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ORIGINAL ARTICLE

Prevalence of Shoulder Pain in Smokers

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ABSTRACT

Objective: This study aims to determine the prevalence of shoulder pain among the general population of smokers.
Study design: This is an Observational cross-sectional study.
Place & duration: Data was collected from the general population of smokers in Kuwait and Pakistan. This study was completed within 2 months.
Methodology: This observational cross-sectional study was conducted on 115 smokers that included a proper standardized research questionnaire (internet survey), a comprehensive literature search, study inclusion criteria, screening techniques and exclusion reasons, data collection, data analysis and synthesis using IBM SPSS software. Further data collection is carried out in Pakistan and Kuwait from the general population of smokers.
Results: Within the sample size of 115 smokers, 41.74% do not experience shoulder pain and 58.26% smokers have shoulder pain.
Conclusion: This study concluded that there is a prevalence of shoulder pain was in smokers despite of any other musculoskeletal disorder. Smoking has an adverse reaction on bones, muscles (rotator cuff), tendons and ligaments and mainly effect the shoulder region.
Keywords: Smoking, shoulder pain, musculoskeletal system

INTRODUCTION

Chronic musculoskeletal conditions such as shoulder pain, neck pain, low back pain, etc. have been associated with cigarette smoking. There is evidence of adverse effects on muscles, tendons, cartilage, and ligaments. Bit concentrating primarily on the area of the shoulder. Problems with shoulder, including pain, are prevalent and may relate to any of the shoulder structures. However most frequently the rotator cuff tear is the main cause of pain in the shoulder region, supraspinatus is engaged in tearing a rotator cuff. Cigarettes smoking can be the major risk factor for disease of the rotator cuff. Researchers have absorbed more attention on the undesirable impacts of smoking on illnesses of elevated mortality, such as cancer and cardiovascular and respiratory diseases, with less studies on any other body structures that includes the musculoskeletal system [(1)]. Smoking affects every tissue in the human body, but there are many reversible impacts. You can decrease your risk of many circumstances by avoiding or quitting smoking. [(2)]

The impacts on bone density, suggesting bone quality deficits in increasing the danger of fracture in smokers is out of proportion [(3)]. Smoking can make bone easily fragile and weak in several ways including-Smoking extremely reduce the blood supply to the bones and many studies have showed it. In tobacco, nicotine slows bone- forming cells (osteoblasts) to create less bone, smoking reduces dietary calcium intake. Calcium is needed to mineralize the bone and smokers create fragile bones with less bone mineral and smoking appears to malfunction the body's estrogen faster. Estrogen is essential for females and males to construct and retain a powerful skeleton. Smoking affects other musculoskeletal tissues, elevating the danger of any disorder such as-Rotator cuff tear (shoulder tear) in smokers are almost two times as big as those who are non-smokers which is likely linked to grade of these tendons in smokers. Smokers are 1.5 times more probable than non-smokers to experience excessive injuries like bursitis or tendonitis, they can also experience more traumatic injuries like sprains or fractures. Therefore there can be a greater risk of developing musculoskeletal pain mainly shoulder pain among all the smokers.[(4)]

Loss of bone mineral and higher incidence of fractures are great known negative impact. The complexity of pathogenesis is due to direct toxic effects on osteoblast and osteoclast activity of nicotine or indirect effect on sex and adrenocortical hormones, vitamin D, oxygen, vessels supple. Negative impact has observed mainly on muscles and tendons. Moreover habit of smoking cigarette is linked to a number of short term post-operative problems and high resource consumption.[(5)]

Recent proof shows that smoking tobacco leads to reduced bone mass and vulnerability to osteoporosis and fracture. Tobacco smoke indirectly affects bone mass by altering body weight, the axis of parathyroid hormone-vitamin D, adrenal hormones, sex hormones, and enhanced oxidative stress on bony tissues. Tobacco smoke also affects bone mass by directly influencing osteogenesis and bone angiogenesis.[(6)] Most young consumers believe that the recreational smoking of cigarette would be harmless. In every society, the youth are considered to be the dynamic and efficient socio-economic power whose health ensures the future health of the whole society.[(7)]

The main reason for conducting this study is to evaluate the accuracy of smoking in the shoulder region. With the assistance of blended standardized questions of smokers and shoulder wellness questionnaire.

METHODOLOGY

It is an observational cross-sectional study and the data was collected from the students of University of Lahore, non-probability convenient data sampling technique was used. in Pakistan, and online survey was made for an easy and quick collection of data in Pakistan and outside that is in Kuwait. Now the online survey questions include the same standardized questionnaire of smokers and standardized questionnaire of shoulder health separately mixed. This study was completed within 2 months (May 2019 – July 2019). The criteria for selection of sample were defined which included smokers, mainly university undergraduate students who smoked almost above 5 years and age range was from 18 – 50 years above and the samples who were excluded from this research were individuals who have a history of previous traumatic injury to their upper extremity mainly the shoulder region and individuals who have any of musculoskeletal disorder. There is no apparatus used except a standardized questionnaires based on shoulder health and smokers.[(8-12)]

Study Design: Observational Cross-Sectional Study
Duration: Study completed within 2 months after the approval of synopsis
Setting: Data will be collected from general population of smokers in Pakistan and Kuwait.

Sample Technique: Non probability convenient data sampling technique.

Inclusion Criteria:

- University undergraduate students who smoke were mainly included
- Age: 18-50 years and above

Exclusion Criteria:

- Previous traumatic Injury to the shoulder

Any musculoskeletal disorder

Data analysis: After taking informed written consent, a combination of standardized questionnaire for smokers and shoulder health related was used. Results were recorded and then analyzed on IBM SPSS Version 25.0 (Statistical Procedure of Social Sciences) Software. For quantitative variables Mean and standard Deviation was calculated. Appropriate statistical test was used after checking normality of data.

RESULTS

For this study, data collected from 115 individuals from general population of smokers. Age group were 27.521±6.196 years were involved. From the table i it is reported that out of 115 individuals 67 (58.3%) of the smokers were smoking more than 5 years. In table ii the shoulder pain was also experienced by 67 (58.3%) of the smokers. Further from the table iii it was defined that which side of the shoulder is problematic, 22 (19.1%) smokers feel pain on the left side of the shoulder, 28 (24.3%) smokers feel pain on the right side of their shoulder, 17 (14.8%) smokers feel pain on both the sides of shoulder and 48 (41.7%) of the smokers do not feel any-pain.

Table 1: This table shows out of 115 frequency of smokers, 67 smokers have been smoking for more than 5 years.

How long have you been smoking for	Frequency	Percent
Less than a month	3	2.6
Less than 6 months	2	1.7
Less than a year	13	11.3
1-5 years	30	26.1
5+ years	67	58.3
Total	115	100.0

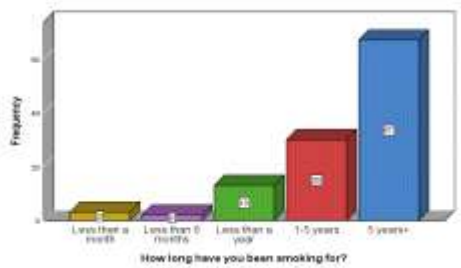
Table 2: This table indicates that out of 100% there is the prevalence of shoulder pain in 58.26% smokers. Detailed descriptive statistics is explained in the next results.

shoulder pain	Frequency	Percent
Yes	67	58.3
No	48	41.7
Total	115	100.0

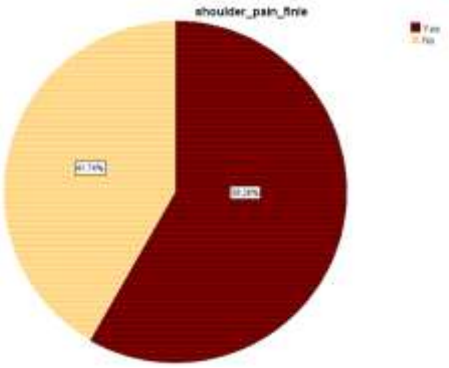
Table 3: This table describes the detail of 58.26% smokers that experience shoulder pain and that out of 100%, 19.13% smokers have left side shoulder pain, 24.35% smokers have right side shoulder pain, 14.78% smokers have shoulder pain on both the sides and remaining 41.74% smokers have no pain

If you have any shoulder problems at all, which side is problematic	Frequency	Percent
Left	22	19.1
Right	28	24.3
Both	17	14.8
Not Applicable	48	41.7
Total	115	100.0

Graph 1: This graph shows out of 115 frequency of smokers, 67 smokers have been smoking for more than 5 years.



Graph 2: This pie chart indicates that out of 100% there is the prevalence of shoulder pain in 58.26% smokers. Detailed descriptive statistics is explained in the next results.



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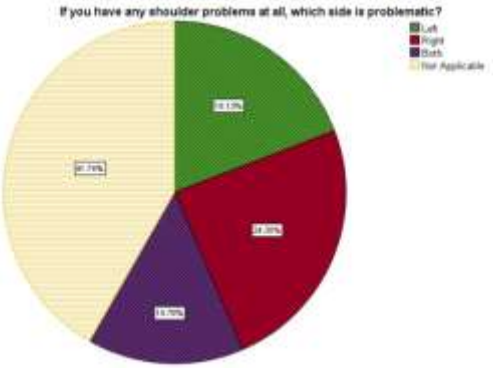

DISCUSSION

According to the above main article, the research has confirmed the relation between smoking and rotator cuff tears by dose-dependent and time-dependent. It was noted a powerful relationship between the disease of rotator cuff and smoking. This may show that smoking is a significant risk factor in rotator cuff tears growth.[13] Whereas another study was shown the relation of smoking with rotator cuff disease and shoulder dysfunction, this systemic review was performed using a search plan based on shoulder and smoking. In four other research, smoking was also revealed to be linked with the incidence of bigger rotator cuff tears. Therefore these relations indicate that smoking increases the danger of symptoms of rotator cuff disease.[14] In order to check the impacts of smoking on tendinous, ligamentous and cartilaginous shoulder surgery a systemic review of various medical databases were carried out, this study concluded that the current review indicates that nicotine and smoking has a negative impact on rotator cuff repair from both the view of clinical results.[15]

Furthermore, studies have explained the rotator cuff tear size with relation to smoking and concluded that the habit of smoking cigarettes, rotator cuff tear and tear size have correlation. More research assessed incidence of non-symptomatic rotator cuff tears and their associated risk factors. [16] This research included 486 volunteers with no shoulder symptoms. In order to recognize rotator cuff pathology an ultrasound was performed but they only included full thickness rotator cuff tears for statistical analysis. The study is completed and the conclusion came out that the smoking was one of the major risk factors for a full thickness rotator cuff tear.[17]

After looking up to all these researches above, this study aims to check the prevalence of shoulder pain among the general population of smokers. This was specified from musculoskeletal system. Smoking effects overall the musculoskeletal but mainly the upper extremity which include shoulders. In this study the frequency of smokers was given out and that is 115 and standardized questionnaire was used. It was a mixture of questions of smokers and shoulder health. This study proof that out of 100% population sample size of smokers, 58.26% of the smoker's experience shoulder pain despite of any musculoskeletal disorder.

CONCLUSION

In this study we found there is a prevalence of shoulder pain in smokers despite of any other musculoskeletal disorder. Smoking has an adverse reaction on bones, muscles (rotator cuff), tendons and ligaments and mainly effect on shoulders.

Recommendations: Study should be conducted on a larger scale so that more relevant and significant data can be obtained from desired population. Longitudinal studies are best to assess these parameters on a follow-up period. There is a chance of recall bias questionnaires so face to face interviews and objective assessment can be done to obtain better results. Moreover, there should be awareness regarding the musculoskeletal pain in smokers.

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