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Prevalence Of Scapular Dyskinesia In Sweepers With Neck And Scapular Pain

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ABSTRACT:
Background: Neck and scapular region pain is very common problem in sweepers. They almost work for 7 hours in a day, and continuously have to sweep with long handle broom. Sweepers are the most important part of our community, they form the integral part of our society. Sweeper's job requires heavy demand, as they deal with dust, sharp objects, chemical waste, biomedical waste, etc. Scapular dyskinesis is defined as visible alteration in scapular position & motion patterns & is believed to occur as a result of changes in activation of scapular stabilizing muscles.The purpose of this study aimed to investigate the prevalence of scapular dyskinesia in sweepers who have pain in neck and scapular region.
Methods: In this study total 323 sweepers were included, who had pain in neck and scapular region, from which 189 subjects were male and 134 subjects were female. Visual analogue scale was used to assess pain in subjects, and Lateral scapular slide test was used to assess the scapulohumeral rhythm to investigate the prevalence.
Result: Among 323 subjects, 69.34% (N=224) subjects tested positive for scapular dyskinesia and 30.65% (N=99) subjects tested negative. Hence, In conclusion, the study highlights the significant prevalence of scapular dyskinesia among sweepers experiencing neck and scapular region pain.
Key Words: Scapular dyskinesia, Sweepers, Poor posture, Visual analogue scale, Lateral scapular slide test.

I. INTRODUCTION:

Work-related musculoskeletal disorders (WMSDs) and complaints are serious health problems that affect the performance and continuity of individuals in many countries. The occupation of sweeping is a vigorous task that involves sweeping of various areas such as roads, footpaths, parks, markets and hospitals with the help of long-handle brooms and deposition of the waste in nearby dustbins.[1] This whole process requires continuous physical tasks such as manually sweeping in the standing posture for long durations, bending while collecting the swept waste, pulling and pushing the dustbin cart, and lifting the baskets to deposit waste manually. A same pattern is followed in other cities in India and other developing countries.[1,2]

Many articles have concluded that the occupational exposure of sweeping is associated with the development of hypertension, asthma, tuberculosis, chronic respiratory diseases, eye irritation and skin diseases among workers.[3] The other non-fatal injuries identified weremostly musculoskeletal. Musculoskeletal disorders are defined as pain or ache in any of the anatomical areas of the body, like neck, shoulders, upper back, lower back, elbows, wrists or hands, hips or thighs, knees, and ankles or feet.[4]

Neck and scapular region pain is very common problem in sweepers. They almost work for 7 hours in a day, and continuously have to sweep with long handle broom. Sweepers are the most important part of our community, they form the integral part of our society. Sweeper's job requires heavy demand, as they deal with dust, sharp objects, chemical waste, biomedical waste, etc.[5]

Scapular dyskinesis is defined as notable alteration in scapular position or motion patterns and is believed to occur as a result of changes in activation of scapular stabilizing muscles. Hence, the repetitive muscular fatigue may directly affect the scapulohumeral rhythm, resulting in compensatory increased rotation or destabilization of scapula.[6] These alteration in scapular position have implication for reduction in muscle function. The important scapular muscle for scapular stability & mobility are the upper trapezius & lower trapezius &serratus anterior muscle.[7]

II. MATERIAL AND METHOD:

This study was anobservational study, carried out in sweepers who had pain in neck and scapular region. The sample size was 323 sweepers, out of which 189 subjects were male and 134 subjects were female. The duration of study

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was6 months. The study was carried out inPune region. The outcomemeasures are Visual analogue scale and Lateral scapular slide test. The materials required to carry out this were inch tape and goniometer. The inclusion criteria was both male and female, Age group was from 25 to 35 years and working at least 6 – 8 hours a day. The exclusion criteria wasnon co-operative subjects, individuals who were not willing to participate,an individual who is diagnosed case of scapular dyskinesia and is undergoing rehabilitation for the same and upper limb fracture.

Clearance was taken from the ethical committee.Participants were recruited according to the inclusion and exclusion criteria.The participant's consent was taken and procedure was explained to them.Assessment of pain was done by using visual analogscale, and assessment of scapula by using lateral scapular slide test.The data was collected and it was analyzed.Data analysis was done using the Statistical Package for Social Sciences (IBM, SPSS Inc.) version 20. Distribution of gender, age, experience and VAS rating analysis was done in excel.

III. RESULTS

The study was conducted to find the prevalence of scapular dyskinesia in sweepers who have neck and scapular region pain. A total of 323 subjects were included in the study, majority of age group between 29 to 32 years.

The results shows that out of 323 subjects, 0 subjects have mild pain, 173 subjects have rated their pain moderate and 150 subjects have rated their pain severe. According to the distribution of experience the results show that out of 323 subjects, 44 subjects have work experience between 1-3 years, 135 subjects have experience between 4-6 years, 128 subjects have experience between 7-9 years and 16 subjects have experience equal to or more than 10 years. The results of lateral scapular slide test shows that out of 323 subjects, 69.34%(N= 224)subjects are positive and 30.65% (N= 99) subjects are negative for lateral scapular slide test. The results of positive lateral scapular slide test according to age shows that out of 224 positive subjects, 28 subjects belong to 25-28 age group, 88 subjects belong to 29-32 age group, and 108 subjects belong to 33-35 age group.

IV. DISCUSSION

The purpose of this study is aimed to investigate the prevalence of scapular dyskinesia in sweepers who have neck and scapular region pain. All subjects were adherent to this study. Different sweepers union were approached in Pune region. Aim and objectives were explained to the participants. The consent forms were filled by each person before conducting the study.Visual analogue scale was used to assess pain in subjects, we observed that the intensity of pain in sweepers was moderate to severe level. Continuous sweeping, long standing and heavy work load results in fatigue and pain in muscles. Due to this pain, sweepers may tend to attain bad postures as compensatory mechanism which results in destabilization of scapula. Lateral scapular slide test was used to assess the scapulohumeral rhythm in subjects. This test has specificity of 26.8%. The scapular position was measured by taking the side to side differences between both sides in 3 test positions, 0^0, 45^0, 90^0.

The high prevalence of scapular dyskinesia observed in our study aligns with previous research highlighting the role of abnormal scapular kinematics in the development and perpetuation of musculoskeletal pain in the neck and scapular region.[8] Sweepers, who frequently engage in repetitive sweeping motions and maintain prolonged static postures during their work, may be particularly susceptible to the development of scapular dyskinesia due to muscular imbalances, altered biomechanics, and overuse of certain muscle groups.[9]Altered biomechanics in scapular dyskinesia refer to deviations from the normal movement patterns and positioning of the scapula during various shoulder and arm movements.[10] The scapula plays a crucial role in providing stability and mobility to the shoulder joint, and its proper biomechanics are essential for optimal functioning of the upper extremity .In individuals with scapular dyskinesia, these normal biomechanics are disrupted, leading to aberrant movement patterns[11]. This can manifest as excessive elevation or depression , protraction, or retraction of the scapula during shoulder movements. Additionally, abnormalities in scapular tilt, elevation, and medial/lateral translation may also be observed.Several factors can contribute to altered biomechanics in scapular dyskinesia, including:

1. Muscle imbalances: Weakness or tightness in specific muscles around the shoulder complex can disrupt the coordinated action of muscles responsible for stabilizing and moving the scapula. For example, weakness in the lower trapezius or serratus anterior muscles and tightness in the

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pectoralis minor or upper trapezius muscles can lead to imbalances that affect scapular movement.

2. Poor posture: Prolonged sitting or standing with rounded shoulders, forward head posture, or slouched posture can contribute to mal-alignment of the scapula and alter its biomechanics during shoulder movements. This can increase the risk of developing scapular dyskinesia over time.

3. Overuse or repetitive movements: Engaging in repetitive activities that involve overhead movements, such as throwing, sweeping, or overhead lifting, can place excessive stress on the shoulder complex and lead to fatigue or weakness in the muscles supporting scapular movement. This, in turn, can result in altered biomechanics and predispose individuals to scapular dyskinesia[12].

Altered biomechanics in scapular dyskinesia can have significant implications for shoulder function, leading to increased susceptibility to musculoskeletal pain, decreased range of motion, and compromised shoulder stability.

We observe that individuals in the older age groups (33-35) are more likely to have positive test results compared to younger age groups (25-28, 29-32). This could imply that factors associated with aging may contribute to the positive outcomes of the test. Aging is associated with changes in posture, including forward head posture and rounded shoulders. Poor posture can disrupt the optimal alignment of the shoulder complex, leading to altered scapular mechanics during movement.[13] Over time, chronic poor posture can exacerbate muscle imbalances and contribute to scapular dyskinesia. Age-related changes in soft tissues, such as ligament laxity and decreased flexibility, can impact scapular stability and movement. Reduced tissue elasticity may result in abnormal scapular positioning or movement patterns, particularly during dynamic shoulder activities[14]. Overall, scapular dyskinesia in older individuals is often multifactorial, involving a combination of muscle weakness, joint degeneration, postural changes and soft tissue alterations.Hence, In conclusion, the study highlights the significant prevalence of scapular dyskinesia among sweepers experiencing neck and scapular region pain.

V. CONCLUSION

Among 323 subjects, 173 subjects have rated their pain moderate and 150 subjects have rated their pain severe, and 69.34% (N=224) subjects tested positive for scapular dyskinesia and 30.65% (N=99) subjects tested negative. Hence, In conclusion, the study highlights the significant prevalence of scapular dyskinesia among sweepers experiencing neck and scapular region pain.

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