International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 18s, 2025
https://theaspd.com/index.php

Prevalence Of Impingement Syndrome Secondary To Overhead Activity In Painters.

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Abstract

Aim: *The aim of this study was to to determine the prevalence of shoulder impingement syndrome among professional painters and to assess the association between repetitive overhead activity and the development of impingement-related symptoms.*

Methods:

A cross-sectional study was conducted in and around the town with 65 professional painters aged 30–60 years. Informed consent was obtained after explaining the study to the participants. Data on shoulder disorders were collected through physical examination, and impingement syndrome was diagnosed using special clinical tests.

Result*:In this study of 65 painters, 46 participants showed positive results in at least one of the shoulder impingement tests. Specifically, the Neer Impingement Test was positive in 16 participants (10 males, 6 females), the Hawkins-Kennedy Impingement Test was positive in 12 participants (8 males, 4 females), and the Posterior Internal Impingement Test was positive in 18 participants (12 males, 6 females). These findings indicate a high prevalence of shoulder impingement syndrome, likely due to the repetitive overhead activities common in the painting profession. 70.77% of the participants showed signs of shoulder impingement syndrome, indicating a high prevalence of this condition among painters*

Conclusion: *The study of 65 painters found that 70.77% showed signs of shoulder impingement syndrome, with 46 participants testing positive in at least one test. This highlights the high risk of shoulder injuries in painters due to repetitive overhead activities, emphasizing the need for preventive measures like ergonomics and regular assessments.*

Keywords: *Impingement Syndrome, Painters, Shoulder Disorders, Overhead Activity, Repetitive Motion, Occupation*

INTRODUCTION

Neer coined the concept "impingement" in 1972. Shoulder impingement is a prevalent cause of shoulder pain and has a significant socioeconomic impact due to its impact on work ability.[1] In 1983, Neer described impingement as a mechanical compressive damage to the tissues of the subacromial area[5]. The subacromial region is bounded by the coracoacromial arch, the humeral head, and the anterior portion of the acromion. Between these two osseous structures, the structures are impinged.[2] Posterior internal impingement was initially characterized as excessive contact between the posterior superior glenoid rim or labrum and the undersurface of the supraspinatus and infraspinatus tendons in 1992 by Walch et al[3]

There are two types of impingement syndrome: primary and secondary. The subacromial space is mechanically narrowed by structural changes that result in primary impingement.[4]An impairment in the humeral head's functional centering leads to secondary impingement.[4]When the space between the acromion and the rotator cuff tendons narrows, either caused by structural difficulties or repeated overhead movements, the tendons and bursa may become compressed and inflamed. This compression can cause inflammation, discomfort and reduce range of motion in the shoulder.[4] Impingement syndrome can be caused by repeated overhead action, incorrect posture, muscle imbalance, or structural problem in the shoulder joint. Subacromial Impingement Syndrome can be caused by either intrinsic or extrinsic factors, resulting in weakness, muscle imbalances, osteophytes, acromial alterations, and changed kinematics that lead to impingement.[2]Intrinsic impingement is a degenerative process caused by repetitive usage, tension overload, or trauma to the tendons. Extrinsic impingement occurs when the tendon becomes inflamed and degenerates

due to coracoacromial arch pathology, poor posture, altered scapular or Gleno-humeral kinematics, or capsular tightness. Overhead industrial workers frequently have shoulder pain due to intrinsic impingement.[2] In several countries, a correlation between upper limb problems and work is a common problem. The frequent appearance of shoulder pain or specific diseases like shoulder impingement syndrome is particularly high among industrial plant workers.[1] Occupational mechanical exposures, such as upper arm elevation, repetitive shoulder movements, and powerful shoulder exertions (e.g., lifting, carrying, pushing, and pulling weights), are known risk factors for subacromial impingement[13].

METHODOLOGY

Participants:-

A cross-sectional study was carried out from in and around the town. This study included prevalence of impingement syndrome secondary to overhead activity in painters. An assessment was made for this purpose. Patients who were cooperative, patients who were willing to participate considering the inclusion and exclusion criteria were included in the study. A consent form was signed by the participants before taking their assessment and all the details explained in Marathi. The respondents were informed about the aim of the study as well as the fact that participation in the study was totally voluntary.A total of 65 participants were assessed. Participants had to be between the ages of 30 and 60 years.

Data Collection Tools:-

Special test:-

- Hawkins-Kennedy impingement test.

PURPOSE- The Hawkins-Kennedy impingement test aims to reduce the distance between the inferior side of the acromial arch and the superior surface of the humeral head. The additional compressive stresses then place pressure on the supraspinatus tendon, the long head biceps tendon, the subacromial bursa, and/or the coracoacromial ligament.

PATIENT POSITION-The patient may be standing or sitting.

EXAMINER POSITION-The examiner stands adjacent and slightly to the front of the shoulder to be tested.

TEST PROCEDURE- The examiner places one hand on the patient's elbow for support and stability while grasping the wrist with the other. The examiner flexes the elbow to 90°, then forward-flexes the arm to 90° before aggressively rotating the shoulder medially. This movement presses the supraspinatus tendon against the anterior surface of the coracoacromial ligament and coracoid process.

- Neer impingement test.

PURPOSE- The Neer impingement test aims to shorten the distance between the inferior side of the acromial arch and the superior surface of the humeral head. The compressive forces then apply pressure to the supraspinatus tendon, the long head biceps tendon, the subacromial bursa, and/or the coracoacromial ligament.

PATIENT POSITION- The patient may be standing or sitting.

EXAMINER POSITION- The examiner stands lateral and slightly behind the shoulder to be tested.

TEST PROCEDURE- The examiner wraps one hand around the patient's collarbone and scapula to help stabilize the scapula, and the other around the wrist or forearm. The examiner passively and forcefully lifts the arm entirely in the scapular plane before medially rotating it. This passive stress causes the larger tuberosity to jam against the acromion's anteroinferior border.

INDICATIONS OF A POSITIVE TEST- A positive test result is indicated by an expression of pain on the patient's face.

- Posterior internal impingement test.

PURPOSE- To test for a lesion on the posterior of the shoulder labrum and rotator cuff.

PATIENT POSITION- The patient is in the supine-lying position. EXAMINER POSITION- The examiner stands adjacent to the shoulder to be tested.

TEST PROCEDURE- The examiner places one hand under the patient's elbow to provide support and stability, while the other hand grasps the patient's wrist and controls shoulder movement. The examiner passively abducts the shoulder to 90°, allowing 15° to 20° of forward flexion and maximum lateral rotation.
INDICATIONS OF A POSITIVE TEST- The test result is considered positive if it elicits localized pain in the posterior shoulder.

RESULTS:

Age-Wise Distribution:

Age Group (Years)	Total Participants	Male (Total)	Male Positive	Female (Total)	Female Positive
30–40	43	33	28	10	6
40–50	18	13	11	5	4
50–60	4	3	3	1	1
Total	65	49	42	16	11

In total, 46 out of 65 participants tested positive for shoulder impingement syndrome, with a higher proportion of positive results in males (42 positives) compared to females (11 positives).

INTERPRETATION:

 Total Positive Cases: Out of 65 participants, 46 tested positive for shoulder impingement syndrome, indicating a significant prevalence of the condition.

 Age Group Trends: The percentage of positive cases increased with age:

- 71.18% of participants in the 30–40 years age group tested positive.
- 83.33% of participants in the 40–50 years age group tested positive.
- 100% of participants in the 50–60 years age group tested positive, showing a clear age-related rise in shoulder impingement cases.

 Gender Differences: Males had more positive cases overall, with 42 out of 49 males testing positive, compared to 11 out of 16 females. Despite this, females, especially in the older age groups, also showed a notable incidence of shoulder impingement.

DISCUSSION

The findings of this study highlight a significant prevalence of shoulder impingement syndrome among painters, with 46 out of 65 participants testing positive for the condition. This indicates that shoulder impingement is a common issue within this occupational group, likely due to the repetitive overhead motions and physical demands inherent to their work. The data shows a clear trend where the prevalence of shoulder impingement syndrome increases with age. Specifically, 71.18% of participants in the 30–40 years age group tested positive, while this percentage rose to 83.33% in the 40–50 years group, and reached 100% in the 50–60 years group. This suggests that the risk of shoulder impingement exacerbates as individuals age, likely due to the accumulation of wear and tear on the shoulder joint over time.

Gender differences also emerged from the data. Males exhibited a higher total number of positive cases, with 42 out of 49 males testing positive, compared to 11 out of 16 females. This could be attributed to the greater proportion of males in the study and potentially their higher participation in physically demanding tasks, which are prevalent in this profession. However, despite the higher prevalence among males, females, especially in the older age groups, also showed a significant number of positive cases. This points to the fact that shoulder impingement is not exclusive to any gender, and females working in such physically demanding roles are also at a considerable risk. The increase in positive cases with age emphasizes the importance of early detection and preventive strategies, particularly for older workers. Regular physical assessments, proper ergonomic practices, and strengthening exercises should be implemented to reduce the risk of shoulder

injuries in painters. The findings also suggest that intervention should be targeted at both genders, with an awareness of the age-related vulnerability to shoulder impingement syndrome.

Overall, this study underlines the need for preventive measures to safeguard the shoulder health of painters and others engaged in similar repetitive tasks. These findings could guide future research and occupational health interventions aimed at reducing the incidence of shoulder impingement and improving the well-being of workers in physically demanding professions.

CONCLUSION:

The present study reveals a high occurrence of shoulder impingement syndrome among painters, with 70.77% of participants (46 out of 65) testing positive through clinical assessments. The results strongly suggest a link between frequent overhead work and the development of impingement-related symptoms. The data also shows that the prevalence of this condition tends to rise with age, likely due to the prolonged impact of repetitive stress on the shoulder. Although male participants had a greater number of positive cases, female painters—especially in older age groups—also exhibited a significant risk. This study highlights the need for immediate attention to shoulder health among painters, recognizing it as a major occupational risk. Implementing preventive strategies such as ergonomic adjustments, proper work techniques, and routine medical evaluations can play a key role in minimizing this risk. Exercises focused on posture correction, muscle strengthening, and flexibility may also help prevent injury and maintain better physical function in workers. Moreover, it is crucial for employers and occupational health professionals to take proactive steps, including offering physiotherapy programs and educational initiatives about injury prevention. Early diagnosis combined with appropriate rehabilitation could help prevent the worsening of symptoms, decrease work-related disability, and improve long-term quality of life for those affected.

Further studies are recommended to evaluate the success of specific prevention methods and treatment approaches in lowering the rate and severity of shoulder impingement syndrome among individuals in physically demanding occupations involving overhead tasks.

Ethical clearance

This study has ethical clearance from Institutional Ethics committee of Krishna Viswa Vidyapeeth(Deemed to be University) Karad numbered 425/2025-2025.

Conflict of interest:

There is no conflict of interest in this study.

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