



## Original Article

### Prevalence of Cervical Radiculopathy Among Teachers

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#### ABSTRACT

**Background:** Pinched nerves or cervical radiculopathy, are caused by damage to the nerves or changes in the way they function. A nerve root close to the cervical vertebrae is compressed, causing the pain. **Objective:** To determine the frequency of cervical radiculopathy among teachers and to find out the difference in the prevalence of cervical radiculopathy concerning demographics. **Methods:** The population of this cross-sectional study was male and female teachers from different institutes of Faisalabad using convenient sampling in their offices for five months. Participants aged from 25 to 70 years having teaching experience of a minimum of 2 years and daily teaching service of more than 6 hours were included in the study. Patients with some psychological problems, a history of systemic diseases or any serious illnesses were eliminated from the study. Informed consent was taken from the participants who ensured their willingness to participate in the study. Written instructions were provided to them regarding responding to the instrument. After the administration of these questionnaires final size of the sample was male teachers. Questionnaires were distributed to teachers to fill in the required data. The participants signed the written consent willingly and all data was kept confidential. Only those regions were assessed that were relevant to this study. The categorical variables were evaluated by frequency and percentages, while the mean and standard deviation were calculated by continuous variables. **Results:** It highlights the prevalence of cervical radiculopathy among male and female teachers separately with male teachers experiencing more symptoms than female teachers. It showed a strong connection between the height of the chair, table, whiteboard, lifestyle, age and cervical radiculopathy. It suggested that teachers must have an active lifestyle to not be the victim of cervical radiculopathy. **Conclusion:** Male teachers scored high on cervical radiculopathy as compared to females. It was also found that teachers with more age scored higher on cervical radiculopathy. Furthermore, teachers who were using chairs and tables of height less than 20 inches scored more on cervical radiculopathy. Moreover, teachers who were using a whiteboard with less height also scored higher on cervical radiculopathy.

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## INTRODUCTION

A condition known as cervical radiculopathy is characterized by nerve compression brought on by a herniated disc or inflammatory bony protrusion.<sup>1</sup> Generally, this impingement causes sensory impairments, motor deficits, and discomfort or numbness in the neck and upper extremities. Abnormalities that affect the nerve roots resulting in symptoms known as cervical radiculopathy.<sup>2</sup> These include stenosis of the intervertebral foramen due to compression, irritation, traction, and a lesion on the nerve root brought on by a herniated disc, foraminal narrowing, or degenerative spondylotic alteration.<sup>3</sup>

Cervical radiculopathy is usually the primary clinical symptom following injury or compression to a nerve root in the cervical spine and causing uneasiness.<sup>4</sup> Parkinson originally characterized the condition in 1817. Although he concluded that it was a rheumatic disease of the deltoid muscle.<sup>5</sup> Cervical radiculopathy has an annual incidence of 83.2/100,000, with men experiencing a greater incidence of 107.3/100,000 than women 63.5/100,000.<sup>6</sup> The most prevalent age to be affected is between 50 and 60 years old, and the incidence is 3.5/1000.<sup>7</sup> In 2004, 36/1000 cases of cervical radiculopathy in Sweden were surgically treated.<sup>8</sup>

For the younger population, disc herniation is most frequently responsible for cervical radiculopathy, which makes up 20-25% of all cases. The osteophyte formation in the uncovertebral- and/or facet joints is associated with decreased disc height in older patients and pleated ligaments in older patients. The C6 and C7 nerve roots are the two that are most frequently damaged.<sup>9</sup> Foraminal stenosis and disc herniation cause different symptoms of cervical radiculopathy.<sup>10</sup> The most frequent symptoms experienced by patients with symptomatic disc herniation are an abrupt occurrence of

neck pain accompanied by arm pain within the same distribution area as the afflicted nerve<sup>11</sup> and mostly linked with rotator cuff tear.<sup>12</sup> Sensory and motor function problems may also be indicators.<sup>13</sup> By extending the neck and rotating it to the side that is experiencing symptoms, you may cause the pain to radiate into your arms (Spurling's sign).<sup>14</sup> Several alternative diagnoses can show common characteristics, such as Parsonage-Turner injuries (plexus injuries)<sup>15</sup>, peripheral nerve entrapments such as carpal tunnel syndrome, neuropathy, neuritis, impingement of the shoulder and ischemic heart disease.<sup>16,17</sup>

Using a self-administered survey, Hussein et al. (2019) conducted a cross-sectional study with teaching staff from public schools. Information about Pain, demographics, occupational and psychosocial characteristics, and severity level were all included in the questionnaire. Analysis was done on the 12-month prevalence, contributing variables, and low back pain severity. Primary teachers reported having LBP at a rate of 64.98%, with over 70% of them reporting only a mild handicap. According to the logistic regression analysis, the female gender was positively related to LBP (odds ratio [OR]: 1.692,  $p = 0.02$ ) and negatively associated with LBP ( $p = 0.003$ ). They concluded that 64.98% of primary school teachers in rural Western Kenya had LBP, with the majority of them claiming just mild impairment.

The gender of the female and insufficient supervisor support were the identified risk factors. The existence of psychosocial risk factors connected to the workplace in this study indicates a thorough approach to the diagnosis and treatment of LBP. To stop and slow the course of LBP disability, precautions should be taken.<sup>18</sup> According to Sottimano et al. (2018), age-related issues are discussed along with the psychophysical wellness of elementary school teaching staff in a town in

North-Western Italy. A screening test to detect musculoskeletal diseases and a structured self-administered survey was used to collect information. During the day, nursery school teachers frequently adopt difficult positions, namely lifting (93.6%) and squatting (61.1%). Perceived musculoskeletal discomfort is widespread, particularly in the cervical (63.3%) and lumbosacral (67.5%) regions.<sup>19</sup> Saudi female school teachers are more likely than their male counterparts to experience musculoskeletal pain, according to Abdul Monem et al. (2014). Between August and October 2013, a quantitative cross-sectional observational study on female Saudi school teachers in five different regions was conducted.

The participants completed a self-administered questionnaire that had questions about their demographics and pain. The self-report of pain by the patient was done using a numeric pain rating scale. The statistical programmer SPSS version 21.0 was used for data analysis. The poll received responses from 486 teachers. Severe 38.1% of teachers said they had low back pain, which was accompanied by knee, heel, shoulder, upper back, hip joint, ankle, and neck pains (26.3%, 24.1%, 20.6%, 17.7%, and 17.7%, respectively). The least frequently reported pain was severe elbow (5.6%) and wrist (7.4%) pain. 46.1% of instructors reported that their pain interfered with their work.<sup>20</sup> In 2012, Pengying Yue et al. conducted research on the incidence and risk factors of neck and shoulder discomfort in Chinese teachers.

Seven schools were chosen at random in Puning, a city in China's eastern Guang Dong Province, between 11 December 2009 and 15 March 2010. During the regular teachers' meeting, a survey was given out. Information on participant demographics, employment traits, environmental exposures, and musculoskeletal symptoms and discomfort were gathered in cross-sectional research of teachers from seven schools. 48.7% of 893 instructors reported having neck or shoulder pain. In addition to physical activity (OR

0.55, 95% CI 0.35 to 0.86), prolonged standing (1.74, 1.03 to 2.95), sitting (1.76, 1.23 to 2.52), static posture (2.25, 1.56 to 3.24), and uncomfortable back support, all were associated with self-reported NSP (1.77, 1.23 to 2.55).<sup>21</sup> Engquist et al. conducted a study to evaluate the results of physiotherapy after the surgical procedure of cervical radiculopathy. They concluded that more improvement was seen in the group who were seeking physiotherapy treatments within 1 year postoperatively as compared to those after surgery not seeking any therapy.<sup>22</sup> It is vital for teachers to feel comfortable and to have good health to teach students with attention and care. If they will feel any kind of discomfort, then it can cause a bad impact on students. So, this study was set out for the assessment of the prevalence of cervical radiculopathy among teachers.

## METHODS

The population of this cross-sectional study was male and female teachers from different institutes of Faisalabad using convenient sampling in their offices for five months. Participants aged from 25 to 70 years having teaching experience of a minimum of 2 years and daily teaching service of more than 6 hours were included in the study. Patients with some psychological problems, a history of systemic diseases or any serious illnesses were eliminated from the study. First of all, informed consent was taken from the participants who ensured their willingness to participate in the study.

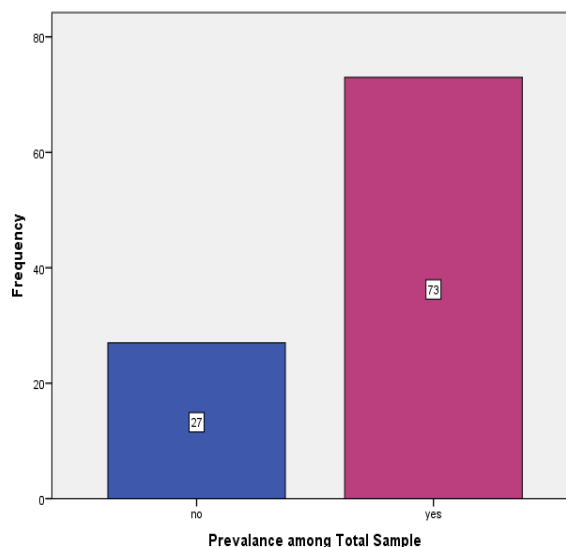
They were assured that the research will not bring any physical, financial or psychological harm to them and the information they were going to provide would be remained confidential. Demographic information was sought from them through a demographic data sheet. Afterward, written instructions were provided to them regarding responding to the instrument. After the administration of these questionnaires final size of the sample was male teachers. Questionnaires were distributed to teachers to fill in the required data. The

participants signed the written consent willingly and all data was kept confidential.

Only those regions were assessed that were relevant to this study. Using SPSS version 23.0, the data was analyzed and the categorical variables were evaluated by frequency and percentages, while mean and standard deviation were calculated by continuous variables.

**RESULTS**

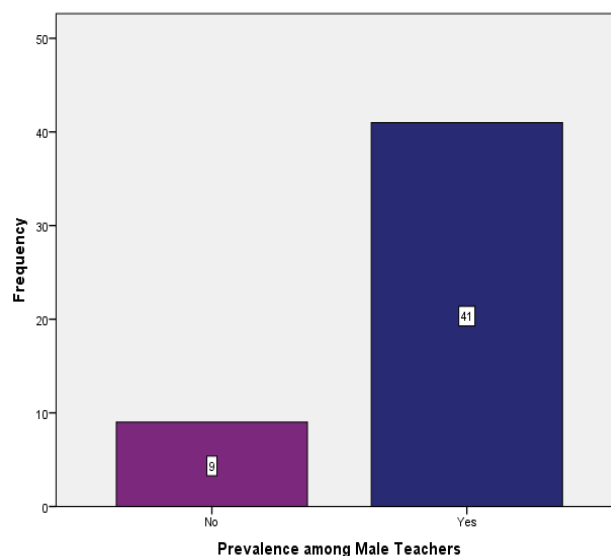
The results showed that 73% of participants reported cervical radiculopathy. In male teachers, 41% of participants had cervical radiculopathy and 9% does not show any symptoms of cervical radiculopathy. Of female participants, 32% reported symptoms of cervical radiculopathy.



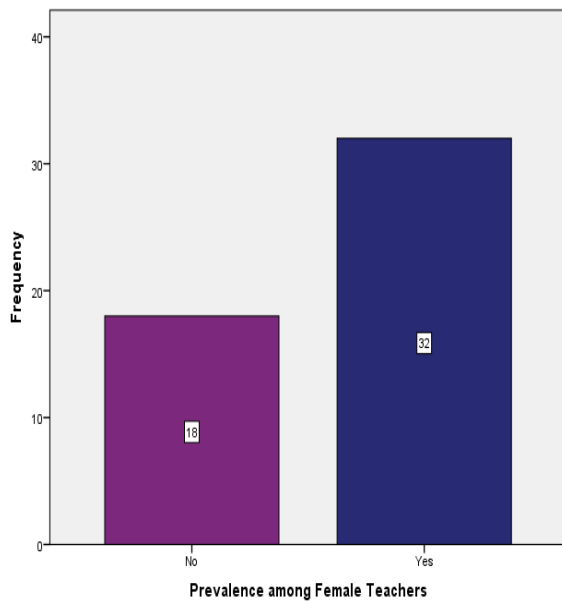
**Figure I: Prevalence of Cervical Radiculopathy (n=100)**

**Table I: Frequency and Percentage of Participants (n=100)**

	Demographic variables	Frequency	(%)
<b>Gender</b>	Male	50	50
	Female	50	50
<b>Age</b>	20-25 years	69	69
	25-30 years	20	20
	30-35 years	11	11
<b>Life Style</b>	Sedentary	24	24
	Less Active	54	54
	More Active	22	22
<b>Height of Chair</b>	Less than 17 inch	39	39
	17-20 inches	52	52
	20-23 inches	9	9
<b>Height of Table</b>	Less than 17 inch	41	41
	17-20 inches	44	44
	20-23 inches	15	15
<b>Height of White board</b>	25-30 inch	39	39
	30-35 inch	61	61



**Figure II: Prevalence of Cervical Radiculopathy among Male Teachers (n=50)**



**Figure III: Prevalence of Cervical Radiculopathy among Female Teachers (n=50)**

## DISCUSSION

Shoulder and neck pain is the most prevalent work-related health issue and a leading contributor to morbidity among teachers around the world.<sup>23</sup> Owing to their daily responsibilities and the nature of their employment, school teachers represent an occupational category that is sensitive to and seems to have a high prevalence of neck and/or shoulder pain.<sup>24</sup> Since educators are undoubtedly the most significant group in our culture, they give kids a reason to live, prepare them to excel as global citizens, and stoke their desire to succeed in school and life.

Teachers are the key factor in a child's readiness for the future because today's youth will be the leaders of tomorrow. As a result, teachers must be at ease and in excellent health to provide their students with the individualized attention they need. Students may suffer if they experience any discomfort, which is detrimental.<sup>25</sup> Frequencies and percentages were also calculated to describe the demographic characteristics of the data. Furthermore, a difference in cervical radiculopathy was also analyzed by using bar

charts concerning different demographics (i.e. the height of the chair, height of the table and whiteboard and lifestyle). The frequency and percentage of study variables concerning demographics (i.e. gender, age, height of the table, height of chair and height of whiteboard and lifestyle). The mean differences of cervical radiculopathy among teachers regarding their lifestyles. It showed that teachers with a sedentary lifestyle were high on cervical radiculopathy (M=24.13) followed by a less active lifestyle (M=20.54). Moreover, teachers who had a more active lifestyle scored less on cervical radiculopathy (17.14).

The mean differences of cervical radiculopathy among teachers regarding the height of whiteboards which they were using in classrooms. It showed that no teacher was using a whiteboard with a height of 20-25 inches, whereas teachers who were using a whiteboard with a height of 25-30 inches scored higher on cervical radiculopathy (M=21.90) than the teachers who were using a whiteboard of 30-35 inches' height (M=19.85). The mean differences of cervical radiculopathy among teachers for the height of the table which they were using in classrooms.

It showed that teachers with a table of less than 20-inch height were high on cervical radiculopathy (M=21.73) followed by a table with a height of 20-25 inches (M=20.14). Moreover, teachers who were using a table with a height of 25-30 inches scored less on cervical radiculopathy (19.20). The mean differences of cervical radiculopathy among teachers for the height of the chairs they were using in classrooms. It shows that teachers with a chair of 20-23 inches in height were high on cervical radiculopathy (M=22.22) followed by the chair with a height of fewer than 17 inches (M=21.69). Moreover, teachers who were using a chair with a height of 17-20 inches scored less on cervical radiculopathy (19.60). The mean differences of cervical radiculopathy among teachers for different age groups. It showed that teachers

in the age group of 20-25 scored low on cervical radiculopathy (M=18), followed by the age group of 25-30 years (M=24.70). Moreover, teachers in the age group of 30-35 years scored higher on cervical radiculopathy (29.91).

The mean differences of activities that increase symptoms of cervical radiculopathy among teachers. It showed that teachers feel more symptoms of cervical radiculopathy while using a whiteboard than checking a notebook or reading a book. One of the main limitations of the current study is response biases. As the current study used self-report measures, they had the advantage that they were vulnerable to social desirability. It could not be generalized to the whole population of Pakistan. Another limitation that took part in the study was participant biasness. Participants tried to appear healthy and do not want to accept that there may exist some musculoskeletal pain.

Another limitation of the present study is that data were collected from a single source; future studies should use some other sources also like a semi-structured interview, so that rich information could be collected. The study recommends that the sample size should have been large enough to generalize the population. The sample size should have been taken from different cities in Pakistan; so it could have been better generalized. Cross-culture studies should also have been conducted to evaluate the differences and the symptoms of cervical radiculopathy for different demographics. Qualitative research should also have been carried out in-depth to examine the symptoms and duration of cervical radiculopathy.

## CONCLUSION

Cervical radiculopathy is increasing day by day teachers with different symptoms of body pains like a headache, and neck or shoulder pain. The results showed that female teachers are more prone to cervical radiculopathy as compared to males. It was also found that

teachers with more age scored higher on cervical radiculopathy. Furthermore, teachers who were using chairs and tables of height less than 20 inches scored more on cervical radiculopathy. Moreover, teachers who were using a whiteboard with less height also scored higher on cervical radiculopathy. In conclusion, this research is important for the literature on cervical radiculopathy but it also explores the prevalence of cervical radiculopathy among teachers and it concluded that age, lifestyle, gender, the height of the table, height of the chair and height of the whiteboard play important role in teachers' health.

## DECLARATIONS

**Consent to participate:** Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

**Availability of data and materials:** Data will be available on request. The corresponding author will submit all dataset files.

**Competing interests:** None

**Funding:** No funding source is involved.

**Authors' contributions:** All authors read and approved the final manuscript.

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