



# Musculoskeletal Disorders among Teachers Residing in Various Nations: A Review

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## Abstract

*Every nation gives priority to their schools and the teachers. The teachers are responsible for the overall physical and mental development of their students. The researcher wanted to find out the musculoskeletal disorder among the school teachers residing in various nations and give recommendations for the teachers. The researcher had gathered information from primary and secondary sources regarding the books and researches published on teachers and prevalence musculoskeletal disorder published in various nations. The findings revealed that, the school teachers of Turkey, China, Australia, Brazil, Sweden, USA, Germany, Estonia, Japan, Malaysia, Philippines, France and Greece, have demonstrated relative to other occupational groups, a high prevalence of MSD. School teachers are among the group which appears to suffer from MSD. Due to long work hours, dissatisfaction from work, work environment, stress, low family and community support are related to Musculoskeletal disorders (MSD). The teachers reported respectively musculoskeletal pain at specific body parts like neck, shoulder, low back, hand, wrist and knees. The future education professional should be informed about the musculoskeletal risks associated with their future occupation.*

**Keywords:** Musculoskeletal Disorders, Teachers.

## Introduction

Every developed nation gives first priority to the schools for their total national development. School is a prestigious institution in the society, which can be called a place shaping the future citizens that can contribute productively in the Nation's economy<sup>1</sup>. The role of education in child development is vitally important. The School provides a structured education and promotes a child's mental and psychological growth. The parents are the child's first teacher while teachers are their second parents. When kids begin their preschool or kindergarten education, children are in a way handed over to trained teachers and are ideally nourished and bestowed with support, and good teaching by these professionals<sup>2</sup>.

**Teacher:** The teacher plays a key role in transforming young children into a productive adult. Teachers are undoubtedly the role models for their students. They have a moral responsibility in the overall physical and mental development of their students. Teacher's job is not an easy one. They have to spend long hours for imparting quality education to the students. A teacher that can get a student at a young age to realize the value in learning and a solid education is doing a great service not only to that child, but also to society in general<sup>3</sup>.

**The Importance of Primary School Teacher:** School teaching is one of the important profession in the world as it is the primary school teacher under whose guidance the young child is developed into a mature human resource that play a key role in

the development of the nation. Teachers pass on knowledge and values to children, prepare them for further education and for working life and are main contributors to good education. Teachers are one of the main pillars of a sound and progressive society. They bear the weight and responsibility of teaching and apart from parents are the main source of knowledge and values for children<sup>4</sup>.

Teacher is a person who is educating children and imparting awareness upon them in their vulnerable age. Whatever the children study from their educators at an early age is likely stay with them for the rest of their lives. Thus teachers surely have a substantial impact on the improvement of children and even older children similarly, The teachers are training them and assisting them to improve their knowledge so that they can use in life. And to become accountable and creative members of society teachers are required. One of the most vital parts of any society is the young children; they symbolize the upcoming time of the country and the course that civilization will take. Teachers can improve a new generation of youngsters so that the future is a safe and secure in the society<sup>3</sup>.

**Teacher's activity during the day:** During the day, teachers were performing various tasks that cause physical health complications. The activities of a teacher not just involve teaching students, but also construction of lessons, evaluating students' work and being involved in the other works such as innovative art and games. Teachers have to take part in

many school committees. It may cause teachers to suffer psychological and bodily health issues<sup>5</sup>.

In a single day a teacher has to perform tasks like teach specific subject to children, check the note-books of students, maintain class discipline, write on the black board, dictate notes to students and take attendance. Szeto found that in many schools non-adjustable furniture were used which made it more difficult to match the students as well as teachers (who can be in all sizes) leading to poor posture and negative physical health effects that had long term implications on their musculoskeletal growth and health in their future<sup>6</sup>.

Grandjean and Hunting reported that, sometimes, while doing such tasks they feel pain in different body parts. One of the common and frequently occurring illness resulting from abnormal posture over a period of time are Musculoskeletal problems, such as low back pain, pain in the neck/ shoulder, arm, pain in joints, bones and muscles. It is often noticed in many working situations (in schools) that teachers are forced to assume bad working postures due to poor design of work, workplace and tools<sup>7</sup>.

**The Work Environment of the School Teachers:** The work environment of the school teachers is their classroom. The teacher is forced to adjust in their existing work environment while teaching. The poorly designed work environment of the classroom might have a direct impact on the productivity of the teacher resulting in their poor health and quality of teaching. At the same time the teacher might also experience discomfort in the posture adopted by them while teaching, leading to several musculoskeletal disorders. If this situation is prolonged for longer span of time, it might have its serious consequences for the teacher as an employee and as well as for the students too.

Young students look to their teachers when determining how to interact as adults. Primary school teachers develop and foster the appropriate skills and social abilities to enable the optimum development of children, according to age, ability and aptitude<sup>8</sup>. At this point of time when the role of teacher is so vital, the teacher cannot perform her duties perfectly well if she is suffering from health problem especially associated with musculoskeletal disorders. These are number of risk factors involved in the prevalence of musculoskeletal disorder that need to be identified.

**Problems associated with Musculoskeletal Disorders:** "Musculoskeletal disorders (MSD) are injuries and disorders of the musculoskeletal system where as exposure to various risk factors present in the workplace may have either contributed to the disorders' development, or aggravated a pre-existing condition." (OHSCO MSD Strategy Development Committee, Wells, 2005). The Musculoskeletal disorder is the disorder of the muscles, joints and bones of the body. This disorder causes pain and it restricts movement of human body. Musculoskeletal disorders can differ in severity from mild, periodic symptoms to

severe, chronic and debilitating conditions. Symptoms like aching, burning, cramping, loss of colour, numbness, swelling, pain, stiffness, tingling and weakness occur in developing stage of this illness. When the musculoskeletal disorder affects a person for a longer period of time it causes different bone problems to person.

**Musculoskeletal Disorders (MSD):** Musculoskeletal disorders (MSD) are one of the common work-related health complications in working people. A musculoskeletal disorder (MSD) is responsible for a considerable impact on quality of life and affecting a major financial burden in compensation costs and lost salaries (Samad, et. al, 2010)<sup>9</sup>. The disorders reduce efficiency at job cause of sick leave, nonattendance and giving up work and are also costly in terms of treatment and separate pain. According to National Occupational Research Agenda (NORA) in USA says, "that work-related MSD is a major reason for work-related illnesses in the United States. Current assessments of the cost related with MSD range from \$13 to \$54 billion annually in United States"<sup>10</sup>.

Musculoskeletal disorders (MSDs) affect the body's muscles, joints, tendons, ligaments and nerves. Most work-related Musculoskeletal disorders (MSDs) develop over time and are caused either by the work itself or by the employees' working environment. For this reason the researcher become eager to find out the musculoskeletal disorder in teachers living in various countries. Regardless of this, the influence of Musculoskeletal disorders (MSD) within the profession of imparting knowledge has not been given importance consideration in the studies that the researcher had come across. The researcher wanted to know that these teachers have musculoskeletal disorder or pain in different body parts which is caused by their profession and to find out the availability of researchers published in journals on musculoskeletal disorder in teachers living in various nations.

**Objectives of the Study:** i. To search and gathered the available studies, researches and reports on Musculoskeletal disorders (MSD) in teaching profession. ii. To provide recommendations for the teaching professionals for prevention of Musculoskeletal disorders (MSD).

## Methodology

The researcher had gathered information from secondary sources on teachers and prevalence musculoskeletal disorder published in various nations. The information about the musculoskeletal disorder was derived from books, researches and electronic media (internet). The researcher had gathered detailed information on musculoskeletal disorder of teachers in this paper.

## Findings of the Study

The school teachers of Turkey, China, Australia, Brazil,

Sweden, USA, Germany, Estonia, Japan, Malaysia, Philippines, France and Greece have proven that related to other working groups, a great occurrence of MSD was noted between 40% and 95%<sup>11</sup>. It has been found by Pillastrini, et. al., that Nursery school teachers, also perform an inclusive range of tasks joining basic childcare and education duties. They have to perform activities which require sustained load and continuous trunk movement. The nursery school teachers were found to have a high occurrence of neck, shoulder, arm and low back complaints and lower-extremity MSD due to actions and tasks which require continuous periods of kneeling and bending<sup>12</sup>.

Erick and Smith from Norway have found that, "School teachers represent an occupational group among which there appears to be a high prevalence of MSD"<sup>11</sup>. Chong and Chan (2010) in their study conducted in China have confirmed that, "Hong Kong teachers showed a higher prevalence for neck (68.9%), shoulder (73.4%) and low back pain (59.2%) (5). It is worth noting that the sample of Hong Kong teachers showed significantly higher prevalence in all musculoskeletal complaints".

In relations of bodily signs it was noted that nursery school teachers of Turkey, China, Australia, Brazil, Sweden, USA, Germany, Estonia, Japan, Malaysia, Philippines, France and Greece were possible to be involve in continuous activities like kneeling, bending over, sitting on the heels which meant that they were possible to suffer from lower back pain<sup>4</sup>. Approximately 4,000 patients in UK were registered in 2010 making musculoskeletal disorder a common illness for the whole mass<sup>8</sup>. Chiu and Ku, from Hong Kong found that, "The academic staff in colleges makes frequent use of computers and their daily work involve repetitive movement such as reading, writing and prolonged static posture<sup>13</sup>." Academic staffs are also required to read for significant amounts of time. Lau, Sham and Wong indicated that subjects with neck pain spent more time in reading<sup>14</sup>.

The nature of university academic works is also stressful. This is supported by the SW190 Survey in Britain which found that, teachers, professionals, and other educational and welfare workers were found to be significantly above average in the rates of self-reported stress, depression, and anxiety as stated by Health and Safety Executives<sup>15</sup>.

The demanding working situations due to large classes, shortage of resources and inadequate payment for the job were the possible cause of the high occurrence of self-reported musculoskeletal disorders (MSD) among school educators of Turkey, China, Australia, Brazil, Sweden, USA, Germany, Estonia, Japan, Malaysia, Philippines, France and Greece<sup>4</sup>. The educated intelligent population of the country was exposed to these occupational hazards from the first day of the work and from the young age from school. This will gradually transform into a major health concern in various nations soon. Hence, there is a need to find out the reasons for the problem and workout suitable solutions<sup>16</sup>.

A study conducted by Thomsen, et. al, in 2007 found that, the strength but not continuity and location were related to hand-wrist pain and possible tendonitis in the analyses. Probabilities ratios for the hazard of hand discomfort was 1.7 (95% CI 1.3 to 2.2) and for possible tendonitis 1.9 (95% CI 1.1 to 3.3). In the follow-up analyses force remained a risk factor for hand discomfort (OR 1.4, 95% CI 1.1 to 1.8) and for possible tendonitis. Repetition was also a risk factor for the onset of hand-wrist discomfort<sup>17</sup>. Increasing levels of force were associated with prevalent and incident hand-wrist pain and possible extensor tendonitis.

Psychosocial factors have been related to Musculoskeletal disorders (MSD) among the primary school teachers. The current analyses suggested that psychosocial factors such as job demands, high stress level, low support of community and society, job dissatisfaction and repetitive work are mostly related to musculoskeletal disorders in educators of United Kingdom. According to the Health and Safety Executive had reported that around 175 million employed days were lost of the UK economy due to sick leave with one in eight patients detected with Musculoskeletal disorder signs like neck, back and shoulder pain estimating the UK economy between £103-129 billion<sup>8</sup>.

Few studies conducted outside India focus more on the musculoskeletal disorders related to specific body parts like neck, shoulder, low back, hand wrist and, knee<sup>18-21</sup>. The literature reviewed further highlighted that some studies were also carried on the impact of workplace risk factors among the teachers<sup>9,19</sup>.

### **Recommendations for Prevention of Musculoskeletal Disorders (MSD) in Teaching Professionals**

Based on the reviews collected, the researcher suggested the recommendations listed below: i. The musculoskeletal disorders result from fractures sustained in accident which affect the back, neck, shoulders and upper limbs so the researcher recommends performing tasks without injuring one's self. ii. The schools should purchase and use adjustable furniture which is more easy to match the students as well as teachers (who can be in all sizes) leading to proper posture and physical health that gives long term benefits on their musculoskeletal growth and health. iii. The researcher recommends the teachers should focused on assuming proper working postures in performing various tasks during working hours based on design of work, workplace and tools used in that task. iv. The teachers are recommended to perform activities like kneeling, stooping, squatting or bending with ease in movement and for nominal period of time to avoid musculoskeletal problems of neck, shoulder, arm and low back disorders and lower-extremity. v. The teachers performing repetitive movement such as reading, writing in prolonged static posture are advised to take rest periods and perform easy

exercise between the tasks to avoid pain, fatigue and discomfort. vi. Applying nominal force, right posture and proper position are helpful in preventing hand-wrist pain and possible tendonitis in teaching professionals. vii. Yoga and proper breathing exercises can help the teachers with musculoskeletal problems resulted from job environment, stress, dissatisfaction from job, dissatisfaction due to family conditions, social environment, longer work hours and job demands. viii. Avoiding working in awkward posture and avoid writing with elevated arm on the board can prevent musculoskeletal symptoms. ix. The educational authorities of every nation needed take preventive actions to focus on identifying and reducing psychological stresses in education professionals. x. Occupational injuries should be avoided by finding ways to reduce standing position sustained for long periods by the teachers. xi. The researcher recommends Ergonomic and individually tailored measures in terms of work time control and specific relaxation techniques may improve the stress management in teachers.

## Conclusion

Researches on School teachers of various nations like Turkey, China, Australia, Brazil, Sweden, USA, Germany, Estonia, Japan, Malaysia, Philippines, France and Greece have demonstrated the existence of musculoskeletal problem in teaching occupation. It is observed that the prevalence of musculoskeletal disorder differ depending on the locale of the research. The findings of the study would be useful for the school authorities to become aware of the impact of poor design of the classrooms and the resulting affect of it on the teachers and students. The findings of the present study also will strengthen the data base for conducting similar studies on teachers and other occupations. The researcher recommended that it would be essential to better inform future education professional (teachers) about the musculoskeletal risks associated with their future occupation.

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