Prevalence of Piriformis tightness in male Tailors

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ABSTRACTS

Background: Pain in low back region is the usual problem in general population, and especially common in those population where the majority of people sit. Prolonged sitting position or poor body ergonomics are the main source of developing piriformis tightness, which can progress to piriformis syndrome. Adolescents and younger people were more likely to adopt poor posture and body ergonomics, which leads to piriformis muscle tightness. Goal of this study was to find out how common piriformis tightness in male tailors.

Objective: To calculate the prevalence of piriformis tightness in male tailors.

Methodology: Data was collected by using a convenient sampling technique and the participant in this study were evaluated and assessed by using inclusion and exclusion criteria. FAIR test was used to detect piriformis muscle tightness in the enrolled participants.

Results: 385 participants took part in the study, with the primary findings indicating that piriformis tightness were found in 171(44.4%) of tailors who had a positive diagnostic (FAIR test). Other respondents were found to be negative test results, and some other subjects did not match the selection criteria.

Conclusion: Majority of respondents reported symptoms of piriformis tightness ranging in mild pain, while few participants reported moderate discomfort. Prolonged sitting was the most common source of symptom exacerbation. Majority of participants in the discomfort zone had a longer work history and were more likely to develop muscle tightness.

Keywords: Piriformis syndrome, FAIR test, Adolescents.

INTRODUCTION

Piriformis is derived from the two words "pirum" meaning (pear) and "forma" mean (shape). Piriformis syndrome is common disabling ailment, affects everyone who walks or sit adopts for

long duration of time, as a result this leads to postural issues and inactivity at work. It's a similar condition to low back pain. Patients suffering from piriformis syndrome experience low back pain. Piriformis is a strong muscle that acts as external rotators, weak abductors, and weak flexors of the hip, assisting in the balance of lower limbs. High seated and cross-sitting position adopt for long duration, are common source of developing piriformis syndrome, however, the symptoms differ depending on how you sit.[1]

Piriformis syndrome is neurological disorder characterized by sciatic nerve entrapment or irritation, which supplies the hamstring and bicep femoris muscles. When sciatic neuritis occur, sharp shooting pain spread from the buttock to the knees, and finally to the foot area. The pain in the buttock and hip area extends to back of the thigh, up to the level of the popliteal fossa. This syndrome affects 6.25 percent of the population.[2]

Women are responsible for both family and professional duties, this disorder(piriformis tightness) is fairly common among them. As a result of involvement in a wide range of professional and family tasks, problem arises in daily life. Poor dietary habits, low socioeconomic status, sedentary life style, prolonged standing position and a history of previous low back pain all factors that disrupt the body's mechanics. Women with a large pelvic diameter and a large quangle were more likely to develop piriformis syndrome.[3]

Spreading ratio in hospitalized-referred patients differ by country. Because most people sit or lie in an incorrect position that disrupts the body's mechanics. This disorder affects approximately 12.2- 27 percent of the general population. Prolonged standing and sitting position causes piriformis syndrome, due to an overweight person compresses lumber region disc, causing sciatic nerve irritation and it develop sharp shooting pain on the back of the thigh, which travel and cover the whole of lower limb.[4]

Prevalence of piriformis syndrome varies greatly from place to place. However, it usually affects between 5 and 36% of the general population. People at the age of forties and fifties mostly affected by this disorder, as a result they cause poor seating issues. This syndrome affects forty to fifty percent of students as a result of their bad postural/poor sitting habits.[5]

In term of PS there are several differences between asian and other sub- continental population. Piriformis syndrome is primarily caused by soft tissue pressure felt inside the muscle. Compression of the lumber region disc can result in sharp shooting pain and a feeling of muscle strain.[6]

Blood clotting, tissue inflammation, and muscular spasm can all occur as result of the buttock injury, limiting or eliminating the buttock's action. The prevalence of piriformis syndrome in patients with chronic low back pain is estimated between 5 and 36%.[7]

Low back discomfort is a prevalent problem in dancers, it can account for as much as 25 percent of all dance injuries. Back problem can arise from minor muscle strain to nerve compression syndrome, a career ending injury on a lower level can develop disability. Entrapment of one or both division of sciatic nerve as they travel to sciatic fossa or irritation of muscle causes piriformis syndrome.[8]

Piriformis muscle arise from the sacral vertebrae and attaches to a greater trochanter of femur. The sciatic nerve exits the greater sciatic notch just below the inferior border of the piriformis muscle. Symptoms of piriformis syndrome are buttock pain that spreads into the hip area, posterior aspects of thigh, and leads toward the proximal section of lower leg. When person adopt sitting or crouching posture for too long period, they experienced localized/radiating pain.[9]

When the body's weight is equally distributed between the two lower limbs, the force applied to the hip is normal. Hip joint is extremely important in athlete's life, adopting biomechanical principles can protects it from all forms of injuries and muscle strains.[10]

Piriformis syndrome is a neuromuscular disorder, caused by the piriformis muscles pinching the sciatic nerve. Common cause of developing Piriformis syndrome by macro trauma to the buttocks area or micro trauma from overuse of the piriformis muscle, resulting in soft tissue inflammation, muscle spasm or both. A prolonged sitting position develops musculoskeletal disorders by disrupting mechanics of body. MSDs were common among public transportation all over the world, with spreading ratio ranging from 53- 91 percent depending on the job.[11]

To calculate the prevalence of piriformis tightness in male tailors. Goal of this study is to raise public knowledge about piriformis tightness, so that appropriate preventive and corrective measure could be apply in time to reduce the rate of expansion of LBP as a result of piriformis tightness.

METHODOLOGY

Descriptive Cross-sectional study was conducted. The study was conducted on population of male tailors from district Gujrat to district Jhelum Pakistan. Four month from September 2021 to January 2022.Non probability convenient sampling technique was used. All 385 participants of tailors which was engaged in this study. All the participants include in this study were healthy

males, age with 18-45 years, work experience ≥ 1 years, seated and cross-sitting sewing tailor were taken.

Tailors with other co-morbedies, i.e recent 6 month lower limb surgery, osteoarthritis or rheumatoid arthritis of hip and diabetic neuropathy were excluded from this study. Data on the prevalence of piriformis tightness in tailor were collected by using a modified questionnaire. FAIR test were performed on tailors to assess the piriformis tightness. Data were collected from those participants who meet inclusion and exclusion criteria. SPSS version 21.0 was used to analyze the data and result was representing in fig and table.

All the data was recorded in excel sheet and descriptive analysis done. Categorical data were displays in frequency and percentage. Chipirowilk test or Colombo groywentssemeres test were applied to assess for normality of numerical data. All data were analyzed at 95% confidential level.

RESULTS

Table 1 show that demographic characteristics such as age and marital status among population. Table 2 shows that the diagnostic test which has been categorized into two parts, positive and negative. While table 3 represent that association between FAIR test with demographic and VAS. Out of the total sample size of 385, 93(24.2%) participant lies in 18-24 years of age group, 121(31.4%) fall with in the 25-31 years of age group, 92(23.8%) in 32-38 years of age group, and 79(20.6%) in 39-45 years of age group.257(67.1%) participate in this study were married and 127(32.9%) was unmarried. (Table1).

Categories	Variables	N(%)
Age(Years)	18-24	93(24.2)
	25-31	121(31.4)
	32-38	92(23.8)
	39-45	79(20.6)
Marital Status	Married	258(67.1)
	Unmarried	127(32.9)
Total		**385(100)**

Table 1: Demographics characteristics of sample population

Table 2 represent that, out of total sample size of 385,171(44.4%) tested positive for FAIR test, while 214(55.6%) were negate the result.

Diagnostic test	Variables	N(%)	Chi square value	P-value
FAIR test	Positive	171(44.4)	49.088	<0.001
	Negative	214(55.6)		
Total			**385(100)**	

Table 2: Diagnostic test for piriformis tightness

Table 3 shows that association of FAIR test with demographics studies. Association of FAIR test and age (years) was found to be statistically significant with p-value=0.041, association between FAIR test and marital status was found to be statistical significance with p-value=0.001, association between FAIR test and VAS didn't found to be statistically significance with p-value=0.000.

Categories	Variable	N(%)	Spearman correlation	P-value
Age(Years)	18-24	93(24.2)	0.104	0.041
	25-31	121(31.4)		
	32-38	92(23.8)		
	39-45	79(20.6)		
Marital status	Married	258(67.1)	0.274	0.001
	Unmarried	127(32.9)		
Visual Analogue Scale(VAS)	0 (no pain)	165(42.9)	0.005	0
	1-3(mild pain)	174(45.2)		
	4-6(moderate pain)	46(11.9)		

Table 3: Association between FAIR test with demographic and VAS.

Table 4 represents that the questionnaire of questions which has been divided into two or multiple portions. Out of total 385 sample size, 220(57.1%) do feel discomfort,165(42.9%) did not feel any discomfort. 165(42.9%) was not feeling pain according to Visual Analogue Scale(VAS),174(45.2%) do feel mild pain(mild pain) while 46(11.9%) did feel moderate pain(4-6).56(14.5%) were user of ground sitting sewing machine while 329(85.5%) were the user of seated sewing machine.6(1.6%) participants were sitting on the seat for 4-5hour/day,188(42.8%) were sitting for 6-7 hour/day, while 191(49.6%) had been sitting for 8-9 hour/day.12(3.1%) had up to one year of work experience,108(28.0%) had work experience for 2 years,49(12.7%) had also work experience for 3 years while 216(56.2%) had work experience for more than 3

years.15(3.8%) participants had complaint of radiating pain,205(53.3%) had complaint of localized pain, while 165(42.9%) didn't feel pain.

Prevalence of piriformis tightness	Variables	n(%)	spearman Correlation	P-value
Pain/Discomfort	Yes	220(57.1)	0.118	0.031
	No	165(42.9)		
Level of Pain measure(VAS)	0(no pain)	165(42.9)	0.293	0
	1-3(mild pain)	174(45.2)		
	4-6(moderate pain)	46(11.9)		
Type of sewing machine user	Ground sitting sewing machine user	56(14.5)	0.013	0.8
	Seated sewing machine user	329(85.5)		
Sitting duration in seat/day	4-5 hour/day	6(1.6)	0.005	0.918
	6-7 hour/day	188(48.8)		
	8-9 hour/day	191(49.6)		
Work experience	1 year	12(3.1)	0.162	0.001
	2 years	108(28.0)		
	3 years	49(12.7)		
	more than 3 years	216(56.2)		
Pain type	Radiating	15(3.8)	0.274	0
	Localized	205(53.3)		
	None	165(42.9)		

Table 4: Prevalence of piriformis tightness

DISCUSSION

Main goal of this study is to find out that how common piriformis tightness is in male tailors. 385 participants, out of 171(44.4%) were found to have piriformis tightness.

In 2017, according to the article of Malika Mondal et al, they conducted a cross sectional study which based on piriformis tightness in healthy sedentary population. The prevalence of piriformis muscle tightness was measured in 200 sedentary subjects, 105 males and 95 females, ranging in age from 18- 60 yrs. 159 out of the 200 participants had clinically confirmed piriformis tightness, other subjects failed to meet the criteria for inclusion. According to our findings, hired 385 male tailors, aged from 18-45 years. Data was collected from all tailors by using Visual Analogue Scale. According to our study, a tailor who works for long hours is more likely to develop muscle tension. The diagnostic test (FAIR test) yielded positive results was 171(44.4%) of the participants. A significance increase in pain intensity was more likely to be reported by peoples with more than 3

years of work experience. Buttock pain was experienced by a high proportions of tailors who sat on a stool for 6-7 hours over an extended period of time.[1]

In contrast, Syed Imtiaz Hussain Shah et al, concluded that there is no correlation with this research, such as one that compares working and non-working women groups. The data was analyzed by using t and chi-square tests in a comparative cross sectional study with 88 participants. There is no standardized way for assessing muscle strength, and there is no explanation for how a person feel when they were in pain.[3]

Soleman Warner and his colleagues conducted a study that based on our research on the prevalence of piriformis syndrome in University students. Buttock discomfort was reported by 40(35.4%) of the 113 male students. Localized pain affects 34.9 percent of students with buttock discomfort, while radiating pain affects 6.3 percent. Sixteen percent of the subjects had pain on both side of their buttock area, whereas 34% had pain on only one side. The most common source of pain was long duration of sitting (75%), followed by long standing (15 %), and rest (4 percent). The pain relieving factors were rest (19.5%), massage (10.2%), walking (8.2%) and administering heat. 40 students experienced buttock pain, with 33 percent keeping their wallet in back pocket, and 7 (17.5%) were not. In terms of wallet use and extended sitting, with 30(75%) students reported pain from long sitting, While doing so, 27(90%) of them putting their wallet in their back pocket. According to our findings, the majority of participants 325(89.9%) were use a seated sewing machine, with 205 peoples reporting a localized pain, 15(3.9%) experiencing radiating pain and the remaining subjects did not experience any discomfort. In our study, the majority of participants 121(31.4%) peoples choose the best choice for symptoms relief while walking, while minor number of participants found relieve while sitting position and 167(43.4%) were not relieve in any comfort zone.38(9.9%) reported pain below the hip region, and just 16 (4.2%) reported pain below the knee.[12]

In contrast, Samraiz Mughal and his colleagues conducted a study on the prevalence of piriformis tightness in bankers due to long hours of sitting. This research has somehow, nothing to do with our study.65.4% who took the piriformis stretch test has positive finding, on the other hand, reject the test and may be associated with this disorder not covered by this research. According to frequency distribution test, 31.4% of the population never put their wallet in back pocket, 36.6% does it occasionally and 10% does it all the time. As a result, placing a wallet is a problematic maneuver, because creating pressure to builds and may strain the sciatic nerve. According to our

inquiry, no questions were asked to identify the participant work experiences, and no procedures were performed to assess muscle strength. Test is carried out to diagnose the pathology. Muscle strength should be assessed as well.[13]

Desaiandhiscolleagueconductedastudyontheprevalenceofpiriformistightness on sitting duration in bankers, which revealed that this disorder is more common in those people with a high BMI ratio, and that there is no single factor that affects a person's daily life time activities aside from BMI and age.[14]Tightness of hip muscles, it stated as, the participants was stay in seat for long duration of time, causes increase in likelihood of developing piriformis syndrome.[15]piriformis tightness in professional middle age women, and revealed that, this disorder is more common in middle-aged women than younger.[16]piriformis syndrome related to clinical reviews and its disorders, it was investigated that people who did not follow a pattern of moments, such as unusual moment perform which are more likely to develop hypertrophy (an increase in the number of cells), swelling and edema develop at the level of muscle, which causes excruciating pain.[17]

Piriformis syndrome, it stated as, factors that involves in this disorder were muscular spasm, edema, muscle inflammation and disc related compression which leads towards sciatic neuritis.[18]Piriformis syndrome, identified that disc herniation is the most serious cause of piriformis syndrome.[19]piriformis syndrome, investigate that people who walk for long period of time have negative impact on lower limbs, and the weight of disc being increase due to over loading, piriformis syndrome becomes a problem.[20]

CONCLUSION

It concluded that majority of respondents reported symptoms of piriformis tightness and complaining of mild pain, few participants reported a moderate pain. Prolong sitting position was the most common source of symptoms exacerbation. It were more likely to develop in those participants which had a long history of work experience.

CONFLICT OF INTEREST

None

ACKNOWLEDGEMENTS

I am most grateful to Almighty Allah who provided me this opportunity to conduct the study.I would like to express my deep sense and gratitude towards supervisor for this invaluable

supervision, guidance and constant encouragement through out the study and assistance to bring data in final shape and assisting in typing the study and analysis of data.

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SUPPLEMENTARY TABLES

Data Analysis			
Sr.No	**Variable**	**Association**	**N(%)**
1	**Age(Years)**	18-24	93(24.2)
		25-31	121(31.4)
		32-38	92(23.9)
		39-45	79(20.5)
2	**Pain/Discomfort**	Yes	220(57.1)
		No	165(42.9)
3	**VAS(Visual Analogue Scale**	0(No pain)	165(42.9)
		1-3(Mild pain)	174(45.2)
		4-6(Moderate pain)	46(11.9)
4	**Type of sewing machine use?**	Cross/ground sitting sewing machine	56(14.5)
		Seated sewing machine	329(85.5)
5	**Sitting duration in seat/day?**	4-5 hour/day	6(1.6)
		6-7 hour/day	188(48.8)
		8-9 hour/day	191(49.6)
6	**No of breaks?**	1 time/day	352(91.4)
		2 time/day	33(8.6)
7	**FAIR test?**	Positive	171(44.4)
		Negative	214(55.6)
8	**Work experience?**	1 year	12(3.1)
		2 year	108(28.1)
		3 year	49(12.7)
		> 3 years	216(56.1)
9	**Pain type?**	Radiating	15(3.9)
		Localized	205(53.2)
		None	165(42.9)
10	**How long does your tightness feel last time?**	Few second to 30 minutes.	77(20.0)
		30 minute to 1 hour	122(31.7)
		30 minute to week	20(5.2)
		None	166(43.1)
11	**When feel pain?**	Sitting	197(51.2)
		Standing	21(5.5)
		Side lying	1(0.3)
		None	166(43.1)
		Limb moment not against gravity.	57(14.8)

12	**Assess muscle strengthening?**	Moment against gravity but not resistance	235(61.0)
		Moment against at least some resistance	93(24.2)
13	**When feel comfort/relax?**	Rest	97(25.2)
		Walk	121(31.4)
		None	167(43.4)
14	**Tightness typically beginning?**	Gradually	24(6.2)
		Suddenly	191(49.6)
		Varies	4(1.0)
		None	166(43.1)