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Increase in prevalence of sciatica in traffic police officers of Sangli city during the COVID pandemic: An observational study

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Abstract

This study aimed to find out the increase in prevalence of sciatica in traffic police officers (TPO) of sangli city during the COVID pandemic. 120 traffic police officers participated in the study. The Modified Lasague's test (MLT) and Pain frequency severity duration score (PFSD) was taken as an outcome measure for assessing the symptoms of sciatica. All the participants were assessed for MLT first. 44 out of 120 participants showed a positive test. These 44 participants were further scored on PFSD scale to assess the multiple aspects of pain rather than just the intensity. 30 out of 44 participants reported increase in symptoms of sciatica due to the extended COVID duties. A Chi-square test was done to compare the observed results of increase in sciatica symptoms due to prolonged COVID duties. With a P-value of 0.001*, it revealed that 68.18% of increase in prevalence of sciatica is present due to prolonged COVID duties among traffic police.

Keywords: Sciatica, COVID duties, MLT, PFSD scale, Traffic police officers (TPO)

1. Introduction

Sciatica is the term used to define nerve pain in the leg that is caused by irritation and or compression of the sciatic nerve [1]. Sciatica begins in the lower back radiates deep into the buttock and travels down the leg. It is relatively prevailing condition with a lifetime incidence varying from 13% to 40% with its peak incidence in the fourth decade. The main causes of sciatica are, Herniated disc, lumbar canal stenosis, spondylolisthesis, piriformis syndrome, sedentary lifestyle (sitting or standing for long periods, physically inoperative), jobs (lifting heavy loads, twisting movement), smoking, obesity, cauda equina syndrome (rare) etc [2]. The sciatic nerve is made up of the L4 through S2 nerve roots. These nerve roots merge to create the large sciatic nerve in the pelvic cavity. The sciatic nerve then exits the pelvis via the sciatic foramen posteriorly. After exiting the pelvis, the nerve routes inferior and anterior to the piriformis and posterior to the gemellus superior, gemellus inferior, obturator internus, and quadratus femoris [3]. Next, the sciatic nerve invade the posterior thigh and courses through the biceps femoris. Later, the sciatic nerve terminates at the knee posteriorly in the popliteal fossa giving rise to the tibial and common fibular nerves. Sciatica symptoms arises when there is pathology anywhere along this course of the nerve [3].

Patients with sciatica commonly experience pain in the lumbar spine, and almost invariably, the pain will be unilateral. A usual characteristic is that pain may be radicular to the ipsilateral affected extremity. Often, patients may define pain as a burning sensation deep in the buttocks, and frequently they will describe paresthesia that accompanies the pain. Less commonly, there is accompanying ipsilateral leg weakness. These patients may report the affected leg as "feeling heavy" [3]. Traffic Police Officers (TPO) are trained through different training programs related to management of stress, interpersonal and personal development of skills and knowledge about different areas. MSK pain is work related and common in TPO. A cross-sectional study was conducted among 270 traffic police officers in Mumbai City of India using Nordic musculoskeletal questionnaire and low back pain was the most commonly pain in them [15]. The most common musculoskeletal symptoms among local police officers are cervicobrachial pain, low back pain, and sciatica [5]. Hence, the traffic police officers work in prolonged standing, and their frequency and duration of duty had increased during the

COVID pandemic, this factor can cause increase in the lumbar lordosis and further compressions of nerve in the spinal canal. Also standing too long with your pelvis push forward puts stress on the hamstrings, stretching them or can even cause a spasm of the piriformis muscle from where the sciatic nerve passes this can lead to undue compression or irritation of the sciatic nerve.

The Modified lasegue’s test or straight leg raise test is a fundamental neurological maneuver used during the physical examination of the patient with lower back pain aimed to assess the sciatic compromise due to lumbosacral nerve root irritation. This test is one of the most widely performed maneuvers across clinical practice and provides important information when making the clinical decision to refer a patient to specialist as well as among spinal surgeons to guide therapeutic decision making [11].

The pain-frequency-severity-duration scale (PFSD) was developed in an effort to assess multiple aspects of pain and to broaden the focus to capture more than pain intensity. The PFSD incorporates multiple aspects of pain, in order to better capture the impact of the pain experience and the PFSD composite score is thought to be more reflective of the overarching experience on the youth’s life than assessing pain intensity in isolation [13, 14].

2. Material and Methodology

The observational study was conducted at the Miraj and Sangli police station of Sangli city. The study was approved by the Institutional Ethical research committee of Miraj Medical Center, College of physiotherapy, Wanless Hospital, Miraj.

2.1 Participants

Subjects who completed the inclusion and exclusion criteria were included in the study. The inclusion criteria, Both males and females between the age group of 35-55 years, working for more than 4 hours in standing and involved in COVID duties from last 2 years. The exclusion criteria were patient with recent fracture at the hip, knee, or ankle, any recent ligament injuries, recently operated spine and leg conditions, peripheral vascular disease, other neurological condition causing the pain. Written informed consent was obtained from the participant.

2.2 Procedure

The training program was explained to the subjects in their

vernacular language. Demographic data like name, age, height, weight, BMI, number of working years, duty hours history of any previous injuries, and any medical condition of the participant was recorded in the data collection sheet. The Modified Lasegue's test is a passive test. Each leg was tested individually with the normal leg being tested first. When performing the test, the patient was positioned in supine without a pillow under his/her head, the hip medially rotated and adducted, and the knee extended. The therapist lifted the patient's leg by the posterior ankle while keeping the knee in a fully extended position. The therapist continued to lift the patient's leg by flexing at the hip until the patient complains of pain or tightness in the back or back of the leg. To increase the sensitivity ankle dorsiflexion, and neck flexion to the test were added.

Interpretation- Neurologic pain: 30-70degrees, Pain less than 30 degrees- Acute spondylolesthesis, gluteal abscess, tumour of buttock etc, Pain at greater than 70 degrees indicates tightness of hamstring, gluteus maximus, or hip capsule. Test Reliability: [Cronbach's alpha: 0.95]



Fig 1: Assessment of MLT.

Individuals who showed Positive MLT were further scored on Pain frequency severity duration scale. The pain frequency severity duration PFSD scale was developed in an effort to assess multiple aspects of pain and to broaden the focus to capture more than pain intensity.

Table 1: Pain Frequency Severity Duration scale

(1) About how many days in the past 2 weeks have you been in pain?	1, 2, 3, 4, 5, 6, 7 8, 9, 10, 11, 12, 13, 14
(2) About how long have you had a pain problem?	Weeks, Months, Years
(3) Would you describe your pain as recurrent or continuous (circle one)?	Recurrent/Continuous
(4) On the days that you have been in pain, what has been your usual level of pain (0 = No pain; 10 = Worst pain you can imagine)	0-10
On average, how many hours has this usual pain lasted?	1-2 3-5 6-8 9-12 12-18 18-24
On the days that you have been in pain, what has been your worst level of pain (0 = No pain; 10 = Worst pain you can imagine)	0-10
On average, how many hours has this worst pain lasted?	1-2 3-5 6-8 9-12 12-18 18-24

Interpretation: Number of days in pain in the past 2weeks × Usual pain level × Worst level of pain ÷ 10 Total score- 140
 0-10= very mild problem
 11-60= mild problem
 61-100= moderate problem
 101-140= severe problem
 Test Reliability: [Cronbach's alpha: 0.87]

3. Results

Table 1: Gender wise distribution of participants

Gender	Frequency	Percent.
Male	108	90
Female	12	10
Total	120	100

In total, 120 participants were evaluated from which 90% of participants were males and 10% were females.

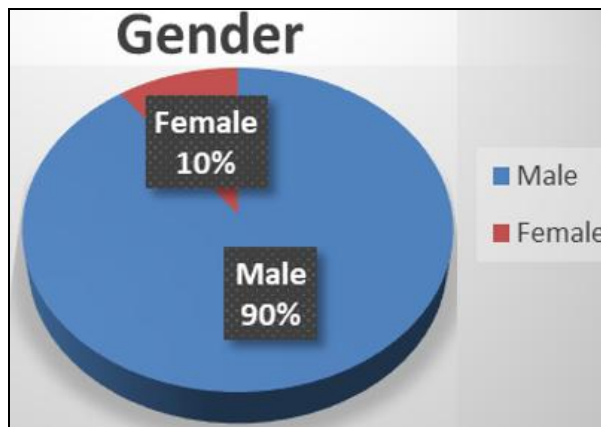


Fig 1: Gender

Table 2: Age wise distribution.

Age category	Frequency	Percent
35-40	55	46
41-45	21	18
46-50	22	18
51-55	22	18
Total	120	100

The average age of participants was 35-55 years. The Age wise distribution shows 46% Traffic police was between 35-

40 years, 18% was between 41-45 years, 18% was between 46-50 years and 18% with more than 50 years.

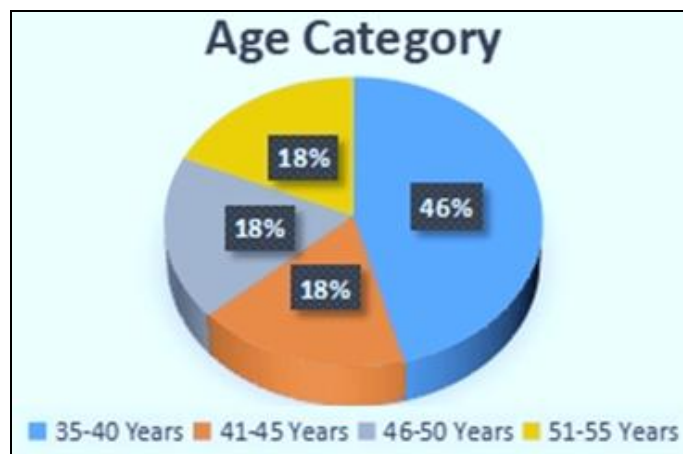


Fig 2: Age Category

Table 3: BMI of male and female traffic police officers

BMI Category	Frequency	Percent
Normal- 18.5-24.9	94	78
Overweight- 25.0-29.9	21	18
Obese- >30	5	4
Total	120	100

The BMI groups were with 78% 18.5-24.9 (normal BMI), 18% 25.0-29.9 (overweight), and 4% above >30 (obese).

Table 4: Evaluation of Modified Lasegue's test

Modified Lasegue's Test	Frequency	Percent
Negative	76	63
Positive	44	37
Total	120	100

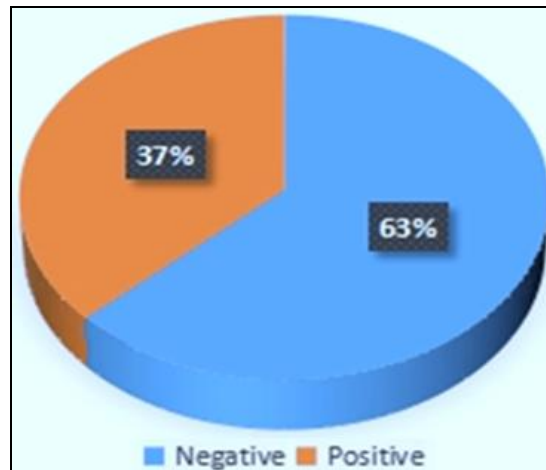


Fig 3: Modified Lasegue test

Out of 120 participants 37% showed a positive modified lasegue’s test and 63% with a negative modified lasegue’s test.

Table 5: Pain frequency severity duration (PFSD) scoring.

Pain Frequency severity duration score	Frequency	Percent
Nil	76	63
Mild	28	23
Moderate	14	12
Severe	2	2
Total	120	100

Further the participants were scored on PFSD scale. 23% participants reported mild PFSD score, 12% with moderate and 2% with severe PFSD score.

Table 6: Increase in symptoms due to extended COVID duties

Increased symptoms after COVID duties	Frequency	Percent
No	90	75
Yes	30	25
Total	120	100

Table 7: Modified Lasegue Test & Symptoms Cross tabulation

Particular	Increased symptoms after COVID duties		Total	Chi square	p-value
	No	Yes			
Modified Lasegue Test	Negative	0	76	69.091	0.001*
	Positive	30	44		
Total	90	30	120		

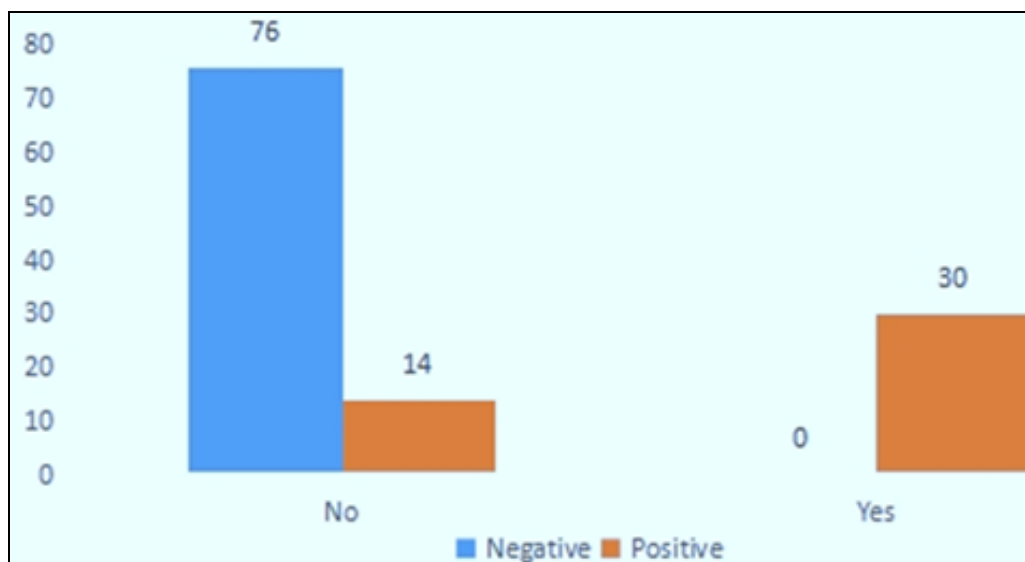


Fig 4: Modified Lasegue test & Symptoms

With a P-value of 0.001*, 44 out of 120 individuals have sciatica symptoms, with 30 reporting an increase in their symptoms as a result of extended COVID duties and 14 not reporting any increase in symptoms due to COVID responsibilities.

$$\text{Prevalence Rate} = \frac{\text{No of people with increased symptom}}{\text{No. of people with disease}} \times 100$$

$$\text{Prevalence Rate} = 30 / 44 = 68.18\%$$

4. Discussion

Sciatica is a severe condition in which the patient has pain and/or paresthesia in the sciatic nerve distribution or a lumbosacral nerve root linked with it. The hamstrings and lower extremity adductors receive direct motor function from the sciatic nerve, while the calf muscles, anterior lower leg muscles, and some intrinsic foot muscles receive indirect motor function. The sciatic nerve also gives sensation to the posterior and lateral lower leg, as well as the plantar portion of the foot, indirectly through its terminal branches. It's crucial to understand that most occurrences of sciatica are

caused by an inflammatory condition that causes inflammation of the sciatic nerve. Direct compression of the nerve, on the other hand, causes more severe motor dysfunction, which is often not visible and, if present, would necessitate a more thorough and expedient workup.

A study by R Centemeri *et al.* G Ital Med Lav Ergon suggest that the most common musculoskeletal symptoms among local police officers are cervicobrachial pain, low back pain, and sciatica. Low back pain is associated to tasks exposing to awkward posture of spine [5]. Another study by Louise Back Larsen shows that 43.2% of the population complains of low back pain while 38% had pain in the lower limb [9].

While there are a variety of assessments and tests for determining the prevalence of sciatica, the modified Lasegue's test has been suggested as being more reliable.

The modified lasegue's test, often known as the straight leg raise test, is done in supine position. The examiner gently raises the patient's leg by flexing the hip and extending the knee, and the test is positive if the patient feels pain down the lower limb in the same distribution as the lower radicular nerve roots (usually L5 or S1).

Furthermore, when pain is induced by lower limb flexion at an angle less than 45 degrees, it is considered a positive straight leg raise test. Patients frequently request that the examiner abort the procedure if the pain is repeated during the leg straightening portion of the test, and the buttock pain is usually eased by flexing the patient's knee.

Present study aimed to find out the occurrence and rise of sciatica symptoms in traffic police officers during the COVID pandemic. Multiple literatures have suggested prevalence of sciatica and low back pain in TPO but no literature suggested increase in the prevalence of sciatica in TPO during the COVID pandemic.

The data was collected at Miraj and Sangli traffic police station. Based on the inclusion and exclusion criteria, a total of 120 people were included in the study. Modified Lasegue's or the SLR test were administered to all of the subjects. A positive test was found in 44 of the 120 participants. The pain frequency severity duration scale was used to evaluate all 44 individuals in order to assess several aspects of pain rather than simply the intensity.

Due to the longer COVID duties, 30 out of 44 individuals reported an increase in symptoms, while 14 reported no rise in symptoms.

The findings aid in the early detection and correction of sciatica, which helps to avoid or prevent subsequent issues linked with the lower back and lower leg.

The results of this study reveal that sciatica is linked to lengthy COVID responsibilities in the Traffic Police of Sangli City.

5. Conclusions

Present study was done at Sangli city among the traffic policemen to assess the presence and rise of sciatica due to extended COVID duties with the help of modified lasegue's test and PFSD score. Prolonged standing and vibratory force due to driving can cause deleterious effect on the lumbar spine. The study concluded that 68.18% of increase in prevalence of sciatica is present due to prolonged COVID duties among traffic police. The prevalence was 52% with normal BMI and 50% with BMI above 24.9 (Overweight) which is almost equal.

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