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Prevalence of Shoulder Pain, Disability, and Its Association with Quality of Life Among Weightlifters in Peshawar

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KEYWORDS

Numeric pain rating scale
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DECLARATIONS

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ABSTRACT

Background: Shoulder pain and disability are common musculoskeletal issues affecting physically active individuals, particularly those engaged in weightlifting and repetitive upper limb activities. These conditions can lead to significant functional limitations and negatively impact quality of life. **Objective:** To assess the prevalence of shoulder pain and disability among gym-goers and examine their association with quality of life. **Methodology:** This cross-sectional research design was carried out across several gyms in Peshawar, Pakistan. Ethical approval for the study was obtained from the Research Committee of the City University of Science and Information Technology. The 106 participants comprised both male and female gym members aged between 18 and 45 years, with a minimum gym membership duration of two months and an average participation of 3 to 5 hours of exercise per week. Individuals were excluded if they had a history of shoulder trauma, fractures, previous shoulder surgeries, or structural deformities. Pain intensity, functional disability, and quality of life were evaluated using the numeric pain rating scale, shoulder pain and disability index and short form-12, respectively. Data were collected through structured questionnaires administered face-to-face under the guidance of trained researchers to ensure accuracy and completeness. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize demographic and clinical characteristics. Inferential analysis was conducted using the chi-square test to examine the associations between shoulder pain, disability, and quality of life. **Results:** Among 106 weightlifters, 40.6% female and 59.4% male, aged 18 to 45, participated in the study. The most common pain level was Moderate pain (34.9%), while the least common pain level was severe pain (15.1%) ($p < 0.001$). Those who had more shoulder discomfort and disability had significantly worse quality of life ratings, even though the majority of participants (67%) said they had an excellent or good QOL. **Conclusion:** The results of this study show that the musculoskeletal issues of the shoulder hurt the performance of a recreational weightlifter as well as their overall mental and physical health. In order to reduce shoulder-related issues, it is essential to promote early detection, management and rehabilitation and suitable training techniques.

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INTRODUCTION

In recent years, the demand for maintaining health and fitness has been increasing in the young population, which has led to the popularity of sports like weightlifting worldwide. While these activities enhance physical fitness and promote cardiovascular health, they also come with a significant risk of physical injuries, particularly to the shoulder, which is the most movable joint in the upper extremity.¹ Weightlifting is a strength training technique where resistance is provided by pushing or pulling a load.² The common issues faced by weightlifters in gyms are shoulder pain and disability, which affect their training performance.³ There is limited documentation on the prevalence and patterns of shoulder pain and disability among weightlifters. Understanding these patterns is essential for reducing negative outcomes and optimizing the benefits of weight training, to measure the frequency and patterns of musculoskeletal disabling pain in weightlifters and explore the relationships between their prevalence and quality of life.⁴

Weightlifting is used as a component of a plan to improve load-bearing ability and long-duration muscle capacity, or as part of a program to effectively prevent injuries.⁵ Along with the positive effects of weightlifting towards society, it also has some negative impacts that are due to improper positions, overuse, and irregular patterns or simply, we can say that it's occurring due to lack of knowledge about proper weight lifting techniques.⁶ In recreational weightlifting, the shoulder girdle, upper and lower limbs are the anatomical regions that are at increased risk for injuries. According to reported injuries in the upper limb, mostly the shoulder is the area where the majority of these injuries happen because it is the highly mobile joint in the upper limb.⁷ The shoulder is a complex system formed. The four joints that combine to make up the shoulder are the scapulothoracic, glenohumeral, acromioclavicular, and sternoclavicular.⁸

According to biomechanics, improper loads can cause damage to each of these joints. The shoulder's biomechanics are unique in contrast to other joints in the human physique, because it permits a notably wide range of motion (ROM), and it is firmly supported by muscles and tendons, which can become prematurely underwear in addition to being more susceptible to acute

trauma.^{9,10} Muonwe et al. studied recreational weightlifters to examine the ratio of injuries related to muscles, tendons, ligaments and joints. It was calculated that 47.3% injuries occurred in those who are engaged in gym training within 6 months. The most frequently injured body parts were the hand, wrist, and shoulder. Higher onset rates of injuries were associated with several training sessions every day.¹¹ Pitt et al. in 2022 conducted a systematic review on mental illness in elite weightlifters. He stated that someone with unstable mental health cannot be regarded as healthy. Researchers are becoming more interested in the mental health of great athletes because it has a direct impact on an individual's quality of life. The prevalence of mental health disorders varied from 19% for alcohol abuse to 34% for anxiety and depression.¹²

Huebner and Lavallee conducted research on arthralgia in women weightlifters aged above 35 years. He investigated that in female master weightlifters, the most common locations for arthritis complaints were the shoulders (29.8%), hands/wrists (28.8%).¹³ The objective of this study is to comprehensively examine the prevalence and patterns of shoulder pain and disability among weightlifters, with particular focus on how these issues influence training performance, physical function, and overall quality of life. Furthermore, the study aims to identify the underlying risk factors, such as improper lifting techniques, overuse, and inadequate training practices, that contribute to shoulder-related injuries. By generating evidence-based data, this research seeks to address the existing gaps in the literature and provide valuable insights for clinicians, trainers, and sports professionals to design effective preventive strategies, rehabilitation programs, and safe training protocols tailored for both recreational and professional weightlifters.

METHODOLOGY

This study employed a cross-sectional research design and was carried out across several gyms in Peshawar, Pakistan. A total of 106 participants were recruited through non-probability convenience sampling. Ethical approval for the study was obtained from the Research Committee of the City University of Science and Information Technology (CUSIT), and formal permissions were additionally secured from the administration of each participating gym before initiating data

collection. The study population comprised both male and female gym members aged between 18 and 45 years. Eligibility criteria required a minimum gym membership duration of two months and an average participation of 3 to 5 hours of exercise per week. Individuals were excluded if they had a history of shoulder trauma, fractures, previous shoulder surgeries, or structural deformities affecting the shoulder joint.

Pain intensity, functional disability, and quality of life were evaluated using standardised and validated questionnaires. The numeric pain rating scale (NPRS) was employed to measure the intensity of shoulder pain on a scale ranging from 0 (no pain) to 10 (worst possible pain). Shoulder-related pain and functional limitations were assessed using the shoulder pain and disability index (SPADI), which provides both pain and disability sub-scores to capture the overall burden of shoulder dysfunction. Quality of life was measured through the short form-12 (SF-12) Health Survey, which evaluates both physical and mental health components, allowing for a comprehensive understanding of the impact of shoulder pain on general well-being.

Data were collected through structured questionnaires administered face-to-face under the guidance of trained researchers to ensure accuracy and completeness. Anonymity and confidentiality of all participants were strictly maintained. Once collected, the data were coded and entered into SPSS software version 24 for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize demographic and clinical characteristics. Inferential analysis was conducted using the chi-square test to examine the associations between shoulder pain, disability, and quality of life. A p-value of less than 0.05 was considered statistically significant.

RESULTS

This study included 106 participants; 63 were males and 43 were females. The majority of participants (36.8%) fell within the 18-24 age group, followed by 29.2% in the 25-31 age range. About 19.8% of the participants were aged between 32 and 38 years, while the smallest group, comprising 14.2% of the sample, belonged to the 39-45 age category. Out of a total of 106

respondents, 63(59.4%) were male and 43(40.6%) were female. Among participants aged 18-24, 16 out of 39(41%) reported no pain, while only 1(2.6%) reported severe pain. In contrast, in the 39-45 age group, only 1 out of 15(6.7%) reported no pain, while 3(20%) reported severe pain. Among 63 male participants, 16(25.4%) reported no pain, 19(30.2%) mild, 19(30.2%) moderate, and 9(14.3%) severe pain. Among 43 female participants, 7(16.3%) reported no pain, 11(25.6%) mild, 18(41.9%) moderate, and 7(16.3%). Among 63 male participants, the majority reported a good quality of life 38(60.3%) and above average quality of life 18(28.6%), while only 2(3.2%) reported poor quality of life. The mean age of the participants was 31.79 with a standard deviation of 5.41.

Table 1 presents the distribution of pain intensity and shoulder disability among participants. Based on the NPRS, 21.7% reported no pain, 28.3% experienced mild pain, 34.9% reported moderate pain, the most common category and 15.1% experienced severe pain. According to the SPADI, 14.2% of participants reported no shoulder pain and disability, 17.9% had mild symptoms, and 21.7% experienced moderate levels. Severe, very severe, and extremely severe disability were reported by 18.9%, 17%, and 10.4% of participants, respectively.

In Table 2, a chi-square test showed a significant association between age range and pain intensity levels, at a p-value of 0.00. Among participants aged 18-24, 16 out of 39 (41%) reported no pain, while only 1 (2.6%) reported severe pain. In contrast, in the 39-45 age group, only 1 out of 15 (6.7%) reported no pain, while 3 (20%) reported severe pain. A chi-square test was conducted to examine the association between gender and pain intensity levels, as measured by the NPRS. The results indicated an insignificant association, at a p-value of 0.52. A chi-square test showed an insignificant association between age range and quality of life, at a p-value of 0.144. The results indicate an insignificant relationship between increasing age and a decline in quality of life. A chi-square test was performed to examine the association between gender and quality of life, as measured by the SF-12 scale. The results showed an insignificant association, at a p-value of 0.44.

As shown in Table 3, a chi-square test showed a significant association between shoulder pain and

disability (SPADI) and pain intensity levels (NPRS), $p < 0.00$. In Table 4, the chi-square test showed a significant association, $p < 0.001$. Participants with no or mild shoulder pain and disability mostly reported a good quality of life (14 out of 15 and 18 out of 19, respectively). Those with very severe and extremely severe shoulder pain and disability were more likely to report lower quality of life levels, including poor, below average, or average quality of life. In Table 5, A chi-square test was conducted to examine the association between levels of shoulder pain and quality of life. The results showed a statistically significant association between the two variables, $p < 0.00$.

DISCUSSION

This cross-sectional study was conducted in different gyms of Peshawar. The main goal of this

study was to find out the prevalence of shoulder pain, disability and its association with quality of life among weightlifters. This study included 106 participants. The majority of participants (36.8%) fell within the 18-24 age group, followed by 29.2% in the 25-31 age range. About 19.8% of the participants were aged between 32 and 38 years, while the smallest group, comprising 14.2% of the sample, belonged to the 39-45 age category. Out of a total of 106 respondents, 63(59.4%) were male and 43(40.6%) were female. Among participants aged 18-24, 16 out of 39(41%) reported no pain, while only 1(2.6%) reported severe pain. In contrast, in the 39-45 age group, only 1 out of 15(6.7%) reported no pain, while 3(20%) reported severe pain. Among 63 male participants, 16(25.4%) reported no pain, 19(30.2%) mild, 19(30.2%) moderate, and 9(14.3%) severe pain. Among 43 female participants, 7(16.3%) reported

Table 1: Association between age and gender with NPRS

NPRS Level	Frequency	Age (years)				Gender		
	(%)	18-24	25-31	32-38	39-45	Male	Female	Total
No pain	23 (21.7)	16	5	1	1	16	7	23
Mild pain	30 (28.3)	10	8	9	3	19	11	30
Moderate pain	37 (34.9)	12	12	5	8	19	18	37
Severe pain	16 (15.1)	1	6	6	3	9	7	16
Total	106 (100)	39	31	21	15	63	43	106
Chi-square (Age vs Pain): $\chi^2 = 23.31$, $p = 0.00$								
Chi-square (Gender vs Pain): $\chi^2 = 2.23$, $p = 0.52$								

Table 2: Association between SPADI and NPRS

SPADI	Frequency	NPRS				
	(%)	No pain	Mild pain	Moderate pain	Severe pain	Total
No pain	15 (14.2)	12	1	2	0	15
Mild pain	19 (17.9)	4	11	4	0	19
Moderate pain	23 (21.7)	5	11	5	2	23
Severe pain	20 (18.9)	1	6	11	2	20
Very severe	18 (17.0)	1	1	10	6	18
Extremely severe	11 (10.4)	0	0	5	6	11
Total	106 (100)	23	30	37	16	106
p-value = 0.00				$\chi^2 = 78.91$		

Table 3: Association between SPADI and quality of life

SPADI Category	Poor QOL	Below Avg QOL	Average QOL	Good QOL	Total
No pain	0	0	0	14	15
Mild	0	0	0	18	19
Moderate	0	1	0	22	23
Severe	0	1	0	19	20
Very severe	0	0	3	15	18
Extremely severe	2	1	0	8	11
Total	2	3	3	67	106
p-value = 0.00			$\chi^2 = 70.15$		

Table 4: Association between quality of life and NPRS

Quality of Life (SF-12)	No pain	Mild pain	Moderate pain	Severe pain	Total
Poor	0	0	0	2	2
Below average	0	0	2	1	3
Average	0	0	2	1	3
Above average	1	7	14	9	31
Good	22	23	19	3	67
Total	23	30	37	16	106
p-value = 0.00			$\chi^2 = 37.98$		

no pain, 11(25.6%) mild, 18(41.9%) moderate, and 7(16.3%). Among 63 male participants, the majority reported a good quality of life 38(60.3%) and above average quality of life 18(28.6%), while only 2(3.2%) reported poor quality of life. Quality of life, assessed using the SF-12, was generally good among participants; however, those experiencing severe shoulder pain and disability reported significantly poorer quality of life. Among 43 female participants, 29(67.4%) reported a good quality of life, and 13(30.2%) reported above-average quality, with no females reporting poor or below-average quality of life.

The age distribution in this study revealed that the majority of participants were young adults, particularly within the 18-24 (36.8%) and 25-31 (29.2%) age groups. This finding aligns with studies, which similarly observed that younger individuals are more likely to participate in bodybuilding and weightlifting activities.^{14,15} The pain intensity was measured by the NPRS. The present study found that moderate pain was most commonly reported (34.9%), followed by mild

(28.3%) and severe pain (15.1%). This can be compared to who reported a 47.3% six-month injury prevalence in recreational weightlifters, with the shoulder, wrist, and hand being the most frequently affected sites.

Tung et al. identified high injury rates in regions such as the shoulder and knees during both training and competition.^{11,16} The results obtained from the SPADi showed that 85.8% of participants experienced some level of shoulder pain and disability, with moderate (21.7%) and severe (18.9%) categories being the most common. This supports findings by Almalki et al. (2022), who reported a 67.2% prevalence of shoulder pain in young Saudi bodybuilders, and Malliares et al. (2024), who noted the widespread impact of rotator cuff-related shoulder pain. However, unlike these studies, the current research provides a detailed breakdown of SPADI severity levels and explores its association with pain intensity (NPRS), revealing a statistically significant relationship between higher SPADI scores and greater pain levels.^{14,17}

Concerning quality of life, the majority of participants in the present study reported a good (63.2%) or above average (29.2%) quality of life.¹⁸ However, a significant negative relationship was identified between shoulder pain/disability and quality of life, which supports findings from (Oh and Lee, 2022), who reported that shoulder pain and depression mediate the impact of stress on health-related quality of life in middle-aged women (Pitt et al., 2022) similarly noted the importance of mental health and its influence on the well-being of elite athletes.^{12,19}

CONCLUSION

This study highlights the high prevalence of shoulder pain and disability among weightlifters aged 18 to 45, with a considerable proportion reporting moderate to severe symptoms. The findings reveal a significant association between increased shoulder discomfort and reduced quality of life, particularly affecting gym-based performance. Notably, participants above the age of 40 experienced more severe pain, underscoring the impact of age on musculoskeletal health. Beyond physical limitations, the study also emphasizes the broader implications of shoulder problems on mental well-being and daily functioning. These results stress the importance of early detection, targeted interventions, and education on safe lifting techniques to prevent and manage shoulder disorders effectively. It is recommended that regular screening be implemented for timely identification of shoulder issues, trainers should ensure proper exercise techniques are taught, and individualized training plans that consider age-related risks be developed. Additionally, balancing training intensity to minimize overuse injuries and providing accessible physical therapy or rehabilitation services within gyms or community facilities can further reduce the burden of shoulder-related problems among weightlifters.

DECLARATIONS

Consent to participate: Written consent had been obtained from patients. All methods were performed following the relevant guidelines and regulations.

Availability of Data and Materials: Data will be made available upon request. The corresponding author will submit all dataset files.

Competing interests: None

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