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Long-Term Effects of Mechanical Neck Pain on School Teacher Scapula Position, Neck Disability, and Quality of Life in Delhi NCR Region

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Abstract

The aim of the present study was to study and to analyze the static scapula posture, neck disability, and changes due to mechanical neck pain on overall quality of life of school teachers working in Delhi and NCR region. Latest evidence among all kinds of occupational related health problems, neck pain and shoulder pain are found to be most common musculoskeletal disorder. As compared to other forms of musculoskeletal disorders, neck pain to be precise is most commonly found in teaching professionals. 100 School teachers were examined for their static scapula position (Scapula protraction and scapula Upward Rotation), school teachers' quality of life and neck disability were assessed with the help of Neck disability index questionnaire and SF-36 questionnaire, study focused on the age group of 25–35 years of age. SPSS software was used for analysis of data and results show statistically significant difference in scapula position in all three positions and scapula upward rotation. It is also observed that mechanical neck pain deteriorate the life and neck disability of school teachers. From present, we can conclude that school teachers suffer from adverse neck disability, overall quality of life and scapular protraction as well as scapula upward rotation in all assessed positions.

Keywords: Neck pain, School teacher, Posture, Disability, Life, Disorder

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Introduction

As per latest evidence among all kinds of occupational related musculoskeletal disorders, neck pain and shoulder pain are among the most common musculoskeletal disorder founded.[1-3] As compared to other forms of musculoskeletal disorders, neck pain to be precise is most commonly found in teaching professionals. School teachers have to work in awkward position for preparation of notes, paper correction, preparation of assignments, and various other work commitments which leads to neck pain. Neck pain found in teachers is multifactorial in nature which also affects their quality of life as well.[4-8]

School teachers have to perform variety of task and duties which involves working in forward head posture and neck flexion posture for long hours which puts lot of stress in neck musculature and promote neck disability and affects quality of life.[9-11]

It has been observed teachers tend to gradually develop psychosocial impairments because of excessive work pressure at school. Such work load leads to development of shoulder and neck pain which leads to development of loss of daily activities such as grip strength and loss of Activities of Daily Living activities.[12]

There is lot of evidence which shows that most of school teachers are suffering from enormous amount of stress which affects their physical and mental wellbeing altogether. All stress related work environment may affect their quality of life and puts greater impact over their health status and performance.[13,14] Hence, the major reason behind examining scapula posture, neck disability, and quality of life among school teachers is because poor health status not only have impact on school teachers but also has significant effect on students' performance as well.[15,16] Hence, primary aim of study was to find out effect of neck pain on static scapula position, overall quality of life, and neck disability of school teachers who are working in Delhi and NCR region.

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Methodology

Cross-sectional study design was used and convenience sampling technique was utilized for selection of subjects from schools of New Delhi and NCR region. Neck disability was assessed by "Neck disability questionnaire- NDI" whereas Short form -36 (SF- 36) questionnaire was utilized for examining quality of life among school teachers.[17,18] Scapula protraction measurements done by adopting method devised by keibler – lateral scapular slide test LSST. This test is designed for assessment of position of scapula for any asymmetry. Scapula position is assessed at three different positions with upper extremity at zero-degree, 45 degree, and 90 degrees. During examination of first position glenohumeral joint is placed at zero degrees also known as resting position. Second position is assessed at position, where glenohumeral joint is at 45° degrees abduction also known as hands on hip position. Third position is assessed when glenohumeral joint is placed at 90° abduction with internal rotation. Scapular upward rotation was also examined of all school teachers using baseline digital inclinometer where school teachers were standing in relaxed

normal posture. Measurements were done at rest, with 60 degrees, 90 degrees, and 120 degrees of glenohumeral abduction.[19-22] 100 sample size was calculated with 95% Confidence interval. We have included all school teachers who are working in primary, secondary and higher secondary school of Delhi NCR. Both private and government school teachers of age between 25 and 35 years were included in the study.

Before data collection an information letter with respect to research was sent to various government and private schools of Delhi NCR which includes necessary and required information of research work. After receiving permission from school's data collection was done on all school teachers who come under inclusion and exclusion criteria. School teachers are also explained objectives of the study.

Before commencement of research work Ethical Clearance was obtained from Department of Physiotherapy S.G.T University, Gurugram Haryana as per letter SGT/FOP/2019/44 dated 4/10/2019.

Data analysis

SPSS software version 23 was used for windows. Results considered to be statistically significant when $P < 0.05$.

Outcome Measures

The present study followed cross-sectional study design. Validated and reliable questionnaire was used for the assessment of neck disability and quality of life of school teachers. Neck disability index and SF-36 questionnaire and Numeric Pain rating Scale were used for assessment of pain intensity of mechanical neck pain. Scapula position was assessed at three different position by utilizing Keibler's method of scapula position assessment – Lateral Scapula Slide test.[19-21]

Baseline digital inclinometer was used for the measurement of scapula upward rotation at four positions.[22]

Results

Table 1 gives details of frequency of gender distribution of school teachers. A total of 100 school teachers were become part of the study where 60 teachers were female and 40 school teachers were male. It has been found that 60% married school teachers and 40% unmarried school teachers were part of the study [Table 2].

As per Table 3, it is also observed that as a teaching tool school teachers used black and white board as primary tool for teaching.

Table 4 represented that majority of data has been collected from government school teachers as compared to private school.

Results show school teachers having minimum of 2 years and maximum of 10 years teaching experience were included in the study which is very vast range [Table 5].

It was observed maximum number of school teachers included in the present study was between age group of 25–30 years which is 60% [Table 6].

Table 7 shows many school teachers from study has severe neck disability with NDI score value 35 also few them were represented with score 5 which is not severe in terms of neck disability.

Result shows that 55 school teachers were having severe neck dysfunction, 15 teachers show moderate symptoms of neck dysfunction/disability. Overall result shows most of school teachers are suffering from neck dysfunction [Table 8].

Results from Table 9 shows statistically significant effect on overall physical functioning of teachers, their physical limitations, on bodily pain, overall general health, vitality rate, and social functioning among school teachers. It has been found that mental health and emotional limitation not having significant changes among school teacher's quality of life.

Table 1: Description of sample

School teachers	*Frequency of teachers*	*Percentage*
Female teachers	70	70
Male teachers	30	30
Total school teachers	100	100

Table 2: Frequency distribution of marital status of school teachers

Marital Status	*Frequency*	*% Distribution*
Married	60	60
Unmarried	40	40

Table 3: Frequency distribution of mode teaching in school

Teaching tool	*Frequency*	*% Distribution*
Black/white board only	70	70
Black board/white board and Projector	30	30

Table 4: Frequency distribution of type of government school teachers and private school teacher included in the study

Type of School	*Frequency*	*% Distribution*
Government school teachers	75	75
Private school teachers	25	25

Table 5: Frequency distribution of teaching experience, working hours, sitting hours, standing hours, and computer utilization

Demographic details	*Minimum*	*Maximum*	*Mean±SD*
Teaching experience	2	10	3.81±2.0
Working hours/Day	8	12	8.09±0.86
Sitting hours/Day	2	5	4.00±1.15
Standing hours/Day	2	8	3.73±1.35
Computer use/Day	2	7	3.06±1.11

Table 6: Frequency distribution of age

Age	*Frequency*	*%*
25–30	60	60%
31–35	40	40%

Table 7: Descriptive statistics of NDI

NDI	*Minimum score*	*Maximum score*	*Mean±SD*
Score NDI	5	35	23.79±4.37

NDI: Neck disability index

Table 8: Distribution of neck disability among school teachers as per gender distribution

Degree of disability	*Female*	*Male*	*P-value*
0	5	5	0.000
1	15	5	0.00
2	10	5	0.000
3	40	15	0.000

"Neck Disability Index" NDI- 0 – lack of dysfunction, 1 – mild (NDI), 2 – moderate (NDI), 3 – severe (NDI) *$P \leq 0.05$ – statistically significant

Table 9: The mean value and standard deviation value of quality of life, SF-36

SF-36 subcomponents	*Study Sample of study (n=150) mean (SD)*	*P-value*
Physical functioning status	71.32 (21.87)	0.000
Physical limitations of teachers	61.29 (37.38)	0.000
Bodily pain	67.65 (20.58)	0.000
General health of teachers	62.42 (18.10)	0.000
Vitality rate	60.26 (17.32)	0.000
Social functioning activity	71.32 (21.10)	0.000
Emotional limitation status	69.29 (38.16)	0.964
Mental health status	67.05 (15.91)	0.765

Table 10: Static scapular position among school teacher having mechanical neck pain

Position	*Right (Mean±SD)*	*Left (Mean±SD)*	*t-value*	*P-value*
At rest	12.00 (1.57)	12.08 (1.22)	1.98	0.004
Hands on hip (in cm)	13.67 (1.65)	12.68 (1.49)	1.98	0.005
90° abduction (cm)	12.42 (1.33)	15.15 (0.23)	1.99	0.00
Upward rotation at rest	30.8 (1.87)	35.7 (1.81)	1.99	0.00
Upward rotation 60° abduction	28.96 (1.590)	34.93 (1.63)	1.99	0.002
Upward rotation 90° Abduction	11.5 (1.3)	13.7 (1.27)	1.99	0.004
Upward rotation 120° abduction	14.0 (1.3)	16.7 (1.4)	1.99	0.004

Table 10 describes effect of mechanical neck pain on scapula position of school teachers at three different positions, results show there is positive statistically significant difference present between right and left side in all three positions as well as in upward rotation.

The result of the present study has shown that there is presence of statistically significant difference between the right and left side in all three positions for scapula protraction as well as in upward rotation of scapula among school teachers.

Result shows that school teachers have neck disability, altered position of scapula and their overall quality of life is also affected.

Discussion

Recent studies show that school teachers are suffering from numerous musculoskeletal disorders because of various factors which are multifactorial in nature. It occurs most commonly due to working in awkward position in prolonged hours which executes lot of stress on neck and scapular muscles. Which further become prominent cause of musculoskeletal disorders of scapula and cervical spine.[11,23]

Results of present study show that quality of life of school teachers is significantly affected; it may be because of continuous work load of administrative work at schools apart from teaching. Schools teachers have to complete work assignments and have to work for long hours to perform other duties assigned to them by higher competent authorities.[13] As school teachers are always have to perform multiple responsibilities in school which affects teachers overall health and quality of life. Teachers have found to have very low scores in their physical functioning, bodily pain, and their social well-being.[20,21] School teachers have very demanding work commitments which they have to follow to meet work commitments.[11,22]

Dussault *et al*. have found that school teachers are suffering from excessive workload, which includes preparation of lesson plans, communication with students and their parents, paper correction, and continuous demand of completing their administrative commitments. Furthermore, latest modifications incorporated in educational system along with application of latest modern teaching tools and applications have put higher demands on school teachers, which require absorption of all new techniques to deliver to students as per requirements. Sometime teachers breakdown also due to increased demands at work where they have to fulfill all need with lower resources.[11]

Cooper *et al*. conducted research on school teachers; it has been found that most of the time school teachers are assessed by performance of students in exams or various entrance exams, which executes lot of pressure on school teachers. School teachers have to deal with higher demands of quality and quantity of work, along with organizational competitiveness among teachers. This puts lot of pressure on teachers which greatly affects overall quality of life of school teachers.[19,20]

Because of excessive demands of teaching profession, school teachers often experience social, emotional, and psychological problems.[23]

Conclusion

The present study showed that school teachers have significant changes on overall quality of life, neck disability of school teachers and scapular protraction as well as scapula upward rotation in all assessed positions. We need further research to find out other factors which are responsible for their poor health and quality of life.

References

1. Sadeghian F, Raei M, Ntani G, Coggon D. Predictors of incident and persistent neck/shoulder pain in Iranian Workers: A cohort study. PLoS One 2013;8:e57544.
2. Larsson B, Søgaard K, Rosendal L. Work related neck shoulder pain: A review on magnitude, risk factors, biochemical characteristics, clinical picture and preventive interventions. Best Pract Res Clin Rheumatol 2007;21:447-63.
3. Erick PN. Smith DR. A systematic review of musculoskeletal disorders among school teachers. BMC Musculoskelet Disord 2011;12:13-7.
4. Erick P, Smith D. Musculoskeletal disorder risk factors in the teaching profession: A critical review. OA Mysculoskeletal Med 2013;1:1-10.
5. Erick PN, Smith DR. Musculoskeletal disorders in the teaching profession: An emerging workplace hazard with significant repercussions for developing countries. Ind Health 2015;53:385-6.
6. Mayer J, Kraus T, Ochsmann E. Longitudinal evidence for the association between work-related physical exposures and neck and/or shoulder complaints: A systematic review. Int Arch Occup Environ Health 2012;85:587-603.
7. Bongers PM, Ijmker S, van den Heuvel BM. Epidemiology of work related neck and upper limb problems: Psychosocial and personal risk factors (part I) and effective interventions from a bio behavioural perspective (part II). J Occup Rehabil 2006;16:279-302.
8. Kraatz S, Lang J, Kraus T, Mu E. The incremental effect of psychosocial workplace factors on the development of neck and shoulder disorders: A systematic review of longitudinal studies. Int Arch Occup Environ Health 2013;86:375-95.
9. Erick PN, Smith DR. The prevalence and risk factors for musculoskeletal disorders among school teachers in Botswana. Occup Med Health 2014;2:178.
10. TN P. Perceived occupational health problems among college teachers in Banke. 2014;2:178.

11. Mesaria S, Jaiswal N. Musculoskeletal disorders among teachers residing in various Nations: A review. Res J Recent Sci 2015;4:23-7.
12. Korkmaz NC, Cavlak U, Telci EA. Musculoskeletal pain, associated risk factors and coping strategies in school teachers. Sci Res Essays 2011;6:649-57.
13. Hong S, Zhijian J, Baohua M. Research on life-span of the population of intellectuals in Harbin Chinese. Chin J Hosp Stat 2003;10:16-8.
14. Kataria J. Effect of mechanical neck pain with forward head posture on scapula position in primary school teachers. Al Ameen J Med Sci 2020;13:25-30.
15. Lederer P, Weltle D, Weber A. Illness-related premature unfitness for work among civil servants in Bavaria an evaluation in the social medical field. Gesundheitswesen 2001;63:509-13.
16. Ingersoll RM. Teacher turnover and teacher shortages: An organizational analysis. Am Educ Res J 2001;38:499-534.
17. Vernon H, Mior S. The neck disability index: A study of reliability and validity. J Manipulative Physiol Ther 1991;14:409-15.
18. Cleland JA, Fritz JM, Whitman JM, Palmer JA. The reliability and construct validity of the neck disability index and patient specific functional scale in patients with cervical radiculopathy. Spine 2006;31:598-602.
19. Côté P, van der Velde G, Cassidy JD, Carroll LJ, Hogg-Johnson S, Holm LW, *et al*. The burden and determinants of neck pain in workers results of the bone, and joint decade 2000-2010 task force on neck pain and its associated disorders. Eur Spine J 2008;17 Suppl 1:S60-74.
20. Dahiya J, Ravindra S. Effect of scapular position in computer professionals with neck pain. Int J Sci Res 2015;4:2075-80.
21. Dahiya J, Kaur T. Effect of scapular position on neck pain in swimmers. Int J Health Sci Res 2017;7:122-7.
22. Kataria J. Current concepts of scapular dyskinesia: Clinical implications and rehabilitation. Int J Yoga Physiother Phys Educ 2018;3:34-7.
23. Kataria J, Sindhu B, Pawaria S. Effect of Mechanical Neck pain with forward head posture on scapula position in primary school teachers. Al Ameen J Med Sci 2002;13:25-30.