



## Original Article

## Prevalence of Piriformis Muscle Syndrome Among Individuals with Low Back Pain

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## ABSTRACT

Piriformis syndrome is a condition in which the piriformis muscle, located in the buttock region, spasms and causes buttock pain. The piriformis muscle also can irritate the nearby sciatic nerve and cause pain, numbness and tingling. Starts at the lower spine and connects the upper surface of each femur (thighbone). Functions to assist in rotating the hip and turning the leg and foot outward. Runs diagonally. **Objective:** To find out the prevalence of piriformis muscle syndrome among individuals with low back pain. **Methods:** Participation of population from Gujranwala city from various emergency clinics was remembered for this study in view of inclusion and exclusion criteria. The data was collected through non-probability convenient sampling technique. Affirmed instances of low back torment patients were added and get some information about their agony as indicated by VAS (visual simple scale) and outer muscle tests (FAIR test, pace sign, Piriformis stretch (test) were performed on patients. **Results:** The results have been obtained from 219 participants. The overall Prevalence of piriformis muscle syndrome among individuals with low back pain was 18.3%. The Mean±SD of exact BMI were 27.43±6.859. Out of 219 patients, male and female Pace sign were respectively (85.8% negative and 14.2% positive). (81.7% Negative and (18.3%) Positive Prevalence of piriformis muscle syndrome in the general population in Age groups chi-square value is (47.753b) and P- Value (<0.001\*). **Conclusions:** In this research, the positive prevalence rate is 18.3%. It demonstrates that several individuals with low back pain have piriformis muscle syndrome.

## INTRODUCTION

Piriformis disorder is characterized as assortment of side effects what's more, indications of torment emerges from piriformis muscle, regardless of sciatic nerve capture [1]. Piriformis condition is a likewise called fringe neuritis that is brought about by one or the other hypertrophy, aggravation, or physical variety of piriformis muscle coming about strangulated and bothered of sciatic nerve [2]. Sciatica, buttock, and lower back pain have all been linked to this condition [1]. The piriformis muscle rises out of the pelvic surface of the sacrum between (and lined up with) the first through fourth pelvic sacral foramina, the edge of the more critical sciatic foramen, and the pelvic surface of the Sacro tuberos ligament, and is implanted to the transcendent line of the more unmistakable trochanter of the femur through a round tendon that, in numerous people, is merged with the tendons of the obturator

internus and gemelli muscles & it is given by sciatic nerve [3]. Postponed analysis of piriformis disorder might prompt pathologic circumstances of the sciatic nerve, constant substantial brokenness and compensatory changes and it might cause torment, paresthesia, hyperesthesia also, muscle shortcoming. In outrageous cases, misdiagnosis of piriformis condition related back torment with "sciatica" as prolapsed intervertebral plate might prompt superfluous medical procedure [4]. This condition causes discomfort and localized sensitivity in the gluteal region around the piriformis muscle, and is commonly described as a deep, agonizing ache with or without sciatica signs and symptoms [1]. Trauma to the pelvic and gluteus areas is a predisposing factor for piriformis syndrome and is frequently regarded as a trigger. Skiers, tennis players, and long-distance cyclists are



among those who are at risk for secondary piriformis syndrome [5]. There are two principal components contributing to PS clinical features, somatic and neuropathic [6]. Since clinical presentations of PS frequently confuse with lumbago sciatica [7]. The sciatic nerve can be compressed between the piriformis muscle and the roof of the sciatic notch due to myositis ossificans of the piriformis muscle [8]. Low back discomfort is a rather prevalent condition among dancers, accounting for up to 25% of all dance injuries [9]. Conveying wallet in pocket containing bills, cards and coins are the propensity for men. At the point when they sit having wallet in back pocket, they have expanded possibility of getting the nerves harmed that altercation that piece of lower back and lead to outrageous agony. The other name of this condition is "fat wallet disorder or wallet neuropathy". It includes both sciatic nerve and piriformis muscle as it is neuromuscular condition [1]. In Literature, the prevalence of PS among patients with low back pain ranges from 5 to 36 % (7). Similarly, another study reported that PS occur most frequently in the fourth and fifth decades of life. PS is more common in women than man because of the biomechanics associated with the wider quadriceps femoris muscle angle (Q angle) of hip bone [10]. The rate of piriformis disorder among people with low back torment has been displayed to go from 5% to 36% [3]. According to Hopayian's research review, PS often has the following four symptoms: pain that worsens when you sit, soreness in the buttocks, and outward tenderness above the bigger sciatic notch. Systems that increment piriformis muscle strain incorporate the FAIR test (Flexion Adduction Internal Rotation), the Beatty test, the Piriformis sign, the Pace sign, and Freiberg's sign [11]. Differential diagnosis includes herniated lumbar disc, intervertebral discitis, intraspinal lesions, lumbar canal stenosis, pelvic masses, diabetic neuropathy, primary sacral dysfunction, sacroiliitis, and trochanteric bursitis [12]. Recurrent piriformis syndrome may result from entrapment of the sciatic nerve due to extensive fibrous tissue formation in surgically treated piriformis syndrome cases [13]. The diagnosis of piriformis syndrome is primarily clinical because no significant investigations have been recorded. Bone scans and electrodiagnostic tests do not appear to be generally effective, despite sporadic claims to the contrary [14]. Stationary individuals regularly whine of low back distress brought about by muscle irregularity, which, in the event that not tended to, can prompt a constant torment condition in the lower back [1]. The recurrence of PS is indistinct because of its confounding show and logical under diagnosis. Zero direct three toward six percent of lower back and upper/back thigh irritation is viewed as brought about by PS. There are around 2.4 million new

occurrences of PS each year, with a forty million yearly rate of back/sciatic torment [15]. To additionally portray the sickness and help in conclusion, this forthcoming review led a clinical assessment of members who had side effects reliable with PMS. It additionally utilized imaging and electrophysiological strategies. Based on these outcomes, it was trusted that a clinical evaluation score might be made and later used to analyze PMS. It was likewise visualized that a treatment procedure might be created to improve patient results [16].

## METHODS

An observational Cross-sectional study was conducted. Non-probability convenient sampling was used to select the sample. The study included 219 confirmed patients with low back pain. Participation of population from Gujranwala city from different hospitals were included in this study based on inclusion and exclusion criteria. Confirmed cases of low back pain patients were added and ask about their pain according to VAS (visual analogue scale) and musculoskeletal tests (FAIR test, pace sign, Piriformis stretch test) were perform on patients. Self-made questionnaire was used to collect data. In questionnaire demographic data questions were ask and musculoskeletal test questions were asked after perform the special tests. The following were among the inclusion criteria: Age 20+ with chronic low back pain. The following were among the exclusion criteria: Lumber injury during road traffic accident. Lumber spinal surgery. Lumber disc pain. All data were analyzed using SPSS (statistical package of social science) by using version 26. Numerical data were described in mean  $\pm$  standard deviation. Frequencies and percentages were used to display quantitative data. For the significance, Chi square test was applied for quantitative data. Pearson's correlation was applied for measuring statistical relationship or association between the variable of interest. All results were calculated at 95% confidence level. P-value < 0.05 was considered as a significant value.

## RESULTS

The results have been obtained from 219 participants. Overall prevalence of piriformis muscle syndrome among individuals with low back pain was 18.3%. All results were calculated at 95% confidence level. For quantitative data Chi square was used. The significant P-value was considered as  $\leq 0.05$ . The significant P-value was set at <0.05. Table 1 shows according to age group (20-25) years old patients were 2.3%, age group (26-30) years old patients were 16.4%, age group (31-35) years old patients were 12.8%, age group (36-40) years old patients were 17.8%, age group (41-45) years old patients were 9.1%, age group (51-55) years old patients were 17.8%, age group (56-

60) years old patients were 9.1%, age group (>60) years old patients were 5.5%. However according to marital status 208 patients (95.0%) were married, 9 patients (4.1%) were single and 2 patients (0.9%) were divorced. According to patients' occupation 4 students (1.8%), 32 office workers (14.6%), 73 patients (33.3%) labors, 2 patients (0.9%) farmers, 87 patients (39.7%) house wives and 21 patients exist in others category (9.6%).

Socio Demographic Characteristics		N(%)	P-Value
Sex of Participants	Female	88(40.2%)	0.004
	Male	131(59.8%)	
	Total	219(100.0%)	
Age Groups (years)	20-25	5(2.3%)	<0.001*
	26-30	36(16.4%)	
	31-35	28(12.8%)	
	36-40	39(17.8%)	
	41-45	20(9.1%)	
	46-50	20(9.1%)	
	51-55	39(17.8%)	
	56-60	20(9.1%)	
Marital Status	Married	208(95.0%)	<0.001*
	Single	9(4.1%)	
	Divorce	2(0.9%)	
	Total	219(100.0%)	
	Others	21(9.6%)	
Patients Occupation	Student	4(1.8%)	<0.001*
	Office worker	32(14.6%)	
	Labor	73(33.3%)	
	Farmer	2(0.9%)	
	House Wife	87(39.7%)	
	Others	21(9.6%)	
	Total	219(100.0%)	

**Table 1:** Socio Demographic Characteristics

Table 2 shows that out of 219 patients (40.2%) was females and (59.8%) was males. According to FAIR test 81.7% was negative and 18.3% was positive. According to Freiberg sign 91.3% was negative and 8.7% was positive. In pace sign 85.8% was negative and 14.2% was positive. Prevalence of piriformis syndrome in low back patients 18.3% was positive and 81.7% negative. Exact BMI +mean (27.43) and standard deviation was deviation (6.859). Chi square test was applied for quantitative data.

Parameter		N(%)	P-Value
Gender	Female	88(40.2%)	0.004
	Male	131(59.8%)	
FAIR Test	Negative	179(81.7%)	< 0.001*
	Positive	40(18.3%)	
Freiberg Sign	Negative	200(91.3%)	<0.001*
	Positive	19(8.7%)	
Pace Sign	Negative	188(85.8%)	<0.001*
	Positive	31(14.2%)	

Prevalence of Piriformis Syndrome	Negative	179(81.7%)	<0.001*
	Positive	40(18.3%)	
Exact BMI of Patients	Total	219(100.0%)	
	N	219	
Mean±SD	27.43±6.859		

**Table 2:** Disease Overall prevalence and tests

Above table 3 shows BMI of 9 patients (4.1%) were underweight, 94 patients (42.9%) were normal, 51 patients (23.3%) were overweight, 33 patients (15.1%) were existing class one obese, 18 patients (8.2%) were existing class two obesity and 14 patients (6.4%) were existing in class three obesity. According to visual analogue scale 113 patients (51.6%) were exist in less pain, 32 patients (14.6%) were existing in moderate pain, 64 patients (29.2%) were existing in more pain and 10 patients (4.6%) were exist in worst pain. Chi square test was applied for quantitative data.

Variables	Categories	N(%)	P-Value
BMI (Kg/m2)	<18.5 under weight	9(4.1%)	<0.001*
	18.5-24.9 Normal	94(42.9%)	
	25.9-29.9 Over weight>	51(23.3%)	
	>30 obese class one	33(15.1%)	
	>30 obese class two	18(8.2%)	
	>30 obese class three	14(6.4%)	
Visual Analogue Scale	1-4 less pain	113(51.6%)	<0.001*
	5-Moderate pain	32(14.6%)	
	6-9 more pain	64(29.2%)	
	10-worst pain	10(4.6%)	

**Table 3:** Variables

## DISCUSSION

Current study concluded that general population with low back pain might experience the prevalence or pervasiveness of piriformis muscle syndrome. The aim of study to find out the prevalence of piriformis syndrome among individuals with low back pain. For those record was taken from 219 males and females' patients in Gujranwala city from different hospitals. patients were added and ask about their pain according to VAS (visual analogue scale) and musculoskeletal tests (FAIR test, pace sign, Piriformis stretch test) were perform on patients. Self-made questionnaire was used to collect data. In questionnaire demographic data questions were ask and musculoskeletal test questions were asked after perform the special tests. A cross sectional exploration was directed in male understudies of college of Lahore. The objective of study to find out piriformis disorder among college understudies. Information was gathered 113 arbitrarily chosen male understudy. Results showed five percent predominance of piriformis muscle condition in college understudies. There was a relationship with long sitting and feeble muscles among understudies and

unfortunate body mechanics lead to piriformis condition [17]. Present study based on general population to check prevalence of piriformis syndrome with low back pain. We found 18.26% prevalence in individuals with low back ache. Out of 219 patients' females was 88 and males was 131. FAIR test was positive in 18.3% population. In present study according to VAS 51.6% patients had less pain. Another cross-sectional review directed in Bangladesh. Back-to-back 31 piriformis disorder patients were enlisted. Other than history and clinical assessment, piriformis muscle thickness was additionally estimated with analytic ultrasound. All gave butt cheek torment, irritating with long sitting [31], lying on the impacted side [31], during ascending from a seat [24], and forward twisting [28]. Six revealed torment improvement while strolling. Gluteal delicacy, positive FAIR test, and Pace sign were evoked in all patients. A discernible gluteal mass was tracked down in 8 cases, gluteal decay in 5 different patients. In Bangladesh piriformis disorder is more normal in female, particularly among housewives. A fall frequently goes before the condition. Piriformis disorder ought to be considered as conceivable conclusion when sciatica happens without an unmistakable spine pathology [11]. In current study piriformis syndrome prevalence exist in both males and females. And more prevalent in males than females. Positive FAIR test (18.3%) and Pace sign positive ness was (14.2%). Piriformis condition ought to be considered as conceivable finding when sciatica happens. Another cross-sectional review directed in exercise-based recuperation female understudies of various foundations of Gujranwala. Information was gathered from 195 understudies with Convenient examining method. The Diagnostic instruments utilized was Visual Analog Scale Piriformis condition symptomatic rules. Out of 195 female exercise-based recuperation understudies 72 (36.9%) had a high score and had a high likelihood of having piriformis condition. Just [4] 2.1% were far-fetched of having piriformis disorder while in larger part of the members 119 (61%) piriformis condition was not thought of. Female exercise based recuperation understudies of Gujranwala have a low to direct likelihood of having PS, with expanded likelihood of butt cheek torment related with delayed sitting. 18 In our study we also use visual analogue scale to find out pain intensity. According visual analogue scale 113 patients (51.6%) were existed in less pain, 32 patients (14.6%) were existed in moderate pain, 64 patients (29.2%) were existing in more pain and 10 patients (4.6%) were existed in worst pain. The difference between both researches because of sample size and setting Another cross-sectional research conducted in Faisalabad. The sample size was 190 among bankers. Piriformis stretch test was proceeded as corroborative proof preceding principle out

connected sign and side effects. Recurrence dissemination of the reporter set of people has been done that displayed around 65.4% had piriformis stretch test ran positive and approved the proof of winning piriformis snugness among them. 19 However, in our research 219 sample size were collected from different hospitals of Gujranwala. Positive FAIR test was 18.3%. The difference between in both researches because of setting and sample size. In our research we target general population both males and females. Another hand only males' bankers consider. In our study BMI of 9 patients (14.1%) were underweight, 94 patients (42.9%) were normal, 51 patients (23.3%) were overweight, 33 patients (15.1%) were existing class one obese, 18 patients (8.2%) were existing class two obesity and 14 patients (6.4%) were existing in class three obesity. A prospective and case control study conducted. 268 cases with low back torment in 268 cases, seven cases had Piriformis condition. We concentrated on torment, seriousness torment, radicular agony, limping, and difficult sitting. Assessment of outer muscle, BMI, and actual assessment of Piriformis sign, Freiberg sign, and speed sign. BMI of all cases was in normal range [20]. We also used FAIR test, pace sign and Freiberg maneuver.

## CONCLUSIONS

Current study shows that with low backache some patients had existence of piriformis muscle syndrome and patients with low back pain have a risk to get piriformis syndrome. There was relation between piriformis syndrome and BMI of the patients but the association were not significant according to our observation. In this research, we employed three tests to evaluate individuals for piriformis syndrome. Our observations indicated that the FAIR test was the most prevalent diagnostic exam. In addition, the Pace sign exam, which came after the FAIR test, was useful in making a diagnosis. Freiberg maneuver was the test that had the fewest favorable results.

## Conflicts of Interest

The authors declare no conflict of interest.

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