder, their major complaints was pain and reduce joint movement due to overuse and over time of work.

in this study total 171 participants were selected as per the inclusion criteria in which 138 males and 33 females participated.

Out of which, the female participants were found to be more affected to ITB tightness using ober's test is 81.8 % in and affected male tailors percentage was found to be 76.8% .it can be because of the daily lifestyle of women in rural areas, most daily activities which include cooking, cleaning utensils, house cleaning, washing clothes, cleaning grains and long duration of sitting due to their tailoring work are the standard activities of females in rural areas which can cause ITB tightness in females. In another study, on prevalence of iliotibial band tightness in office worker found out that males was more affected than females. This can be because their study setting is in urban areas where women have house maids to do their maximum household chores.

Iliotibial band lies laterally at thigh, and performs abduction, lateral rotation and knee flexion, and tailors prolonged sitting posture explain all these movements.it has been found that participants work maximum in flex posture .i.e. flexion of neck and trunk and hip extension, abduction, flexion and lateral rotation with knee flexion. For more than 8 hours per day

Prolonged siiting posture lead to iliotibial band tightness. Pakeeza seemal, Tooba ashraf ET. Al. found that iliotibial band tightness is common condition experienced by bankers with sitting for more than 6 hours daily on chair increases the risk of ITB tightness among bankers.

shows out of 171 participants 47 people are 8 hours per day and out of them 32 are positive to obers test which is 68%. Similarly 44 people work for 9 hours and 33 among them shows 75% positive. 41 people are working 10 hours daily and 33 out of them shows positive ie..80.49%. 24 people are working for 11 hour ,21 among them shows 87.5% positive . and 15 people working for 12 hours per day out of them 14 people that is 93.33% shows positive to obers test

The percentage and frequency distribution of the dominant leg in this study showed that, out of 171 participants, 98% people are right dominant and 2% are left dominant leg. Which shows that most of individuals are right dominant.

J. Thompson, conducted a study on limb dominance. Shows, out of 100 participants, 86% were right leg dominant and 14% are left dominant. The concept of limb dominance is stemmed from the premise that the two hemispheres of the brain function differently and there is a preferential use of either the right or left limb,

eye, ear, and other bodily functions. The hemisphere of speech 38 is the stronger hemisphere, and the majority of humans have a dominant left cerebral hemisphere. (35)

Ober's test is used to assess the iliotibial band tightness ,in this study among the 171 participants shows 77.8% positive respond and 22.8% shows negative respond to ober's test.

The study of prevalence of iliotibial band tightness in prolonged sitting subjects is done by Ankita mane and Tripti Yadav uses ober's test as outcome measure as well. And they found the test co related with sitting hour more than 8 hour shows positive ober's test with 47%.

In this study shows out of 171 participants were taken out of them 65 people have mild tightness that is 47.30%, 44 people have moderate tightness that is 33% and 24 have severe tightness that is 18%.

A study conducted by JOHN C. GOSE, PT, BS,' PAUL SCHWEIZER in which the leg can be passively stretched to a position horizontal but not completely adducted to the table, it constitutes "minimal" tightness especially in the proximal fascia. If the leg can be passively adducted to horizontal at best, it constitutes "moderate" tightness of the ITB and proximal fascia and . If the leg cannot passively be adducted to horizontal, this constitutes a maximal contracture of the ITB throughout its expanse.

ABSTRACT

Background: Musculoskeletal disorder are group of disorder that affects the musculoskeletal system involving nerve, tendon muscles. Muscle tightness leads to an imbalance in acting joints and long term leads to pain. Tightness in muscles leads to reduce range of motion so there is need to aware people about risk factors due to sedentary lifestyle. Tailors have to sit in sitting posture for many hours with sitting in awkward posture with flexion of neck, lumbar and hip flexion lateral rotation and abduction and ITB mainly helps in hip flexion lateral rotation and abduction, so hence aim is find out the percentage of iliotibial band tightness in tailors.

Objectives: to determine the iliotibial band tightness in tailors

Methodology: in this observational study, 171 tailors aged between 25-45 years from latur were taken by convent sampling. Ober's test is used to assess the iliotibial band tightness.

Results: Out of 171 participants, 133 (78.8%) had tightness including 106 males and 33 females, while 38 (22.2%) showed negative for ITB tightness in tailors with 6 female and 32 male.

Conclusion: This study discovered that tailors who were sitting for more than eight hours a day, 78.8% of them had iliotibial band tightness.

Conclusion

The findings of the study suggest that prevalence of iliotibial band tightness among tailors, majority of them in a dominant leg out of 171 ,133 (77.8%) shows iliotibial tightness. With tightness in male is138 (80.7%) more than female that of 33(19.3%).

Limitation

The type of sitting surface (ex-chair) is not taken into consideration.

Work related musculoskeletal pain was not taken consideration.

Manual muscle testing was not taken into consideration

Further scope

Further other studies can be done regarding creating awareness among the tailors about the ergonomics, preventive measures like rest intervals, poor distribution of working hours, avoidance of prolong sitting.

Clinical implication

- A combined program can be designed including strengthening and stretching components to prevent/cure neck pain as well as ankle pain and back pain.
- Awareness program can also be designed to increase their knowledge regarding ergonomics to be followed while working.
- The general health is recommended to be promoted in tailors by paying a special attention to this group and providing proper chairs and table for improving posture.
- Learning the correct way of working, and also recommended to include exercise to increase their muscle strength and physical endurance and reduce the stress on their MSK system.

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