IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Occurrence Of Work-Related Musculoskeletal Disorders Among School Teachers In Rural Areas Of Ratnagiri District: An Observational Study

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Abstract:

School teachers constitute an occupational group that reported a high prevalence of work-related musculoskeletal disorders (WRMSDs). WRMSDs represent an important and costly occupational health problem responsible for teachers' poor quality of life (QOL). Thus a cross-sectional analysis to investigate the prevalence of work-related symptoms of musculoskeletal disorders in School teachers in Rural areas of Ratnagiri District of Konkan was carried out. Methodology: 80 School Teachers were included in the study. The Nordic Musculoskeletal Questionnaire was used to locate the joints involved and Numerical Analog Scale (NAS) was used to quantify pain. RESULT:- Neck pain was the most prevalent musculoskeletal complaint, reported by 60.2% of the respondents in which (23.9%) of teachers were severely affected, and (31.8%) of teachers were moderately affected. The prevalence of lower back pain (60%) was found to be higher than upper back pain (39.8%). The intensity of pain was moderate for the lower back (46.6%) & intensity of pain was found to be severe (42%).

INTRODUCTION:

Work-related musculoskeletal disorders (WRMSDs) are increasingly recognized as one of the most common and expensive occupational health issues in both developing and wealthy countries. In many industrialized nations, they are the second most common occupational disease after occupational mental diseases. They grow over time and present as musculoskeletal aching, pain, or discomfort, resulting in functional impairment. The majority of WRMSDs are produced or exacerbated by specific work duties or the influence of the surrounding working environment[1]. Musculoskeletal disorders (MSD) have been identified as one of the most common and significant health issues in working populations, with social and economic consequences. The prevalence of MSD among teachers was observed to range between 39% and 95%. Teachers in rural schools face more challenges than those in urban areas, such as social and geographic isolation, poor working conditions, low pay, limited opportunities for professional development, a lack of adequate resources, dilapidated buildings, cultural differences, and a lack of community involvement. Physical variables such as extended standing, sitting, and unpleasant posture are found to be connected with an increased prevalence of MSD, according to certain research.

Furthermore, multiple research indicates that psychosocial characteristics such as excessive workload and demands, high perceived stress levels, limited social support, low job management, low job satisfaction, and monotonous work are linked to MSD among school teachers. In this regard, instructors in rural regions may be more vulnerable to developing musculoskeletal diseases[1,2]. The teaching profession is regarded as one of the high-risk vocations for acquiring WRMSDs, and it has gained prominence in recent years after being long ignored. School teachers, in general, have a higher prevalence of WMSDs than other occupational groups, ranging from 45% to 91%. Sick leave, absenteeism, and early retirement are all consequences of WRMSDs. Musculoskeletal complaints, particularly of the lower back, neck, and shoulders, are also common among teachers as a result of prolonged desk work, prolonged standing in class and repetitive overhead writing on the board, prolonged sitting as a result of frequent reading, lesson preparation, and assignment marking, and computer work[3].

A teacher's job entails educating pupils, preparing classes, assessing students' work, and participating in extracurricular activities such as sports. Teachers also serve on several school committees. Because of the range of job tasks, instructors may suffer from adverse mental and physical health difficulties. Nursery school instructors, on the other hand, execute a wide range of tasks that combine basic health care, childcare, and instructional responsibilities, as well as those that involve continuous mechanical load and constant trunk flexion. Nursery school teachers have a higher prevalence of neck, shoulder, arm, and lower back diseases[4]. A teacher spends the majority of the day standing in the classroom, walking through the classroom, working in tight spaces between desks, teaching students, writing on the 3 blackboards, preparing lessons, grading assignments, and doing school administrative work, all of which can cause negative mental and physical health concerns[5]. According to Sunisa and Pornnapa, among workers, especially instructors, extended posture, static labour, and repetition are the causes of repetitive strain injuries (RSIs), a type of MSD that directly affects the upper limb, neck, shoulder, and low back[6].

Occasionally, teaching is carried out in adverse conditions, in which teachers mobilize their physical, cognitive, and emotional ability to achieve the teaching productive objectives, overdemanding or generating excessive effort in their psychophysiological functions. If teachers are not given enough time to recuperate from discomfort, the pain symptoms that cause a high degree of absenteeism due to health concerns, are triggered or exacerbated. Thus, teaching causes stress, primarily to physical and mental health, and affects professional performance. Thus, teaching causes stress, which has an impact on physical and mental health as well as professional performance[7]. Holmstrom et al. showed that physical factors did contribute significantly to neck, and shoulder pain if confounders such as age, individual and employee-related factors were excluded. They also found that the long duration of work with the hands above shoulder level showed a significant relationship to both neck and shoulder pain[8]. The questionnaires provide useful and reliable information on musculoskeletal symptoms. This information either gives rise to further in-depth investigation or gives hints for decision-making on preventive measures[9]. There are different patterns of musculoskeletal diseases among men and women, probably reflecting their segregation in different sectors and jobs. Education is a professional field, and the proportion of female teachers is rising in most countries. Differences between the working

conditions of men and women have been mentioned in different studies, and according to these studies, women were less qualified with low salaries and had lower control over work and higher levels of demands in comparison to men[10].

METHODOLOGY:

A Cross-Sectional Study was carried out for 3 months, where 80 teachers working in zilla parishad schools of rural areas of Ratnagiri were included using simple random sampling. School teachers between the ages of 25-50 years with at least one year of teaching experience were included in this study. Above 50 years old to avoid the confounding effect of age-associated degenerative changes resulting from the physiological process of wear and tear of the osteoarticular system. Teachers who had undergone previous musculoskeletal surgery had a medical history of malignant tumors and pregnant female teachers. Medical causes such as autoimmune and inflammatory joint conditions, were excluded from the study.

PROCEDURE:

The samples for this cross-sectional design study were drawn from Zilla Parishad schools of Ratnagiri District (Maharashtra), India, using simple random sampling. The study included healthy school teachers aged 25 to 50 years. Subjects interested in participating were included in the study after receiving the Institute's Review Board, authorization from a school administrator or authority, and teacher consent. Teachers who meet any of the exclusion criteria were not considered subjects. The following selection, teachers' demographic detail information, health status, Teaching type, and Working hours were recorded. After outlining

the study's goals and objectives, a Nordic Musculoskeletal Questionnaire was distributed, and explained to teachers, their understanding about the same was checked and asked to be completed based on pain level. SPSS was used for statistical analysis. For each variable, the descriptive analysis, including percentages, was computed.

RESULT:

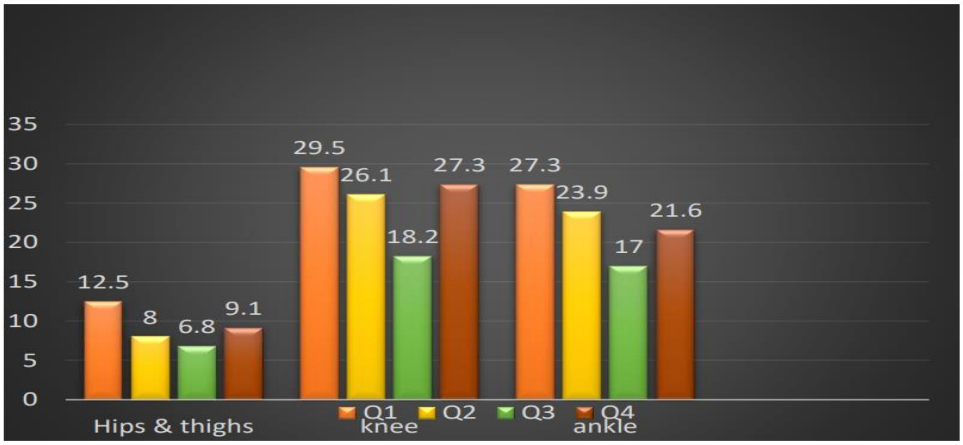
The participants in this study included 88 school teachers of which 49 were males and 39 were females. The highest prevalence of musculoskeletal disorders was found to be in the neck (60.2%) & lower back (60.2%) regions with the intensity of severe pain (23.9%)in the neck region and intensity of severe pain(42%)in the lower back region.

Body Areas Affected= Neck, Shoulder, Upper back.

Q1= Pain during 12 months, Q2= during the last 12 months have you been prevented from carrying out normal activities(because of pain), Q3= During the last 12 months have you seen a physician for this condition, Q4= During the last 7 days have you had trouble in.

Body Areas Affected= Elbows, Wrist/hands, lower back

Q1= Pain during 12 months, Q2= during the last 12 months have you been prevented from carrying out normal activities(because of pain), Q3= During the last 12 months have you seen a physician for this condition, Q4= During the last 7 days have you had trouble in.



Body Areas Affected = Hips/thighs, knees, ankles.

Q1= Pain during 12 months, Q2= during the last 12 months have you been prevented from carrying out normal activities(because of pain), Q3= During the last 12 months have you seen a physician for this condition, Q4= During the last 7 days have you had trouble in .

Discussion:

Work Related Musculoskeletal disorders (WRMSDs) are named after the disorders that develop any problem related to the individual's work. They represent the most prevalent occupational disorders and their various risk factors have been thoroughly studied in different occupations. The teaching profession is considered one of the professions that is more vulnerable to developing WRMSDs. In addition, the teaching profession is a sedentary occupation as it requires prolonged periods of static postures such as sitting and standing Teachers usually work for longer hours which restricts their physical activity. This study aimed to explore the prevalence of self-reported musculoskeletal disorders (MSDs) in 3 months. Prevalence of MSDs was high and especially work-limiting pain was inevitable in teachers employed at rural than those working in urban schools. We found a considerable prevalence of disorders in the neck and lower back region followed by the feet. MSDs in the neck and back region can result from uncomfortable awkward postures, like a 'bent neck' posture, during reading, or marking assignments for several hours, and overhead activities like writing on a blackboard for a prolonged duration. The back and lower extremities could be affected due to extended hours of standing while teaching. postural overloads in the classroom, uncomfortable back support while seated, recurrent twisting, and prolonged static postures. In this study neck pain was the most prevalent musculoskeletal complaint, reported by 60.2% of the respondents in which (23.9%) teachers were severely affected, and (31.8%) teachers were moderately affected. In this study, the prevalence of lower back pain was found to be higher than upper back pain. 60% of teachers reported lower back pain whereas 39.8%of teachers reported upper back pain in this study. The intensity of pain was moderate for the lower back (46.6%) & intensity of pain was found to be severe (42%). Also, Ankle/foot pain was noted due to inappropriate leg/ foot support with a prevalence of (27.3%), where the pain intensified to a moderate level in (69.3%) of teachers & was experienced as severe pain in (20%) of teachers. Our study showed a higher prevalence of MSDs in rural areas, especially for work-related pain independent of age, sex, teaching level, and school type. Living and working conditions in rural areas of Ratnagiri district represent a great challenge for professionals, especially because of limited geographic access, bad road conditions, distancing from the family and poor social support between peers, limited access to technology (including internet), language and cultural issues and poor academic support of parents.

A study found a sensitivity of 100% and specificity of 88% to detect subjects with chronic or recurring low back pain for this questionnaire [11]. Additionally information about pain or discomfort during the last seven days could provide more reliable information minimizing memory recall bias. In this sense, we may assume that this situation is not different in our study because teachers were able to understand these questions through their level of education and respond to them in a reliable way due to the anonymous report in the study.

Conclusion:

The study concluded that 89.77% of school teachers are suffering from WRMSD's. As teachers are the main resource for developing the potential of students and making them responsible citizens of the country, their health should be given priority. It is needed to explore in-depth risk factors related to musculoskeletal disorders in this occupational group to propose appropriate strategies to control and reduce them.

Clinical Implications:

Awareness of WRMSD in school teachers is to be created. Physical fitness sessions can be arranged for them to maintain fitness and avoid MSK disorders. Postural corrections can be done and exercise can be advised. Ergonomic advice, workplace exercises/stretches & workplace modification were advised and taught during the time of assessment.

Limitations & Suggestions:

Moreover, the collected data were subjective, not based on an objective clinical diagnosis by a specialist or an ergonomic analysis for the workplace, and may be influenced by the negative perspective of the teachers, towards their health and work conditions. These factors might lead to under or overestimation of the outcome. Interventions benefitting the treatment and prevention can be studied. Objectivity of the postural changes leading to MSK disorders can be studied. Awareness of the appropriate ergonomics as well as optimum posture can be studied in the future.

Conflict of Interest – All authors show no conflict of interest.

Funding – Self Funded

Ethical Clearance – A letter from the Institutional Review Board was obtained. The letter number is SVJCT/BKLWCOP/ 86/2023-24 dated 11/03/2024.

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