Original Article

Prevalence of Shoulder Impingement Syndrome Among Male Bodybuilders

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Abstract

Objective: The purpose of the study was to determine the prevalence of shoulder impingement syndrome among bodybuilders.
Study design: It was a Cross-sectional study.
Place and duration of study: The study was conducted at the selected gymnasiums of Islamabad (Power Hub Gym, Get Fit Gym, and Ishaq Gym) from July to November 2023.
Material and Methods: A cross-sectional descriptive study was conducted on male bodybuilders with ages ranging from 21-45 years. The consent was taken from each participant prior to the study. Data was collected using a self-administered questionnaire, which included Demographics, a Visual analog scale, Hawkins Kennedy Test, Neer's Impingement test, the Shoulder Pain and Disability Index, and individual risk factors related to bodybuilders. Data was analyzed using SPSS version 26.
Results: Statistical data showed that 68% of total participants had positive Hawkins-Kennedy and Neer's Impingement test , 52% of participants had moderate pain, 24% had mild pain, and a similar percentage had no pain. In terms of disability, 52% experienced moderate disability 48% had mild disability. 52% of subjects who use to have shoulder workout two to four days a week had positive results on the Hawkins-Kennedy test.
Conclusion: The present study concludes that shoulder impingement syndrome is prevalent among bodybuilders with functional limitations as well which affect their quality of life.

Keywords: Shoulder Impingement Syndrome, Bodybuilders, Weight lifting, Shoulder Pain, Biomechanics.

1. Introduction

The term "impingement syndrome" refers to a disorder where the shoulder's rotator cuff muscles are compressed, leading to inflammation and discomfort as they pass between the humerus, the top of the upper arm, and the acromion, the apex of the shoulder.(1) Shoulder impingement syndrome is a common issue that can affect individuals engaged in activities that involve repetitive overhead arm movements, including bodybuilders. It is characterized by the compression or impingement of the rotator cuff tendons and subacromial bursa between the head of the humerus and the acromion - a bony process on the shoulder blade.(2) Shoulder impingement syndrome among bodybuilders can be more prevalent due to the nature of their training routines, which often involve repetitive and intense upper-body exercises. Impingement syndrome is one of the most pervasive underlying diagnoses for shoulder discomfort, which ranks as the third most common musculoskeletal complaint.(3) In 1972, Neer presented the idea of rotator cuff impingement for the first time. According to Neer's description, the syndrome is caused by the rotator cuff tendons mechanically impinging beneath the anterior-inferior region of the acromion when the shoulder is internally rotated and forwardly flexed.(4) The illness most frequently affects women in their 50s and 60s. It has been linked to hypothyroidism and is five times more common in people with diabetes mellitus (4).

As age increases rotator cuff defects become more common. A complete defect can affect up to 30% of people over 70, but 75% of these cases are asymptomatic.(5) Peak time of occurrence is 6th decade. Shoulder Impingement Syndrome (SIS) can have a variety of functional, degenerative, and mechanical causes at the pathophysiological level. The impingement theory postulates a pathophysiological mechanism in which there is a mechanical conflict between several shoulder joint components.

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According to Neer the impingement of the rotator cuff tendons under the stiff coracoacromial arch and acromion was the cause, which ultimately resulted in rotator cuff tendon rupture and degeneration.[6]

The distal portion of the supraspinatus tendon, which is most vulnerable because of its inadequate blood supply, may experience attritional alterations as a result of higher forces and recurrent overhead movements.

The severity of structural damage is typically a factor considered when deciding on the initial treatment approach for shoulder impingement. Historically, nonsteroidal anti-inflammatory medications (NSAIDs), physical therapy, and corticosteroid injections have been commonly used as primary interventions.

Shoulder impingement syndrome symptoms include experiencing pain when raising arms above the head. Discomfort when reaching, lifting, or lowering the arm from a raised position. Tenderness and pain in the shoulder's anterior region. Pain radiating down the arm's side from the front of the shoulder. Soreness while resting on the afflicted side. Ache or pain that keeps you awake at night and interferes with your sleep.[7]

Hawkins Kennedy test is Positive if pain occurs during the arm's maximum internal rotation with the elbow flexed at 90 degrees of anteversion. Pain results from this narrowing of the subacromial space between the coracoacromial ligament and the greater tubercle.[8,9] Although shoulder impingement syndrome is a common condition there is sparse literature available on impingement syndrome and resulting disability in bodybuilders. For this reason, the current study was conducted on the affected population (bodybuilders) to find the prevalence of shoulder impingement syndrome among bodybuilders and to assess the resulting disability caused by Impingement syndrome.

2. Materials & Methods

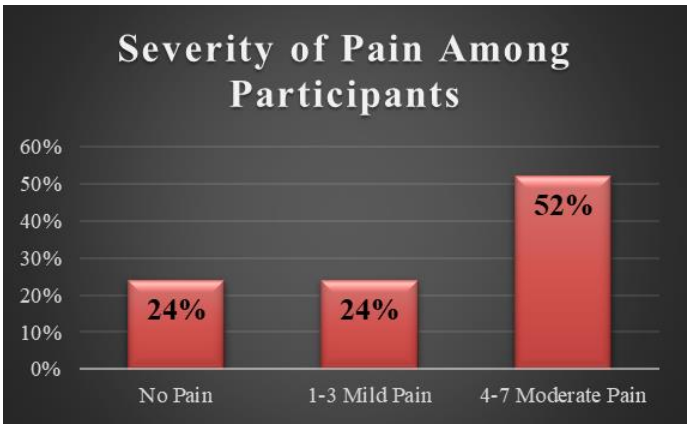
A Cross-sectional study was conducted at the selected gymnasiums of Islamabad (Power Hub Gym, Get Fit Gym, and Ishaq Gym). The study was completed over a time period of 05 months after the approval of the synopsis on 23rd June 2023 by the Ethical Committee for Clinical Research of Bashir Institute of Health Sciences (Letter reference No. B1-86/DPT-2023). Sample size was calculated through an Open Epi sample size calculator a Sample of 100 participants (Bodybuilders) was collected through the Non-Probability Convenient Sampling technique. According to inclusion criteria, Male bodybuilders with an age range of 21-45 years who perform exercises on a daily basis with an average duration of 1 hour with a minimum of 1 year or greater experience in bodybuilding were included. Bodybuilders with a history of systemic disease and trauma or congenital shoulder disorder were excluded from the study. Informed consent and confidentiality agreements were signed before participants were enrolled in the study. Data was collected from bodybuilders using the Shoulder pain and disability index (SPADI) questionnaire, which is a self-administered questionnaire that contains two dimensions, one for functional activities and a second for pain.[10] The pain dimension, then, contains five questions regarding the extent of an individual's pain. Functional activities are assessed using eight questions formulated to measure the extent of difficulty that an individual has with different activities of daily living requiring the use of upper extremity. Demographic data of all participants were recorded on a self-structured questionnaire, and to assess the severity of the pain, a Visual analogue scale was used. Hawkins Kennedy test and Neer's Impingement test were used to confirm positive and negative in term of impingement among participants.[11,12] For descriptive analysis frequency and percentages, Statistical Package for Social Sciences (SPSS version 26 was used for data analysis.

3. Results

The results obtained indicate that for 100 subjects, 31% were in 21-25 years age group, 30% were within the age range of 26-30, 14% were within the 31-35 age group, 18% were between 36-40 years of age, and 7% within 41-45 years of age.

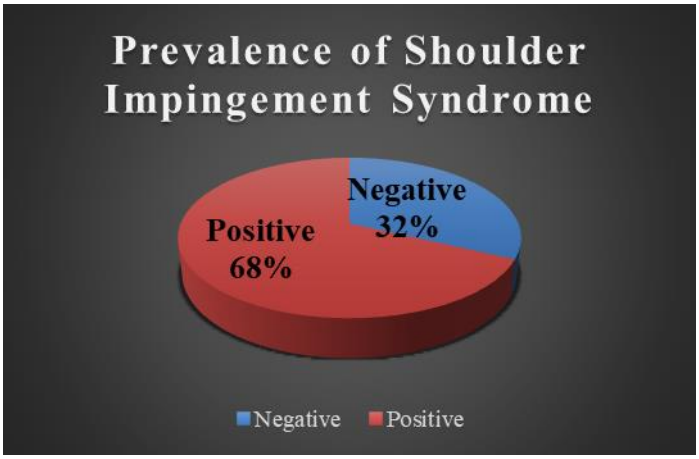
The severity of pain was assessed using the visual analog scale. Results showed that 52% of participants reported moderate pain, 24% reported mild pain and 24% of participants reported no pain as shown (Fig. 1).

Figure 1: Severity of Pain among participants using VAS.



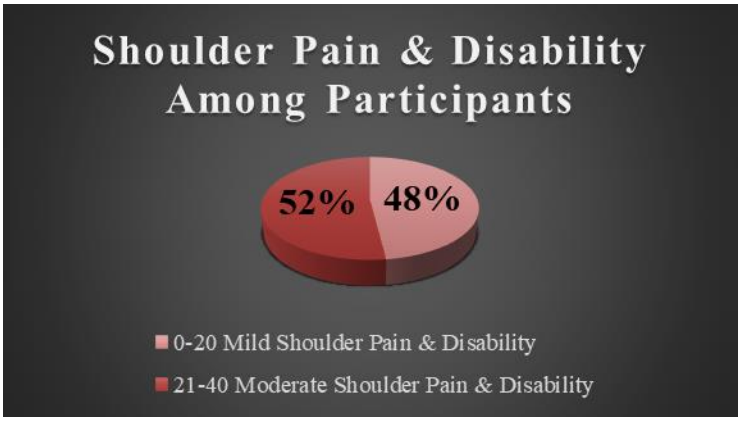
To find out the prevalence of shoulder impingement syndrome Hawkins Kennedy test and Neer's Impingement test were used. Tests was found to be positive in 68% (68 out of 100) participants and negative in 32 % (32 out of 100) participants (Fig 2).

Fig 2: Hawkins Kennedy test positive and negative percentages



Shoulder Pain and Disability Index (SPADI) showed that out of a total of 100 participants, 52% had moderate shoulder pain and disability, and 48% individuals had mild shoulder pain and disability (Fig 3).

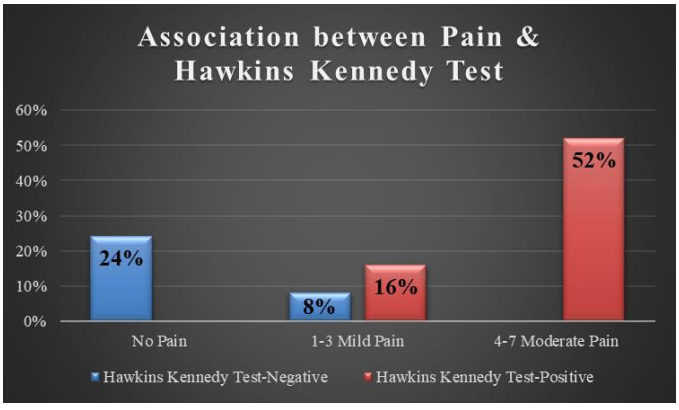
Fig 3: Shoulder Pain and Disability Index Among Participants



Cross tabulation between age and VAS showed that in the 21–25 age group, out of 31 participants, 18 reported no pain, while 13 experienced mild pain. In the 26–30 age group, out of 30 participants, 6 had no pain, 11 had mild pain, and 13 reported moderate pain, in the age group 31-45 all participants experienced moderate pain.

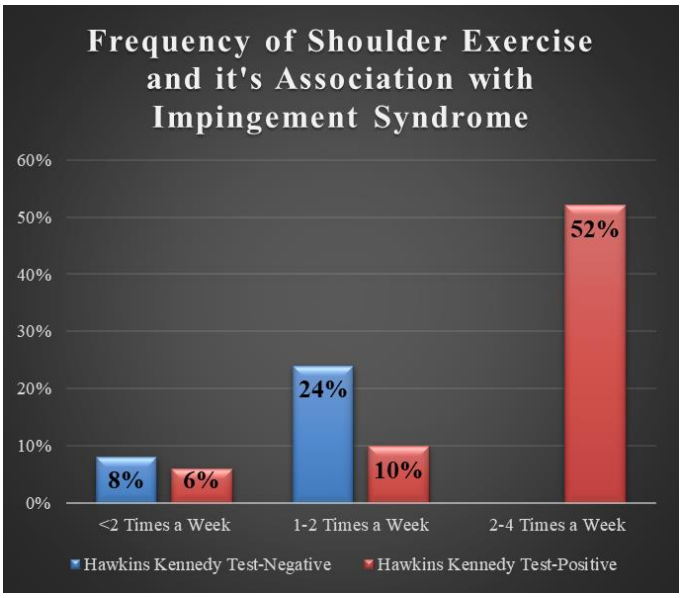
Findings also revealed that Participants who had moderate pain showed more positive results for the Hawkins-Kennedy test and Neer's Impingement test as compared to those who had mild pain (Fig.4). 52% of Individuals who had moderate pain tested positive for Hawkins Kennedy test and Neer's Impingement test, 16% with mild pain showed positive, and 8% tested negative.

Fig 4: Association of Pain and Shoulder Impingement Syndrome



The results also showed that workout duration is directly proportional to positive test outcomes for shoulder impingement syndrome (Fig 5).

Fig 5: Frequency of Shoulder Exercise and its association with Shoulder Impingement Syndrome.



4. Discussion

Current results showed that 52% of total participants had moderate pain and 68% participants had positive Hawkins Kennedy and Neer Impingement test. Shoulder pain and disability index (SPADI) depicted (52%) disability among bodybuilders. Evidence suggests that bodybuilders may be susceptible to shoulder impingement due to their participation in activities such as overhead lifting, high training volume, and inadequate warm-up routines.

Ahmad wassi et al. (2018) conducted a cross-sectional study to assess the prevalence of shoulder impingement and its association with volume of training among players. 116 players with age range 18-22 years were selected from Faisalabad cricket stadium in Faisalabad. Data was collected through interviewed session, informed consent was signed from all players, pain was assessed by active shoulder movements (abduction, flexion internal and external rotation) and diagnosis of shoulder impingement was made by Hawkins Kennedy test and Neer Impingement test .The results of this study concluded that pain was present and out the 116 athletes 49 (42%) had shoulder impingement these athletes played cricket at Faisalabad's sport academies. [13] The current study applied Hawkins Kennedy test and Neer Impingement test for the diagnosis of impingement syndrome on a different population. In contrast to the previous study, visual analogue scale used for pain assessment. The Shoulder Pain and Disability Index was used to evaluate shoulder disability resulting from shoulder impingement syndrome. The study revealed a comparatively higher percentage (68%) of subjects with impingement syndrome.

Marx et al. (2014) conducted a cross-sectional study to assess the injuries and overuse syndromes in competitive and elite bodybuilders. Seventy-one bodybuilders with age 18-55 years were selected from clubs in Germany. Data was collected through a self-structured questionnaire. The results of this study concluded that 45.1% of athletes were reported with pain symptoms.[14] Both studies show similarity in terms of VAS scale used for the assessment of pain. In contrast to the previous study this study used Hawkins Kennedy test and Neer Impingement test for diagnosis of shoulder impingement syndrome. Shoulder pain and disability index was also used to find out disability of shoulder due to shoulder impingement syndrome. The result of the current study results showed that 52% of participants reported moderate pain, 24% reported mild pain measured by VAS.

Another study cross-sectional study was conducted by Ehsanur Rahman et al. (2019) to assess Common Sports Injuries among Male Cricket Players. 100 injured cricket players were selected through convenience sampling technique who were trained in Bangladesh Cricket Board. The study concluded that 40% of the cricket players had shoulder injury and 25% had rotator cuff injury relative to pain.[15] Although the study targeted a different population, yet it showed a significant prevalence of shoulder injuries. Both studies show similarities as both population gender (male) and sample size (100) was same; both used VAS scale for assessment of pain. In contrast to the previous this study used Hawkins Kennedy test and Neer's Impingement

test for diagnosis shoulder impingement syndrome and Shoulder pain and disability index to find out disability of shoulder due to shoulder impingement syndrome.

Conclusion:

The present study concluded that shoulder Impingement syndrome is largely prevalent among bodybuilders.

Conflict of interest:

Authors declared no conflict of interest.

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