INVESTIGATING CERVICAL RADICULOPATHY IN CHENNAI, INDIA: A POPULATION-BASED RESEARCH STUDY

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KEYWORDS

Cervical radiculopathy, Chennai population, neck pain

ABSTRACT

Aims: The aim of this study was to find out the prevalence of cervical radiculopathy among the population of Chennai with neck pain.

Objectives: The target of this study was to lay out the connection between cervical radiculopathy and neck torment and to figure out the level of incapacity by utilizing The Northwick Park Neck pain Survey (NPQ).

Background: Cervical radiculopathy, regularly called a "crushed nerve," happens when a nerve in the neck is irritated or pressed where it branches from the spinal rope concerning explicit neurologic and external musculoskeletal conditions in the neck and upper limbs.

Materials and Methods: A general evaluation was conducted on 1000 samples in Chennai who showed neck discomfort as part of the prevalence investigation in order to identify cervical radiculopathy. The samples were included using the Spurling test and the Northwick Park Neck Pain Survey (NPQ). Where, 300 people were identified with cervical radiculopathy.

Results: According to the data analysis, the study reveals that cervical radiculopathy, a condition characterised by radiating pain in the upper limbs, is diagnosed in 30% of patients with neck pain. Males experienced cervical radiculopathy at a higher rate than females.

Conclusion: This study shows that cervical radiculopathy is common among different types of professionals experiencing neck pain, and that it positively correlates with gender.

INTRODUCTION

Radiculopathy is described as a "objective loss of sensory or motor function as a result of conduction block in axons of a spinal nerve or its roots" [1] by the International Association for the Study of Pain (IASP). Unilateral or bilateral radiating pain in the neck and arms, as well as sensory and/or motor impairments brought on by nerve root compression and/or irritation from spondylosis or disc herniation, are all included in cervical radiculopathy [2]. When neck discomfort radiates into the arm, it's commonly referred to as cervical radiculopathy (CR). The most frequent causes are spondylitis abnormalities such bone spurs or cervical disc herniation, which can compress or inflame the nerve roots (i.e., chemical radiculitis). [3]

A cervical nerve's dorsal (sensory) and ventral (motor) roots may be compressed or irritated at one or more vertebral levels, resulting in cervical radiculopathy. Osteophyte growth, intervertebral disc herniation, and other mass effects in the vicinity of the cervical spine's exit foramen can cause compression [4]. Cervical radiculopathy is estimated to have an annual incidence of 83.2/100,000 persons (107.3 for men and 63.5 for women), with a peak incidence for both genders in the fifth and sixth decade [5]. The prevalence is 3.5/1000 persons. According to a study, the prevalence of cervical radiculopathy was 1.21–5.8/1000, and the incidence was 0.832–1.79/1000 person-years [6].

A survey indicates that the incidence rate is 85% out of 10,000 cases each year, with a slightly higher rate in males than females [7]. Cervical radiculopathy symptoms affect about 4% of the population yearly, peaking between the ages of 50 and 59. After middle age, cervical radiculopathy is a prevalent illness that affects both sexes and is a significant cause of morbidity and disability [8]. All patients should have conservative care for at least six weeks if there is no myelopathy or notable muscle weakness [7]. 75% to 90% of patients with cervical radiculopathy report symptomatic improvement with non-operative therapy, indicating that the condition usually resolves on its own [7].Depending on whether nerve root level is injured, the location and pattern of symptoms will change. If the dorsal or ventral nerve roots are impacted, for example, there may be changes in motor function as well as sensory perception. While neck pain is a common complaint among individuals with cervical radiculopathy, arm pain is the primary cause for seeking medical attention. Patients typically complain of upper extremity pain, numbness, tingling, and weakness, which frequently cause severe functional restrictions and disability [8].

Programs for physical therapy are important for treating cervical spine diseases and helping people feel better. Medication, traction, and the temporary use of a soft cervical collar are examples of nonsurgical treatment for cervical radiculopathy. Conservative treatment also includes physical therapy, steroid injections, and manipulation. Cervical traction has been identified as the preferred physical therapy method for those suffering from cervical radiculopathy [9]. Clinicians have access to a range of therapeutic alternatives for the rehabilitation of CR, including as cervical traction, manual therapy techniques, strengthening and stretching exercises for the thoracic and cervical spines, and postural instruction. There is still a dearth of data supporting the efficacy of these rehabilitation strategies for CR [10].

Leak et al. established the Northwick Park Neck Pain Questionnaire (NPQ), which provides information on how neck pain has affected a patient's capacity to manage their daily life as well as the severity of problems related to neck pain [11]. This questionnaire was created to address the limitations of related scales, taking into account prior knowledge on the significance of using this type of questionnaire to diagnose low back pain [12]. When compared to semi-objective characteristics like the visual analogue scale and objective measurements like neck range of motion, the NPQ has shown to be a valuable tool in research on neck pain. The NPQ has been translated into numerous different languages over time [13].

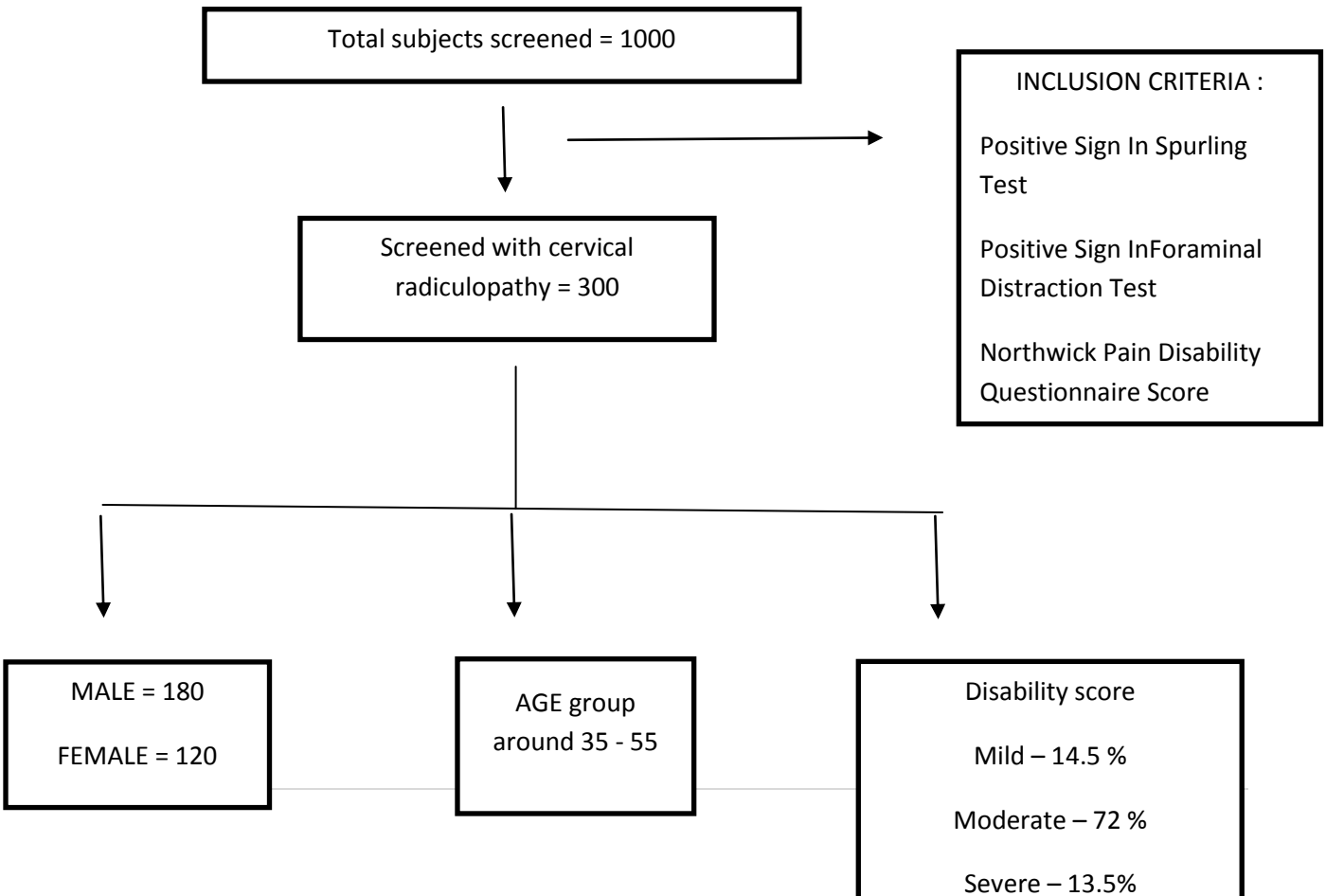
Numerous studies have assessed the Spurling's test, and the results indicate a high specificity ranging from 0.89 to 1.00 (95% confidence interval) [14]. The Spurling compression test [15] is the name given to the manoeuvre that Spurling and Scoville reported in 1944. In an attempt to replicate the patient's symptoms, the initial description of this test—which was later adopted by other authors—suggested that the provocative movement involve lateral bending and axial compression to the cervical spine. The maximum cervical compression test, lateral bending, rotation, and compression, extension and compression, extension and lateral bending, extension, lateral bending, and compression, and extension, rotation, and compression are the other at least five test modifications that have been proposed [16].

The Cervical Distraction Test also called Traction/Distraction test is a symptom-relief test to assess for cervical radicular syndrome/cervical radiculopathy. It has been described to have a sensitivity of 44% and a high specificity ranging between 90 to 97% in the review of Rubenstein et al. (2007). It therefore, has a moderate clinical value to confirm the hypothesis of cervical radicular syndrome. This test can only be performed if the patient experiences symptoms of shooting pain or paraesthesia down the arm at the moment, because this test ceases to reduce these symptoms [19]. The diagnostic accuracy of various clinical tests for cervical radiculopathy has recently been summarised in two systematic reviews. One systematic review concluded that there is evidence that a positive Spurling test, a positive Arm squeeze test and a positive Cervical distraction test are valid clinical tests to increase the likelihood of cervical radiculopathy, based on a high specificity.[20]

MATERIALS AND METHODOLOGY

The prevalence study was done on 1000 subjects who were aged between 35-55, both genders, complaint of neck pain more than 3 months were included. Subjects with Spinal tumours, cervical myelopathy, Ligamentous instability, Shoulder Pathology, Fringe nerve issues, extreme metabolic problem, serious cardiorespiratory sicknesses, serious neurological illnesses and non-supportive subjects were excluded. The subjects were evaluated with a subjective assessment which consists of demographic data's, history of neck pain – intensity, duration, region involved. Further, the subjects were explained about the study and informed consent was obtained. The study was conducted in various hospitals of Chennai, Tamil nadu. All the subjects were preceded for further screening, such as Northwick Park Neck pain Survey (NPQ) and Spurling test and foramina distraction test was done, the subjects with positive sign diagnosed to consider with cervical radiculopathy. Out of which 300 subjects were finally diagnosed to have cervical radiculopathy.

Data chart:



DATA ANALYSIS

The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 24. Frequency distribution and frequency percentage was adopted.

TABLE – 1

Variables	N	AGE Minimum	AGE Maximum	Mean
FEMALE	120	36.00	54.00	45
MALE	180	37.00	55.00	46
(Overall)	300	36.00	55.00	45.5

GRAPH – I
Frequency distribution of Gender distribution in percentage

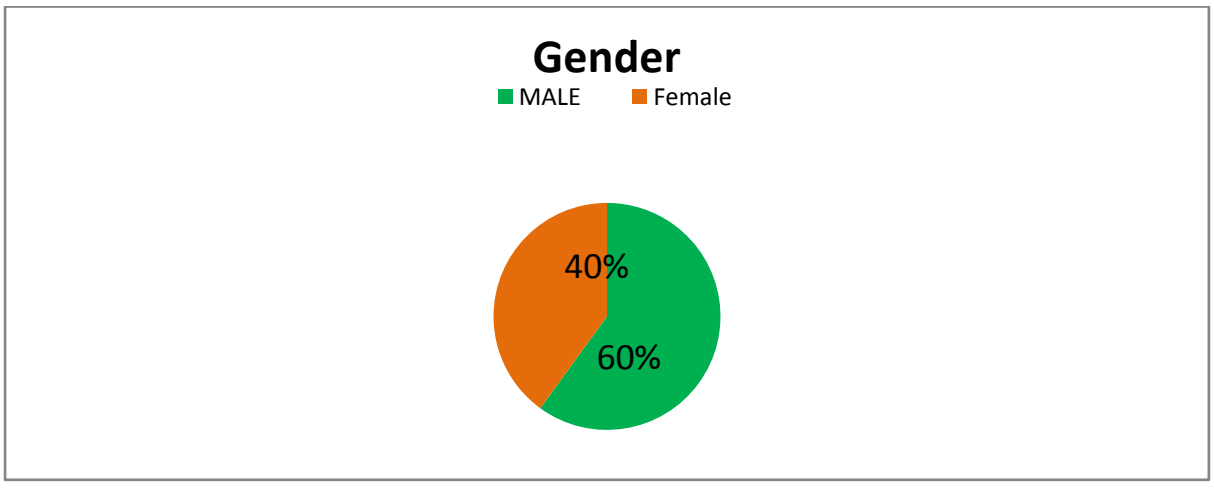


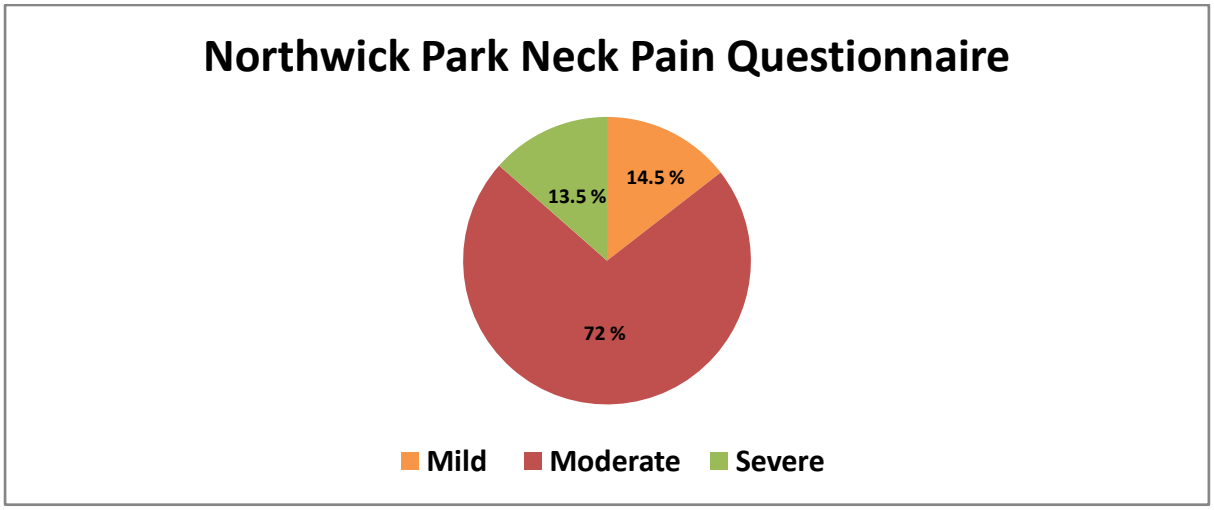
TABLE - 2
FREQUENCY DISTRIBUTION OF SHORT SURVEY FORM

S.NO	SCALE	YES	NO
1.	Do you feel any pain in neck	100%	
2.	Do you feel any pain throughout your arm	100%	--
3.	Do you feel any numbness or tingling sensation in the upper extremity	94.5%	5.5%
4.	Do you have any functional disability in the upper extremity	90.0%	10.0%
5.	How long you have the pain: less than 3 months/ less than 6 months/ more than 6 months	< 3 Months - 24.5% < 6 Months - 66% > 6 Months - 9.5%	
6.	Severity of the pain: Mild/Moderate/Severe	Mild - 15% Moderate - 72% Severe - 13%	
7.	Frequency of pain: Morning /Afternoon / Night	Morning - 23.5% Afternoon - 12% Night - 64.5	
8.	Aggravating factor: Neck Bending/ Daily Activities/ Lifting weight	Lifting Weight - 2.5% Neck Bending - 28% Daily Activities - 69.5%	
9.	Relieving factor: Neck flexion/ neck extension / neck lateral flexion	Neck Flexion - 69% Neck Extension - 22% N. Lateral Flexion - 9%	
10.	Nature of Pain: Dull Pain / Pin Prick Pain/ Stabbing Pain	Dull Pain – 0 Pin Prick Pain - 82.5% Stabbing Pain - 17.5%	

TABLE – 3

Descriptive Statistics on Northwick Park Neck Pain Questionnaire					
Variables	N	Minimum	Maximum	Mean	Std. Deviation
MALE	120	20.00	27.00	23.66	2.32
FEMALE	180	19.00	27.00	23.93	2.18
(Overall)	300	19.00	27.00	23.82	2.24

GRAPH - II
Frequency Percentage of Northwick Park Neck Pain Questionnaire



RESULT OF THE PREVALENCE REPORT

From the data collected, the demographic data shows average male, female percentage as 60 %, 40% respectively. Average age group is between 36 to 55.

Patient survey form revealed that 90% had functional disability in the upper extremity, 72% had moderate pain, 66 % had less than 6 months of pain, 64.5 % had worsen pain during night, 69.5 % had pain during daily activities, 82.5 % had pin pricking type of pain.

Northwick park neck pain questionnaire interpreted around 72% population suffered with moderate intensity of pain, 14.5 % with mild and 13.5 % with severe pain.

DISCUSSION

Allander et al., in his series reported prevalence of cervical radiculopathy increased from 3% in the general population to 19% in the age group 30-60 years.

Kivi et al. reported at mean age as 43 years in his series. Geoffroy et al. reported common age group in their series of cervical radiculopathy between 30-50 years with mean age group 42 years. The findings of the present study are more or less similar to the findings of all the above workers . The occurrence of the cervical radiculopathy in the adult and late age group between 40-60 years could be explained on the basis that physical activity and natural age related changes starts occurring in this age group.

Allander et al. reported that this condition is more common in women as compared to male. However, Geoffory et al. , Hamilton and Waugh et al. reported that cervical radiculopathy is equally common in both male and women. The present findings shows similar findings with Geoffory et al, Hamilton and Waugh et al Therefore the present study shows that it is not specific for any gender, however it is work related and age more commonly affected

Binder et al. reported that 51% attributed symptoms to a specific cause or activity for example household activities, working with tools, lifting and carrying heavy weights, faulty posture and sports.

Although much literature provides various data and information regarding the prevalence of cervical Radiculopathy among the general population, based on gender and work-related causes, literature on their prevalence among the Tamilnadu region population is limited so this study has analysed and found out an statistically analysed prevalence rate of the demographic data shows average male , female percentage as 60 % ,40% respectively. Average age group is between 36 to 55.

Patient survey form revealed that 90% had functional disability in the upper extremity, 72% had moderate pain, 66 % had less than 6 months of pain, 64.5 % had worsen pain during night, 69.5 % had pain during daily activities, 82.5 % had pin pricking type of pain.

Northwick park neck pain questionnaire interpreted around 72% population suffered with moderate intensity of pain, 14.5 % with mild and 13.5 % with severe pain.

Conclusion: The study concludes that approximately 30 percentages of the subjects with neck pain had a symptom of cervical radiculopathy which was confirmed by Northwick park pain questionnaire and Spurling test. Males are more affected than female.

COMPETING INTERESTS:

There is no financial and non- financial competing interest.

AVAILABILITY OF DATA & MATERIALS: Patient survey was done in Chennai, Tamil Nadu, and India.

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