Original Research Article

High Prevalence and Impact of Shoulder Pain Among Gym Instructors: A Study on Work-Related Musculoskeletal Disorders

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Abstract

Introduction: Gym instructors within the fitness industry play a pivotal role in guiding individuals towards achieving a range of health and fitness goals. In addition to muscular and skeletal health, gym instructors are instrumental in boosting the immune system. Even though they help in maintaining the body gym trainers have a limited knowledge of mechanism of injury, neglecting and repetitive movements of the joint leads to worsening of injury and increase in the pain. Musculoskeletal pain can stem from various sources, including uncommon or repetitive activities that strain muscles, tendons, and ligaments. Additionally, it may result from sudden, jerky movements, falls, fractures, or underlying musculoskeletal conditions. The result of repetitive activities that strain the muscles, tendons and sprain the ligaments. Insufficient recovery time, rapid pace work, repetitive motion patterns, heavy weight lifting, forceful manual exertions, mechanical pressure concentrations or whole body vibrations can lead to development of other musculoskeletal disorders. The impact of a musculoskeletal condition on an individual's quality of life is substantial, extending beyond mere physical discomfort. Such conditions not only affect personal well-being but also impose a considerable financial strain, manifested through compensation payments and lost wages. Instances of sick leave,absenteeism, and even job abandonment contribute to diminished job efficiency, further exacerbating the socioeconomic repercussions of these disorders.

Methodology: A total of 147 participants were selected on the basis of inclusion and exclusion criteria. A consent form was filled by them and the study and questionnairewas explained to them. Self-made Questionnaire was explained to each gym instructors according to language understood by that person as well as google forms were also made available for their convenience. Each gym instructor completed a self administered questionnaire which included information regarding complaints of current shoulder pain. The total data was collected and was statistically analyzed.

Conclusion: The Prevalence of shoulder pain in gym instructors is high (78%). The presence of shoulder pain causes a gym instructors to avoid certain activities due to pain which causes a hindrance in their work related activities.

Keywords: Prevalence of shoulder pain, Shoulder pain, Gym instructors, impact of shoulder pain, work - related musculoskeletal disorders.

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Introduction

Gym instructors within the fitness industry play a pivotal role in guiding individuals towards achieving a range of health and fitness goals. These professionals employ their expertise to design and implement exercise programs that significantly enhance cardiovascular endurance. The gym instructors perform high intensity work during their personal session or while assisting their clients during their workout session.[1] Furthermore, they prioritize exercises that enhance mobility and balance, which are essential for everyday activities and minimizing the risk of falls, especially as one ages. Improving posture is another critical area of focus, as it not only affects physical appearance but also plays a significant role in preventing back pain and other musculoskeletal issues. "The number of people in this industry has increased in last 10-15 years of attendees and employees and today almost 7,50,000 people work within this industry. [2] The result of repetitive activities that strain the muscles, tendons and sprain the ligaments. Insufficient recovery time, rapid pace work, repetitive motion patterns, heavy weight lifting, forceful manual exertions, mechanical pressure concentrations or whole body vibrations can lead to development of other musculoskeletal disorders. [3] High energy force in a repetitive manner predisposes the static and dynamic stabilizers of shoulder joint to chronic injuries and attenuation following whicha mild instability pattern develops that places increased demand on rotator cuff muscles. Due to muscle hypertrophy and overuse, poor technique can lead to nerve injuries such as supra scapular neuropathy [4]. Gym trainers have a limited knowledge of mechanism of injury, neglecting and repetitive movements of the joint leads to worsening of injury and increase in the pain [1]. Musculoskeletal pain can stem from various sources, including uncommon or repetitive activities that strain muscles, tendons, and ligaments. Additionally, it may result from sudden, jerky movements, falls, fractures, or underlying musculoskeletal conditions. Weightlifting is one of the exercises which is commonly done by every gym instructors. It is a method of strength, resistance training in which a load is pulled or pushed as a form of resistance. Enhancing muscle strength and endurance, it also offers additional benefits such as increased resting metabolic rate, improved blood lipid profile, reduced resting blood pressure, enhanced bone mineral density, better mental health, and a reduced risk of type 2 diabetes. However, despite these advantages, repetitive actions can result in shoulder injuries and subsequent pain.[5] The impact of a musculoskeletal condition on an individual's quality of life is substantial, extending beyond mere physical discomfort. Such conditions not only affect personal well-being but also impose a considerable financial strain, manifested through compensation payments and lost wages. Instances of sick leave, absenteeism, and even job abandonment contribute to diminished job efficiency, further exacerbating the socioeconomic repercussions of these disorders Additionally, the financial burden associated with the treatment of musculoskeletal conditions and the management of accompanying discomfort is substantial, reflecting both the direct costs of medical care and the indirect costs stemming from reduced productivity and quality of life.[3]

Materials and Methods

A cross-sectional study was carried out from the month of September 2023 - March 2024 in 30 gyms out of 250 gyms in the Pune city. A total of 147 participants were included on the basis of age between 25 - 35 years, work experience of more than 3 years and work for minimum of 6 hours or more. There was no specific criteria to select a gym and no written permission was required for the survey. The purpose of the study was explained to the gym instructors and consent was taken from them. A self-made questionnaire was made as an outcome measure. The questionnaire consisted of presence of shoulder pain and the impact that is being caused in their work related activities. The participants were given detailed information and they were asked to fill the questionnaire which took about 5-10 minutes. The collected data was analyzed by using Microsoft Excel 2016. Data is resulted in the table and graphical form which represents the result achieved from the analysis.

Results and DiscussionResults

Cross sectional study was carried out between September 2023-March 2024, study included total 147 participants which are gym instructors in which there were Males 133(90%) and Females 14(10%) with

average age of 29.38 ± 2.85 years and 9.19 ± 2.75 years of work experience.From 143 participants prevalence of shoulder pain is seen in the average of 33.33% of gym instructors

Table 1

Hand Dominance	Percentage
Right	82.99%
Left	17.01%

TABLE 1. The table shows that there are more number of right hand dominant (83%) gym instructors than left hand dominant (17%).

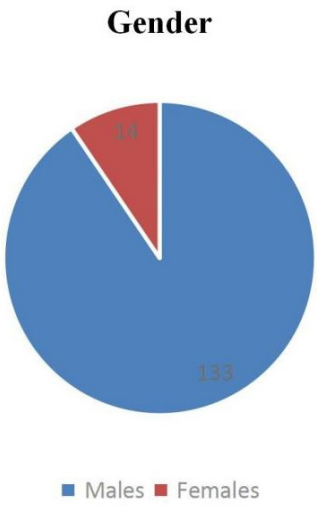

Figure 1

FIGURE 1. is a graphical representation of presence of male gym instructors(90%) being more in the industry compared to the female gym instructors(10%).

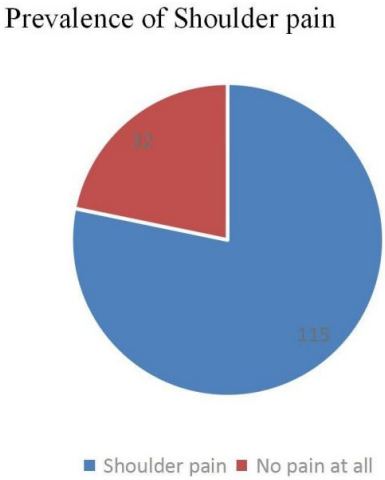

Figure 2

FIGURE 2. is the graphical representation of prevalence of shoulder pain is seen 115 (78%) and the remaining participants have no shoulder pain at all 32 (22%).

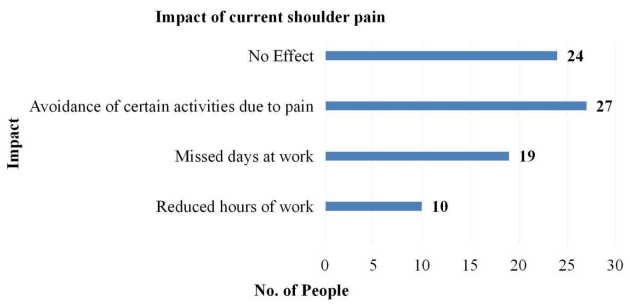

Figure 3

FIGURE 3. is the graph which shows impact of present shoulder pain with prevalence of Avoidance of certain activities due to pain being 27 (18.37%), followed by no effect being 24 (16.33%), missed days at work is 19 (12.93%), and the last being reduced hours of work 10 (6.80%). this graph shows the prevalence of impact that occurs in daily lives of gym instructors.

Discussion

This study seeks to determine the frequency of shoulder pain among gym instructors in Pune city. Common work-related musculoskeletal disorders have been observed in this group, with previous studies indicating that the shoulder is the most prevalent site for pain and injury (79%). With the growing demand for individual fitness, the industry has garnered significant attention, prompting concerns regarding injuries and pain among gym instructors.

This survey utilized a self-designed questionnaire to gather data on factors such as age, hand dominance, years of experience, work hours, presence of shoulder pain, and its impact on day-to-day occupational tasks. Findings indicate a high prevalence of shoulder pain (78%). Given the continuous nature of gym instructors' workouts, shoulder pain may arise without adequate rest and time for recovery.

The study shows that there are more number of right hand dominant participants compared to left hand dominance. Previous studies shows that the strength of the dominant hand is more compared

to non-dominant hand and the injury and pain of the shoulder is very common to happen in the non-dominant hand. Based on the study done by Pud D, Golan Y and Pesta R the study found significant differences in pressure pain threshold asymmetry between left and right-hander, with left-hander demonstrating a distinct pattern compared to right-hander. The pain threshold of right handed participants were more than compared to left hand of those participants. There was no significant change seen in left hand dominant participants.[16]

The survey shows that from total participants there are more number of males (90%) seen. This industry requires proper protocols for resistance training, strengthening exercises and preference of male instructors is more in comparison to female instructors. A similar study done by Mazzetti SA, Kraemer WJ, Volek JS, et al in a previous study propose an alternative perspective. They argue that adherence to and the intensity of exercise might also be significantly influenced by the dynamics inherent in the relationship between the trainer and the trainee, with particular attention paid to the gender of the trainer. Therefore, considerations regarding the gender of the trainer and the ensuing perceptions could hold significant implications for optimizing exercise adherence and intensity, thereby warranting further exploration within the realm of exercise science and training methodologies.[17]

Several studies have explored the impact of the coach's gender across various sporting domains, including athletics, volleyball, basketball, and strength and conditioning. Parkhouse and Williams, as well as Weinberg et al., have documented that male athletes often harbor negative attitudes towards female coaches. Moreover, female athletes have expressed a preference for the prospect of having an unsuccessful male coach over a successful female coach. Qualitative investigations have revealed that in a sample of collegiate female athletes spanning disciplines such as basketball, softball, golf, cross-country, track and field, and soccer, the majority exhibited a preference for male coaches.[19] However, Medwechuk and Crossman's research contradicts this trend, showing that swimmers tend to favor coaches of the same gender. More recent studies have indicated that male collegiate athletes generally lean towards male strength and conditioning coaches, while female counterparts do not exhibit a strong gender preference in this domain.[18,19]

This study aims at finding the prevalence of shoulder pain in gym instructors. Based on the data the results show that there is prevalence of shoulder pain (78%). As gym instructors are the ones who workout in sessions one after other so there is no proper rest. The study done by Shinde N, Sahasrabuddhe P.in "Prevalence of musculoskeletal pain and injuries in gym instructors" there is prevalence of musculoskeletal pain and injury is seen in the shoulder joint as the shoulder joint is renowned for its remarkable mobility, but this comes at the expense of stability. Due to the extensive range of motion it allows, the muscles and ligaments supporting the shoulder joint are often stretched beyond their normal limits, rendering the joint vulnerable to instability. This stretching of the shoulder ligaments can result in pain, which may occur suddenly or gradually over time. Activities involving frequent overhead movements, such as arm abduction and flexion, can also aggravate shoulder pain. [1]

As the result of the survey states that there is prevalence of avoiding certain activities due to pain (18%). As its their occupation and they are paid for the hours they put in the gym avoiding certain activities can lead to less number of people coming to them for workout sessions. If they are taking up less session which can lead to reduce in their salary as their performance is reviewed at the end of the month which can affect their lives financially.

Based on the study done by George SA, Abraham AT. A, in "Review on Musculoskeletal Pain and Injuries among Fitness Instructors." A musculoskeletal condition not only profoundly affects an individual's quality of life but also imposes a substantial financial strain due to compensation payments and lost wages. Factors such as sick leave, absenteeism, and even job abandonment further diminish job efficiency, exacerbating the economic impact of these disorders. Moreover, the associated treatment costs and the discomfort experienced by individuals dealing with musculoskeletal issues contribute significantly to the overall financial burden. Thus, beyond the personal toll they take on individuals, these conditions represent a significant economic challenge, affecting both employers and society at large.[3]

Based on the previous study, experience of the gym trainers can be one of the reason for prevalence of shoulder pain. There is correlation between the qualification and years of experience of the instructors who are responsible for the training session and preventing any further pain or injury. The study done by Ahmed S, Rashid M, Sarkar AS, Islam MJ et al., qualification plays no significant role in becoming the gym instructors. The findings of the study suggest that individuals who engage in workouts under the guidance of experienced trainers are prone to experience less pain compared to those under the ones of less experienced instructors. [20]

Another study done by Lau R, Mukherjee S. in "Prevalence of shoulder and elbow overuse injuries among competitive overhead youth athletes in Singapore" the prevalence of shoulder injury (31%) was seen. In this study it also shows that athletes having less than 8 years of experience have shoulder overuse injuries (95%). There is prevalence seen in shoulder injuries in comparison to elbow overuse injuries in athletes with less years of experience.[21]

Another point of concern for the prevalence of shoulder pain is when instructors work for more hours without having a proper rest and more heavy weights are prone to havingshoulder pain. According to Merat G, Bonato M, Agnello L. et al, this study revolves around the examination of musculoskeletal disorders, it became evident that various ailments were prevalent among Fitness Instructors. These included muscle tightness, which refers to the shortening of a muscle, along with incidents such as ankle, knee, and wrist sprains, shoulder dislocations, contusions, as well as occurrences of low-back pain and articular pain.[22]

This study brings attention to prioritize promoting health, offering rehabilitation services, and implementing preventive measures. This includes advocating for comfortable working postures and utilizing ergonomically designed equipment and tools. By addressing these aspects, gym instructors can help mitigate the risk factors contributing to shoulder pain within their profession. Focusing on these recommendations not only supports the well-being of gym instructors but also enhances their ability to perform their duties effectively while minimizing the occurrence and severity of shoulder-related discomfort.

Conclusion

This study shows there is high prevalence of shoulder pain in gym instructor being 78%. the impact of the current shoulder pain is that there is more of avoiding certainactivities due to shoulder pain which is 18%. Continuous hours of work without proper rest intervals, also presence of previous shoulder pain or injury, have been observed to contribute to present shoulder pain.

Ethical Clearance: Taken from St.Andrews College of Physiotherapy (ST.A/COP/IEC/209/2024) Faculty Research ethics Committee (ON 6 April 2023, REFRENCE :- Dr. Venkatesan R.) IEC REFERENCE NO :- BPTH/Ethics/0075

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