

Prevalance And Awareness Of Paraspinal Muscle Spasm In Tecahers.

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ABSTRACT

Background -Paraspinal Muscle Spasm Is Abrupt , Involuntary Contraction Of Muscles Present Around The Spine . Mostly Affecting Adult Age Engaging In Prolong Static Standing , Sitting .Teaching Profession Is One Of The Profession Which Demands The Uncomfortable Prolong Postures , Monotonous Work , Repetitive Tasks . So, Teaching Is One Occupational Group Which Have High Prevalence Of Various Musculoskeletal Conditions .Most Of Time Paraspinal Muscle Spasm Remains Unnoticed , Because There Is Lack Of Information About Its Symptoms , Possible Risk Factors And Its Proper Management Among Teachers. So , This Study Is Based On Uncovering Prevalence Of Paraspinal Muscle Spasm In Teachers And Creating Awareness In About It.

Methods- The Observational Study Was Conducted In Pre-Primary Schools , Primary School , And High School Around Karad. The Study Is Done To Find Out Prevalence And Awareness Of Paraspinal Muscle Spasm In Teachers. Before Proceeding With The Survey, The Ethical Committee Approval Was Taken. Patient Selected According To Inclusion And Exclusion Criteria. With Permission Of 92 Teachers Participating In This Study And Result Was Obtained By The Help Of Statistician.

Result- In This Study We Found That Out Of 92 Patients, The Prevalence Of Paraspinal Muscle Spasm In Teachers Is 67 % And Among All 92 Participants Only 26% Of Teachers Are Aware About Paraspinal Muscle Condition, Showcasing Poor Awareness About It .

Conclusion-The Study Found That Among Hundred Percentage Of Responses Only 26% Of Teachers Are Aware About Paraspinal Muscle Spasm , And There Is Prevalence Of 67% Of Paraspinal Muscle Spasm In Teachers.

Key Words - Awareness , Lbp ,Nprs ,Occupational Musculoskeletal Disorders. Paraspinal Muscle Spasm, Prevalence , Teachers .

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INTRODUCTION

Low back pain (LBP) is commonly recognized as one of the most frequently reported musculoskeletal disorders worldwide, in part due to paraspinal muscle spasm. Acute musculoskeletal pain is frequently associated with spasm, creating a vicious cycle of pain from spasm and limited mobility [1]. The paraspinal muscles are crucial to spinal stability and are associated with spinal disorders [2] ; it is well documented that they undergo both structural and functional changes in people with LBP, including atrophy, asymmetry and activation failure and bilateral asymmetry has been documented in individuals suffering with LBP [3]. Imaging studies have further shown that paraspinal muscle parameters can be linked with spinal degeneration and can potentially contribute to the development of a chronic pain condition [4].

Morphological asymmetry and variation in composition of paraspinal muscles have demonstrated in the general population both are associated with risk factors that predispose individuals to musculoskeletal issues [5]. In occupational settings, individuals who are involved in repetitive strain and hold static postures for long periods of time are even more predisposed to musculoskeletal disorders [6]. Within occupational groups, professional groups such as school teachers are particularly vulnerable to static postures in combination with prolonged standing and sitting; there is strong documentation of high prevalence rates for musculoskeletal disorders among teachers which suggests that their occupational tasks promote elevated risk [7].

Comparative advanced imaging studies between healthy individuals and those with chronic LBP have provided

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strong evidence of substantially altered paraspinal muscle health. These findings affirm that degenerative structure correlates with symptomatic outcomes [8]. For teachers, prolonged standing has been directly correlated with chronic LBP and there is a clear link between occupational demands and musculoskeletal health decline [9]. As noted in the critical review on paraspinal muscle spasm, there is clinical relevance to spasm, as dysfunction and pain secondary to spasm can present as a self-perpetuating cycle [10]. Furthermore, prolonged sitting and static postures contribute to increased trunk stiffness and activation demands on trunk musculature to maintain static postures, which worsens discomfort and may predispose to an episode of LBP [11].

Epidemiological evidence supports that musculoskeletal disorders occur widely across the teaching profession internationally. Systematic reviews and meta-analyses suggest that the teaching profession is a highly risky occupation as there are many significant contributors to musculoskeletal morbidity, such as, repetitive strain, awkward postures and psychosocial factors [12]. Work related disorders can detrimentally affect not only physical health but also quality of life and work efficiency, as indicated for school teachers in other contexts [13]. Large scale studies exploring lumbar paraspinal muscle health have shown that age, BMI, sex and lower levels of physical activity are significant factors that will predispose for chronic back pain and disturbed muscle integrity of paraspinal muscles [14].

Across India, cross-sectional studies among teachers indicate that low back pain (LBP) is prevalent and impacted by several associated factors such as ergonomic workplace conditions and long teaching hours [15]. Consistent findings from other areas of the world show that musculoskeletal pain among teachers is common, and associated with various stressors including occupational stress, poor ergonomics, and lack of awareness of preventative measures [16]. Experimental studies indicate that prolonged lumbar flexion can induce multifidus spasms which forms one mechanistic explanation to the high incidence of spasm based pain in workers with exposure to an occupational risk of LBP [17].

In addition, research that investigated coping strategies among teachers, show that whilst musculoskeletal pain is commonplace among teachers, awareness and the adoption of preventative methods are poor. Typically teachers relied on and adopted passive coping strategies instead of active rehabilitation or ergonomic strategies, and subsequently prolonged their disablement and lessened their productivity [18].

In light of this context the prevalence and awareness of paraspinal muscle spasm in teachers emerges as an important area for research. Teachers represent a professional group that are at high risk for developing musculoskeletal strain due to prolonged static postures, repetitive postures, and inadequate ergonomic

modifications. Limited awareness regarding the role of the paraspinal muscles in spinal health would also contribute to the difficulty, and potential delays, in recognizing appropriate diagnosis and management. Therefore, the prevalence of paraspinal muscle spasm and the awareness level of the teachers needs to be assessed in order to develop appropriate prevention, educational and rehabilitative strategies.

MATERIALS AND METHODOLOGY-

This was a cross sectional study which included 92 participants .The permission were obtained from protocol and ethical committees from Krishna Vishwa Vidyapeeth, Karad 92 participants were chosen by using this formula $n = z^2 * pq / L^2$, $z = 1.96$, $p =$ prevalence , $q = 100 - p$, $L =$ allowable error. The sampling method was simple random sampling. This is an observational study was conducted with inclusion criteria among the teachers of age group of 28 to 58 years doing the teaching for more than 5 years both male and female teaching professionals . The teachers taking steroid , muscle relaxants and analgesics are exclude because it will not able to provide proper result . During pregnancy back pain is common symptom experienced by the females so , the spasm could be caused due the pregnancy not just by teaching so , pregnant teachers are excluded from study. The teachers engaging in other professions and part timer teachers are excluded because occupational needs in other profession will have different influence on individuals and we can't say that the paraspinal muscle spasm is exclusively caused by occupational demands in teaching profession.

The research is conducted at pre-primary, primary and high schools around Karad. Samples were included according to inclusion and exclusion criteria. The data was collected by providing questionnaire, NPRS and tenderness scale. The questionnaire is based on the finding the prevalence and awareness of paraspinal muscle spasm in teachers .NPRS scale is used to assess the intensity of pain at both activity and rest [19]. Tenderness scale is used to grade the how painful a site is during palpation also helps to know severity of spasm [20] . Prolong static posture , about lack of awareness of various occupational conditions and lack of physical activity resulting into musculoskeletal conditions like paraspinal muscle spasm in teachers.

Statistical analysis:

The collected data was analysed by a statistician using the SPSS 26.0 software .Percentage formula [Percentage = (Part / whole) * 100] is used to determine percentage of each group of various outcome measures used in study.

RESULT

This study found there is total prevalence of 67 % of paraspinal muscle spasm in teachers and, only 26 % of teachers among all the participants are completely aware about the paraspinal muscle spasm as shown in Table 1 and Figure 1.

Prevalence And Awareness Of Paraspinal Muscle Spasm In Teachers.

Table 1. Prevalence and awareness in teachers

| | |
|------------|-----------|
| Prevalence | Awareness |
| 67% | 26% |

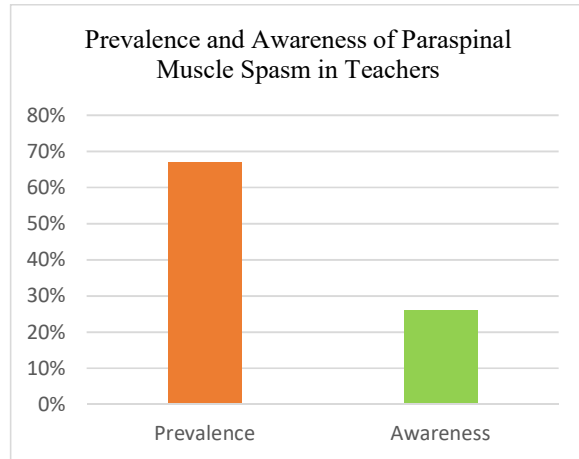


Figure 1. Prevalence and awareness of paraspinal muscle spasm in teachers.

Study shows that , n = 62 (67%) respondents experience worsening of spasms with standing, suggesting that prolonged standing is a significant aggravating factor . As shown in Table 2

Table 2. Spasm aggravating with standing

| | | |
|---------------|-----|-----|
| | Yes | No |
| Frequency (n) | 62 | 30 |
| Percentage | 67% | 32% |

According to study , n =67 (73%) , respondents confirm that spasms affect their daily activities, indicating a negative impact on quality of life. As shown in Table 3

Table 3. Spasm affecting daily life of teachers

| | | |
|---------------|-----|-----|
| | Yes | No |
| Frequency (n) | 67 | 25 |
| Percentage | 73% | 27% |

This study found that , 45(49%) individuals experience spasm in lower back , 25(27%) individuals have spasm in upper back , in both upper and lower back 5(5%) individuals experience spasm , 17(18%) individuals do not experience spasm . This suggests that the lower back is

more commonly affected . As shown in Table 4

Table 4. Spasm affecting areas of back

| | | | | |
|------------|------------|------------|------|------|
| | Upper back | Lower back | Both | None |
| Frequency | 25 | 45 | 5 | 17 |
| Percentage | 27% | 49% | 5% | 18% |

Study shows that , n = 37(40%) , individuals do preventive exercises, indicating a lack of proactive physical activity to prevent spasms . As shown in Table 5

Table 5. Exercise to prevent back muscle spasm

| | | |
|---------------|-----|-----|
| | Yes | No |
| Frequency (n) | 37 | 55 |
| Percentage | 40% | 60% |

As found in study , n=14(15%) , respondents have sought professional help, which reflects underutilization of medical support and underreporting. As shown in Table 6

Table 6. Professional help taken for spasm

| | | |
|---------------|-----|-----|
| | Yes | No |
| Frequency (n) | 14 | 78 |
| Percentage | 15% | 85% |

NUMERICAL PAIN RATING SCALE-

According to results, at rest , score 0 is seen in 40 (36.8%) subjects, score 1 is seen in 23 (21%) subjects , score 2 is seen in 25 (23 %) subjects, score 3 is seen in 2 (1.8%) subjects, score 4 is seen in 1 (1 %) subject , score 5 is seen in 1 (1 %) subject , Score 6, score 7, score8, score 9, score 10 was not present in any subject .

According to results, at activity score 0 is seen in 26 (23.9%) subjects, score 1 is seen in 0 (0%) subjects , score 2 is seen in 10 (9.2 %) subjects , score 3 is seen in 14 (12.8%) subjects, score 4 is seen in 15 (13.8 %) subject , score 5 is seen in 9 (8 %) subject, Score 6 is seen in 6 (5.5 %) subjects, score 7 is seen in 9 (8%) subjects , score 8 is seen in 3 (2.7%) subjects , score 9 and score 10 was not present in any subject. As shown in

Table 7

Table 7. NPRS at activity and rest

| NPRS | At Rest | | At Activity | |
|------|-----------|------------|-------------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| 0 | 40 | 44% | 26 | 28% |
| 1 | 23 | 25% | 0 | 0% |
| 2 | 25 | 27% | 10 | 12% |
| 3 | 2 | 2% | 14 | 15% |
| 4 | 1 | 1% | 15 | 16% |
| 5 | 1 | 1% | 9 | 10% |
| 6 | 0 | 0% | 6 | 6% |
| 7 | 0 | 0% | 9 | 10% |
| 8 | 0 | 0% | 3 | 3% |
| 9 | 0 | 0% | 0 | 0% |
| 10 | 0 | 0% | 0 | 0% |

The NPRS analysis at rest , shows that mean pain is 1 with median of 1 , shows minimal pain at rest. SD of 1.07 shows that the slight variation of pain among participants .The p values of 0.0001 confirms findings are statically significant. As shown in Table 8

Table 8.Statistical analysis of NPRS at rest

| Parameters | Mean | SD | Median | P value |
|-----------------|------|------|--------|---------|
| NPRS (at rest) | 1 | 1.07 | 1 | 0.0001 |

The

NPRS analysis at activity, shows that mean pain is 3.1 with median of 3 , indicating mild to moderate pain at activity. SD of 2.4 shows that the wider variation of pain among participants .The p values of 0.0001 confirms findings are statically significant. As shown in *Error! Not a valid bookmark self-reference.*

Table 9.Statistical analysis of NPRS at activity

| Parameters | Mean | SD | Median | P value |
|-------------------|------|-----|--------|---------|
| NPRS(at activity) | 3.1 | 2.4 | 3 | 0.0001 |

TENDERNESS Scale:

According to data found in study , tenderness was absent in 50 subjects that is 54% , grade 1 was seen in 35 subjects (38%) , grade 2 in 7 subjects (8%) , grade 3 , grade 4 and grade 5 was not seen in any subjects .As shown in Table 10

Table 10.Tenderness grading

| | Frequency | Percentage |
|----------------|-----------|------------|
| Absent | 50 | 54% |
| Grade 1 | 35 | 38% |
| Grade 2 | 7 | 8% |
| Grade 3 | 0 | 0% |
| Grade 4 | 0 | 0% |
| Grade 5 | 0 | 0% |

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Tenderness scale shows mean score of 1.27 and median of 1 showcasing there is mild tenderness seen among the participants . The SD of 0.44 shows less variability .The p value 0.0001 indicates result is statistically significant . As shown in Table 11

Table 11.Statistical analysis of tenderness scale

| Parameters | Mean | SD | Median | P value |
|------------------|------|------|--------|---------|
| Tenderness Scale | 1.27 | 0.44 | 1 | 0.0001 |

DISCUSSION-

The findings of this study indicate a high prevalence (67%) of paraspinal muscle spasm among teachers in the Karad region, with only 26% demonstrating awareness of the condition. This suggests a significant occupational health concern that is largely under recognized. The results show that prolonged standing was a key aggravating factor, affecting 67% of respondents, and 73% reported that spasms negatively impacted their daily activities. Lower back involvement was most common (49%), followed by upper back (27%), aligning with existing literature that links prolonged static postures and repetitive trunk flexion to increased mechanical stress on the lumbar region. Alarmingly, only 40% of teachers engaged in preventive exercises and a mere 15% sought professional help, indicating both a lack of preventive behaviour and underutilization of healthcare services. Pain intensity, measured through the NPRS, revealed that discomfort was more pronounced during activity than rest, reinforcing the role of occupational demands in symptom exacerbation. Tenderness grading further supported the prevalence of musculoskeletal strain, with 46% presenting some degree of tenderness on palpation.

Previous documented study showed , according to Global Systematic Review of Musculoskeletal Disorders in School Teachers (BMC Musculoskeletal Disorders) Patience N Erick , Derek R Smith, which reported a wide prevalence range for back pain from 17.7% to 76.7% depending on the country and specific teaching subgroup. Such variation reflects the influence of geographical, cultural, and occupational factors, as well as differences in workplace ergonomics and physical demands. In our study, the lower back emerged as the most frequently affected region (49%), supporting prior evidence that lumbar stress is a key occupational hazard in teaching professions due to prolonged standing, static postures, and repetitive trunk movements^[21].

Another study showed that the role of occupational risk factors is further supported by the findings of the MSD Prevalence & Factors in Secondary School Teachers in Hail, Saudi Arabia Omar W. Althomali , Junaid Amin , Wael Alghamdi , Daria Hussain Shaik, which highlighted prolonged standing, awkward postures, and inadequate rest breaks as significant contributors to musculoskeletal discomfort. Similarly, in our study, 67% of respondents reported that standing aggravated their spasms, and 73%

indicated that spasms interfered with daily activities, underscoring the bad impact on quality of life. Despite this high burden, only 40% of participants engaged in preventive exercises, and a mere 15% sought professional help, indicating gaps in both preventive health behaviours and healthcare utilization. This is concerning, as unaddressed muscle spasm can progress to chronic musculoskeletal disorders, potentially reducing productivity and increasing absenteeism^[22]

Another previous study about Prevalence and factors associated with Musculoskeletal Disorders among Secondary Schoolteachers In Hail , Saudi Arabia : A Cross Sectional Survey Abdulah H. Almansour , Danah S. Almutairi , Turki M. Alaskar , et al. The study highlights a high prevalence of low back pain (LBP) among secondary school teachers in Saudi Arabia's Eastern Province, with 62.56% experiencing LBP in the past year and a considerable proportion reporting moderate to severe disability. Female gender, advancing age, higher perceived stress levels, and a greater number of classes per week emerged as significant predictors of LBP, indicating both physical and psychological demands of the profession contribute to the condition. The findings align with previous local and international research, underscoring the multifactorial nature of LBP, including occupational workload, ergonomic challenges, and mental health factors. Interestingly, BMI and smoking status were not significantly associated with LBP in this cohort, contrasting with some earlier studies. The research emphasizes the negative impact of LBP on teachers' work and leisure activities, with implications for productivity and quality of life. These results reinforce the need for targeted interventions such as ergonomic training, workload adjustments, and stress management programs to mitigate the burden of LBP in the teaching profession^[23].

This research is important as it highlights the high prevalence and low awareness of paraspinal muscle spasm among teachers, a condition that can significantly affect their health, productivity, and quality of life. By identifying the extent of the problem and gaps in preventive practices, the study provides essential evidence to guide ergonomic interventions, awareness programs, and early management strategies to protect teachers' occupational wellbeing.

CONCLUSION –

The study revealed a prevalence of paraspinal muscle spasm (67%) among teachers, with alarmingly low awareness levels (26%) regarding its causes, symptoms, and preventive measures. These results, furthermore, show that teachers who stood for prolonged periods and adopted static postures worsened their muscle spasms and overall quality of life and work productivity. The results provide need for ergonomic interventions, health education, and proactive preventive strategies to safeguard teachers' musculoskeletal health and occupational wellbeing.

STRENGTHS, LIMITATIONS AND FUTURE SCOPE

A major strength of this research is its focus on an underexplored area: paraspinal muscle spasm in teachers, providing valuable evidence on both prevalence and awareness levels. The inclusion of multiple teaching levels (pre-primary, primary, and high school) allowed for a broader representation of occupational demands, while standardized tools such as the NPRS and tenderness scale ensured reliable symptom assessment. However, the study has certain limitations. The sample size was relatively small and limited to schools around Karad, which may affect the generalizability of the findings. Additionally, reliance on self-reported awareness and preventive behaviours introduces the possibility of underreporting.

Future studies should consider larger samples across diverse geographic regions to provide stronger external validity. Longitudinal research could help to look for the links between teaching-related occupational factors and musculoskeletal health outcomes. Intervention-based studies, such as ergonomic training, physiotherapy programs, and awareness campaigns, would be valuable in assessing the effectiveness of preventive strategies. Furthermore, exploring gender-based differences, stress levels, and lifestyle factors may provide deeper insights into the multifactorial causes of paraspinal spasms among teachers, ultimately guiding comprehensive occupational health policies.

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