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## **Prevalence of Shoulder pathologies in Cairo and Qalubiya - Egypt: Hospital- based cross sectional study**

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**Abstract**---Background: Pathological conditions of the Shoulder joint are very common as the shoulder is the most freely movable joint in the body (and hence the most unstable). These conditions can lead to pain and disability that affect individuals socially and economically. Purpose: This study was conducted to identify the prevalence and characteristics of shoulder pathologies in two main hospitals in two Egyptian governorates as up to researchers` knowledge, no previous epidemiological studies of shoulder conditions attending orthopedic physical therapy outpatient clinics have been carried out in Egypt, so

the current study provides valuable information about diseases' burden for researchers and healthcare policy makers, thus assisting in disease prevention, identifying health economic models and establishing guidelines. Methodology: A hospital-based record study was made for 1633 patients, 101 patients of them were suffering from shoulder pathologies, data were collected from patients' referral records to orthopedic physical therapy outpatient clinics in two hospitals (Kasr Aini educational hospital) (KA) in Cairo and (Benha educational hospital) in Qalubiya – Egypt, that are reviewed from the first of January 2019 to 31 December 2019. Demographic characteristics including (gender, affected side) and different types of pathologies were described. Results: One –year prevalence of shoulder pathologies was 6.1% (101/1633 cases). Male to female ratio was 1:2.6. The most frequent type of shoulder pathologies was impingement syndrome (38.6%), followed by rotator cuff tear (17.8%). Right side was most frequently affected (43.6%). Conclusion: Shoulder impingement syndrome (SIS) and rotator cuff tear (RCT) were the two main types of shoulder pathologies among people living in Cairo and Qalubiya- Egypt. Concerning gender, higher prevalence was in women, and finally when considering the affected side, right side was commonly affected.

**Keywords**---shoulder pathologies, hospital, pathological conditions.

## Introduction

Shoulder pain is the third most common musculoskeletal complaint in the primary care setting.<sup>1</sup> Several pathologies in the shoulder can lead to this pain and can originate locally from the glenohumeral joint (GHJ), acromioclavicular joint (ACJ), sternoclavicular joint, RC, and other soft tissues within the shoulder complex.<sup>2</sup> Several studies addressed the prevalence of shoulder pain and its specific pathologies. Lynch et al.<sup>3</sup> reported that 78% of patients have some level of shoulder pain. Luime et al.<sup>4</sup> found that one - month prevalence of shoulder pain in the general population was 19-31%. Pope et al.<sup>2</sup> reported that the total level of suffering in the community from shoulder pain was to be as great as 20% of the population. Point and life time prevalence of shoulder pain were 18.6 and 27.6% respectively in middle aged women.<sup>5</sup> Annual incidence of shoulder pain was 2.4% at rate of 17 per 1000 person per year for middle aged adults.<sup>6</sup>

The most common source of pain in the shoulder was found to be soft tissue lesions (81%), of which the bulk were lesions of the rotator cuff (65%), peri scapular soft tissue (11%), ACJ pain (10%) and cervical referred pain (5%).<sup>7</sup> Forty four to sixty five percent of the population with shoulder pain is impingement.<sup>8</sup> Most common clinical diagnosis involves dysfunction of the rotator cuff with signs of impingement seen in 74% of shoulder pain sufferers.<sup>9</sup> Prevalence information for shoulder pain would be useful to estimate the demand for management of shoulder and upper extremity complaints. Musculoskeletal disorders including the shoulder are some of the most frequent reasons for long-term absence from work, with a major impact on daily living and quality of life. The objective for

these studies may contribute to reducing the population burden of shoulder and upper limb pain. Therefore, there may be appreciable scope for preventive modification of the physical and psychosocial work environment to reduce the impact of shoulder and upper limb pain.<sup>10</sup> To researchers' knowledge there were no published studies addressed prevalence of common types and characteristics of shoulder conditions among outpatients referred to orthopedic physiotherapy clinic in two hospitals (in Cairo and Qalubiya- Egypt). This provides better preventive approach. So, the purpose of this study was to identify the prevalence of common types and characteristics of shoulder pathologies among outpatients referred to orthopedic physiotherapy clinic in two hospitals (in Cairo and Qalubiya- Egypt).

## **Methods**

### **Aim, design and setting**

This Hospital- based record study, which was conducted to identify the prevalence and characteristics of shoulder pathologies, included all shoulder cases at the out-patient clinics of two hospitals (in Cairo and Qalubiya- Egypt) during the period between the first of January 2019 and 31st of December 2019. Data were collected from patients' records of the referrals to orthopedic physical therapy clinics. These two hospital settings were used because; 1) first hospital Kaser Alini receives patients from all over the country (Egypt), 2) both hospitals offer physical therapy sessions at low price (nearly 5-10 Egyptian pounds) which makes these hospitals receiving large number of patients.

### **Inclusion criteria**

The study included patients with shoulder pathological conditions who were complaining of shoulder pain and referred within period between January 2019 and December 2019.

### **Exclusion criteria**

- Patients with fractures of any part of shoulder complex.
- Shoulder pain due to carcinogenic or osteoporotic incidences.

### **Statistical analysis**

The following information was extracted from the patient records (when available): Sex, age, and affected side. No data were available about co-morbidities. Most of data about age and few data about the affected side were lost. Piloted form tool for data extraction was used. Numerical data was expressed as mean and Standard Deviation (SD). Categorical data was expressed as number (percent).

**Tables**

Table 1  
Prevalence of shoulder pathologies by type (N=101)

	RC tear	AC	ACJ OA	SIS	Shoulder OA	Shoulder dislocation	others	TOTAL
Count (percent)	18 (1)	14 (0.8)	11 (0.7)	39 (2.4)	5 (0.3)	5 (0.3)	9 (0.6)	101 (6.2)

Table 2  
Characteristics of shoulder pathologies by gender and side (n=101), data expressed as count (percentage)

	RC tear	AC	ACJ OA	SIS	Shoulder OA	Shoulder dislocation	others	Total
Gender								
Male	9 (8.9)	1 (1)	2(2)	8(7.9)	1(1)	3(3)	4(4)	28(27.7)
Female	9 (8.9)	13 (12.9)	9(8.9)	31(30.7)	4(4)	2(2)	5(4.95)	73(72.3)
Total	18(17.8)	14(13.9)	11(10.9)	39(38.6)	5(5)	5(5)	9(8.95)	101(100)
Side								
Right	9(50)	5(36)	4(36.5)	16(41)	1(20)	4(80)	5(55.6)	44(43.6)
Left	4(22)	4(29)	4(36.5)	12(31)	-	1(20)	1(11)	26(25.7)
Bilat.	-	3(21)	-	1(2.6)	-	-	-	4(4)
NR	5(28)	2(14)	3(27)	10(25.4)	4(80)	-	3(33.4)	27(26.7)

others: Infrapinatus tendinopathy (1), Inferior glenohumeral ligament sprain (1), Posttraumatic shoulder pain (1), SA bursitis (2), Bankart tear (2), ACJ sprain (2). AC (adhesive capsulitis or frozen shoulder). ACJ OA: acromioclavicular joint osteoarthritis, RC: rotator cuff, SIS: shoulder impingement syndrome. NR: Not reported.

NB: combined cases allowed (only 6 cases).

Table 2  
Classification and prevalence of RCT by site

	Classification	Prevalence (count, %)
Site	Supraspinatus	14 (77.8)
	Subscapularis	1(5.5)
	Not determined	3(16.7)

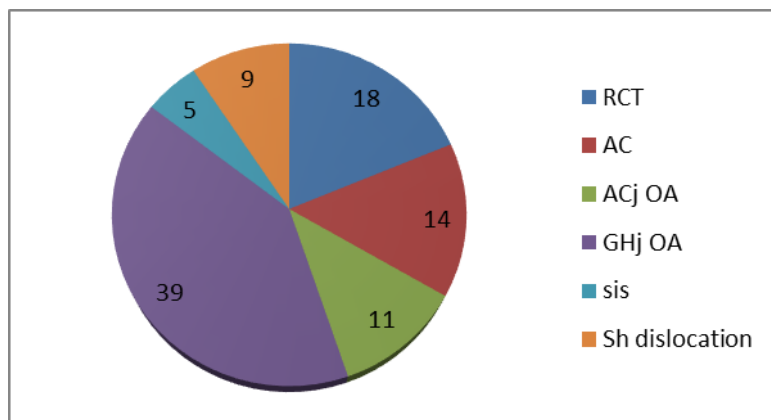


Fig. 1. Pie chart showing prevalence (count or no. of cases) of shoulder pathologies (N=1633)

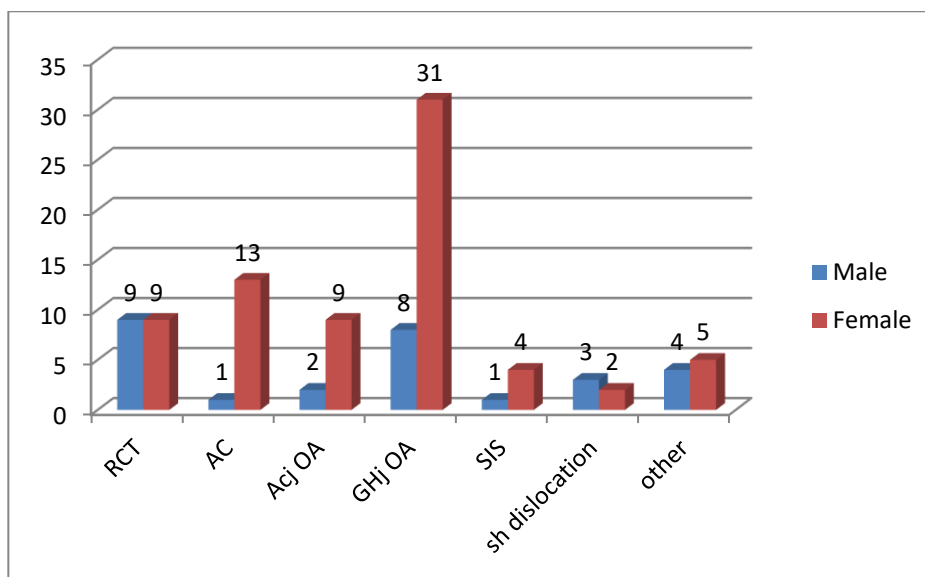


Fig. 2. Bar chart showing prevalence (count) of shoulder pathologies by gender

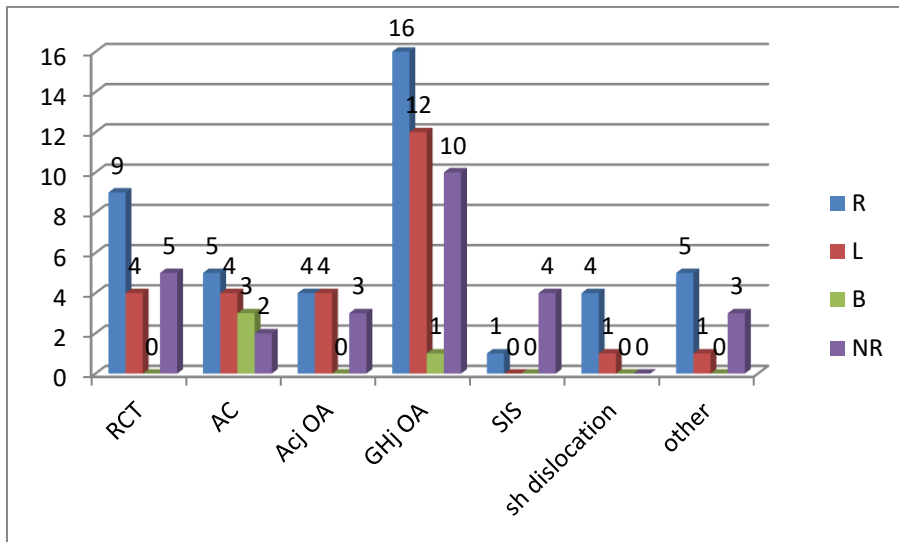


Fig. 3. Bar chart showing prevalence (count) of shoulder pathologies by affected side

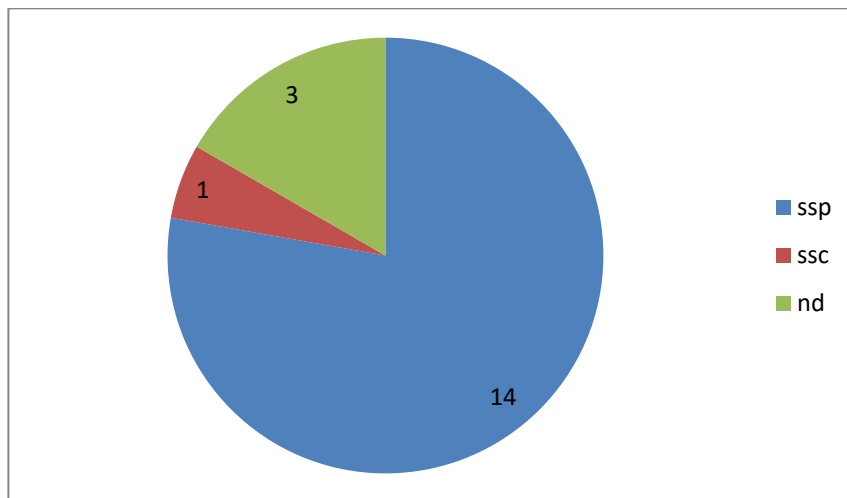


Fig. (4). Pie chart showing prevalence (count or no. of cases) of RCT by site (N=1633)

**Results**

***Prevalence of shoulder conditions***

Total number of patients admitted to orthopedic physical therapy out-patient clinics of the two hospitals were 1633 cases, among them 101 cases with shoulder disorders, revealing a one year-prevalence of 6.2 % (95% CI: 5.1-7.5%), see table (1).

## **Gender**

Gender distribution was shown in (Table 2). On an average, (27.7%) of the patients were males and (72.3%) were females. The male/female ratio was 1:2.6.

## **Side**

Shoulder pathological conditions mainly occur in the right side (43.6%) followed by left side (25.7%), and to lesser extent occur bilaterally (5%). See table (2).

## **Type of shoulder condition**

The highest prevalence appears for SIS (including impingement, tendinitis, tendinopathies mainly for supraspinatus) (38.6% of all shoulder conditions, 2.4% of population), followed by RCT (17.8% of all shoulder conditions, 1% of population, mainly in supraspinatus 77.8%), followed by frozen shoulder (14% of all shoulder conditions, 0.8% of population), followed by acromioclavicular joint osteoarthritis (ACJOA) 11% of all shoulder conditions, 0.7% of population). Shoulder OA and dislocations accounted for the least percent of shoulder conditions and represented 5% for each. See table (1, 2, and 3).

## **Discussion**

A detailed understanding of the epidemiology and pathology of shoulder pathological conditions within a local and a national system of care is vital for directing further system development, determining the priorities for funding and resource management, and identifying the greatest potential for injury prevention. The current survey was performed on the shoulder pathological conditions for patients referred to orthopedic physical therapy out-patient clinics of two hospitals (in Cairo and Qalubiya- Egypt) during the period between first of January 2019 to end of December 2019. No figures have previously been available for the prevalence and characteristics of shoulder disorders in general populations in Cairo or Qalubiya. This work has important implications for the prevention of shoulder complaints. Shoulder impingement syndrome (SIS) is a narrowing of the subacromial space compressing rotator cuff, biceps tendon long head, and subacromial bursa, within it, against the surface of acromion and coracoacromial ligament during elevation of the arm,<sup>11</sup> causing pain and disability mostly during overhead activities.<sup>12</sup> So, people whose work requires heavy lifting or raising arm repeatedly above shoulder height, should be aware of the potential of work-related shoulder problems, and appropriate equipment should be provided to improve their body mechanics and ergonomics, as majority of the shoulder conditions were impingement.

The results of the current study revealed that the most frequent type of shoulder pathologies was SIS (38.6%) followed by RCT (17.8%), AC (14%), ACJOA was (11%) , shoulder dislocation and shoulder OA showed (5%).On the other hand, SA bursitis , Bankart tear and ACJ sprain formed (.01%). Finally, Infraspinatus tendinopathy, inferior glenohumeral ligament sprain, and posttraumatic shoulder pain constituted the least percent (.005%). This means that referrals related to rotator cuff have a prevalence of 56.4% (38.6% for SIS plus 17.8% for RCT). It is

similar to the results reported by Murphy and Carr in 2010 who found that referrals for non-operative community-based musculoskeletal care of shoulder pain are commonly attributed to the rotator cuff (65%), ACJ(10%), glenohumeral osteoarthritis (GHOA) (3%), and adhesive capsulitis was (1.5%).<sup>13</sup> The present study findings concluded that the prevalence of adhesive capsulitis was 14% and this contradicted the findings of Murphy and Carr in 2010 who found that prevalence of adhesive capsulitis was 1.5%.

Adhesive capsulitis is a pathologic condition resulting from inflammation of the joint capsule and synovium followed by fibrosis, scarring and contracture of the capsuloligamentous complex, causing range of motion restriction<sup>14</sup>, consequently the higher prevalence of adhesive capsulitis and the resulting disability, so recommendations towards preventive and therapeutic strategies should be considered. The current study revealed that the prevalence of shoulder pain conditions was 6.1% of general population, this comes in agreement with the work of Van der Heijden in 1999,<sup>15</sup> who reported that shoulder pain forms 5% of all medical practice visits and the work of Juel and Natvig in 2014 who reported that prevalence of shoulder pain has been reported to range from 7% to 36%,<sup>16</sup> and work of Luime and colleagues in 2004 who reported that 1- year prevalence of shoulder pain was 5-47%.<sup>4</sup> On the other hand, Urwin and colleagues ,1998 reported that shoulder pain affecting 21% of the general population.<sup>17</sup>

Linsell et al.<sup>18</sup> reported that the annual prevalence of people consulting for a shoulder condition was 2.36%, and shoulder syndrome was the most frequently recorded diagnosis (27.4%), followed by 'dislocated shoulder' (26.2%) and this agreed with the current study findings in that the most common shoulder condition was SIS. The results of the current study also showed that females (72.3%) were at greater risk for shoulder pathologies than males, with a female to male ratio of 2.6:1. The work of Hasvold <sup>19</sup> and colleagues in 1993 agreed with findings of the present study in which the authors found that prevalence of shoulder pain was estimated to be 15.4 % in men and 24.9% in women who reported weekly episodes of pain in Norway. Furthermore, the results reported by Bot and colleagues in 2005 agreed with the current results, in which, the number of consultations for a shoulder complaint/complaint was higher in females (31.4 per 1000) and 23.2 for males.<sup>20</sup>

The current study has shown that orthopedists and physiotherapists tend not to record a specific diagnosis (as site and type of tear, affected side, and the cause) when a patient presents with a shoulder condition and that they diagnose the case in fairly general terms. Complex structure of the shoulder, lack of agreement <sup>21</sup> and expertise <sup>22</sup> in diagnostic criteria for problems intrinsic to the shoulder (that may be due to overlap <sup>23</sup>), makes a precise diagnosis difficult to reach.<sup>21</sup> An additional reason may be lack of confidence in relation to diagnosis of musculoskeletal conditions generally, which in turn relates to the quality of their training. This work has a number of limitations. Firstly, lack of clear data about patients with shoulder pathological conditions as there was no information available for patients who were medically managed (before referral) or dealt with by other hospitals. Secondly, collecting data from a limited geographical area over only one year, however, the two selected hospitals deal with a lot of cases all over the country (Egypt) and in particular Cairo and Qalubiya cities, that make them



representative. Thirdly, the affected side or specific characteristics had not been reported in some cases, which may slightly affect the specific prevalence, rather than the overall prevalence.

## Conclusion

The current work provided a description of characteristics and types of shoulder pathologies and their prevalence among outpatients referred to orthopedic physical therapy clinics of two hospitals (in Cairo and Qalubiya- Egypt). The study revealed that women were the group having the highest risk for complaining from shoulder problems. The most common affected side was right. Furthermore, SIS followed by RCT was the most common types of shoulder complaints. Although shoulder pathologies are predominantly present in Women, more attention for primary prevention, medical care and rehabilitation is required in men as well.

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