

# Association of Depression and Anxiety with Shoulder Pain and Disability Index in Adhesive Capsulitis

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## ABSTRACT

**Background:** Impingement syndrome is a disorder of unknown etiology in which the restriction of shoulder movements is the result of inflammation of shoulder joint capsule and its ligaments.

**Aim:** To explore relationship of depression and anxiety among Patients of Adhesive Capsulitis, and correlation of despair and nervousness with shoulder pain and disability index in Adhesive Capsulitis.

**Methodology:** A correlational study was conducted in which 280 patients of both genders from different Hospitals were taken. A Questionnaire examined the association of depression and anxiety and determine the rate of Shoulder pain and Disability index in Frozen Shoulder patients. The Shoulder pain and Disability index scale and Hospital Anxiety and Depression Scale were also included in this study. SPSS v.26 analyzed the data. Mean±SD presented quantitative variables.

**Results:** Out of 280 classified as diagnosed patients of Adhesive capsulitis in correlational study with mean and standard deviation of age is 49.75±8.19, Among 280, 33.9% were males and 66.1% were females. This study enumerates correlation between SPADI and HADS-A and between SPADI and HADS-D and the correlation is significant at the 0.01 level(2-tailed). Of the 280 FS patients, 62.5% had a high risk of anxiety and 37.5% were without anxiety.

**Conclusion:** It was concluded in our study that there is strong association of depression and anxiety with Shoulder pain and Disability index in Adhesive Capsulitis.

**Keywords:** Frozen Shoulder, SPADI, HADS and Depression.

## INTRODUCTION

Impingement syndrome is a disorder of unknown etiology in which the restriction of shoulder movements is the result of inflammation of shoulder joint capsule and its ligaments<sup>1-3</sup>. Hall marks of adhesive capsulitis are stiffness, sleeping issues on affected side, gradual restriction of AROM and PROM<sup>4</sup>. FS patients are characterized with shoulder pain progressive global stiffness, accompanied by disability for ADLs and nocturnal pain leads to depression and anxiety. Inayat et al showed that the estimated prevalence of FS was 41.3%<sup>5</sup> while in India estimated prevalence of AS was 18%<sup>6</sup>.

In our study the main subject is Correlation of Anxiety & Depression with SPADI in AS patients. Ding et al showed FS patients had depression and anxiety with functional restriction and shoulder pain<sup>7</sup>. Tveita et al investigated reproducibility and responsiveness of the SPADI in patient with AS.<sup>8-10</sup> Badcock et al explored the effects of chronic shoulder pain and disability on psychological health.<sup>11</sup> Hmighthanmawii et al examined pain and disability in different phases of FS<sup>12</sup>.

Main objectives of our study were to assess the responsiveness of shoulder pain and disability in patients with FS and to determine the depression and anxiety score and its association with responsiveness of SPADI in AS. The study will help Physical Therapist and others clinicians to recognize the risk of depression and anxiety associated with responsiveness of SPADI in AS and to treat patients more efficiently.

The objective of the study was to explore relationship of depression and anxiety among Patients of Adhesive Capsulitis and the correlation of despair and nervousness with shoulder pain and disability index in Adhesive Capsulitis.

## METHODOLOGY

This correlational study was conducted at Railway Hospital, AFIRM (Armed Forces Institute of Rehabilitation Medicine), BBH (Benazir Bhutto Hospital), and Federal Government Services Hospital (Polyclinic Hospital) Islamabad, Pakistan. In this study Purposive Sampling Technique was used. Total number of patients were 280. Males and Females aged about 30-60 years with Frozen Shoulder,

Received on 22-04-2022

Accepted on 21-08-2022

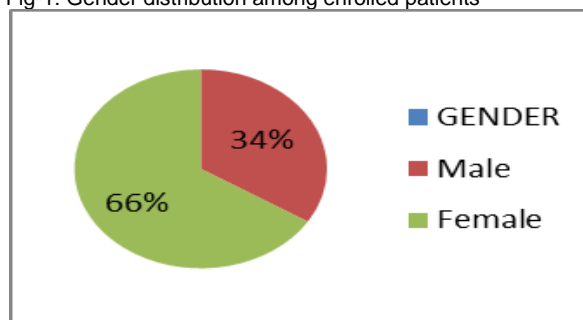
FS patients of any stage, FS Patients complaining of shoulder pain and restricted ROM with any history of trauma or injury to Shoulder were included in this study. Whereas excluded subjects were patients with previous history of shoulder surgery and patients with Primary complaint of neck or thoracic pain and females with current pregnancy. Data was collected through following tools i.e. Self-Structured Questionnaire used for Demographics, NPRS (Numeric Pain Rating Scale), SPADI (Shoulder pain and disability index), HADS (Hospital and Anxiety Depression Scale). SPADI scale has two parts SPADI Pain & SPADI Disability and their mean scores were evaluated respectively. Data was collected by asking questions related to assessments to determine pain and disability level of FS patients and to measure the impact of depression and anxiety in FS patients. SPSS 21 was used to calculate and evaluate the numerical data. Keeping the privacy of patient intact was of utmost importance. Special attention was paid to keep the patients comfortable and that they felt safe. No harm was caused to any person during the research.

**Statistical analysis:** SPSS (v26.0) analyzed data. Mean ± SD presented quantitative variables while frequency and percentage presented categorical variables. Pearson correlation test was applied.

## RESULTS

Out of 280 FS Patients, mean age was 49.75 years. Almost 33.9% were males and 66.1% were Females (Fig. 1)

Fig-1: Gender distribution among enrolled patients



The current study showed highest number of patients reported shoulder pain for 15 min i.e. 40.4%, 31.1% complained of Shoulder pain for 30 mins, 21.1% of patients suffered for 1 hour and 7.5% for 5 mins. Our results showed Among 280,45% of patients with frozen shoulder were first diagnosed as recently, 38.2% were diagnosed as patients of frozen shoulder before 3 to 6 months,16.8% were diagnosed before one year and 59% had Right sided FS,33% were with left sided FS & 8% had both sided FS. Figure-2 showed that 38.2% had activity related pain & 61.8% had pain at rest.

Fig-2: Pain distribution among enrolled patients

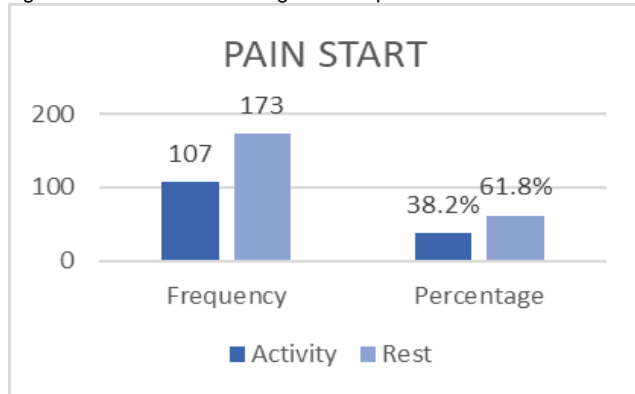


Figure-3 showed that almost 58.2% of patients developed frozen shoulder due to idiopathic cause, 28.9% came with previous history of fall while 12.9% with history of trauma.

Fig-3: Frozen shoulder distribution etiology among enrolled patients

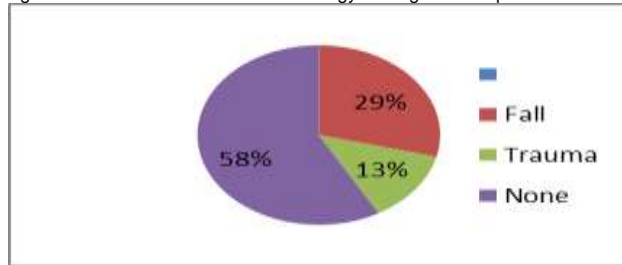


Table 1 showed a direct intermediate correlation between SPADI & Anxiety and between SPADI & Depression. It also showed a significant result.

Table-1: Correlation of SPADI with Anxiety and Depression

SPADI	HADS Anxiety		HADS Depression
	R value	.543**	.617**
	P value	.000	.000

\*\*Correlation is significant at the 0.01 level (2-tailed)

Table-2 showed that by applying Independent t test, subgroups of anxiety & Depression were taken according to reference study of Ding et al and significant correlation of NPRS & SPADI with subgroups of anxiety and depression.

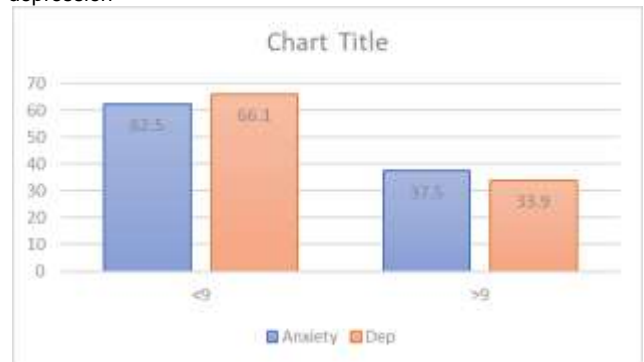
Table-2: Correlation of NPRS & SPADI with different subgroups

HADS Score	NPRS	SPADI
Anxiety ≥9	6.97± 1.99	75.33±16.90
≤9	5.49±1.62	59.21±16.18
P value	0.000	0.000
Depression ≥9	2.62±0.56	78.22±15.85
≤9	2.13±0.54	58.60±15.56
P value	0.000	0.000

\*<9 =FS patients with anxiety and depression ;>9=FS patients without anxiety and depression.

Figure 4 showed that 37.5% of FS patients were with anxiety and 62.5% of FS patients were without anxiety & 33.9% of FS patients had depression while 66.1% were without depression.

Fig-4: Frozen shoulder distribution among patients of anxiety and depression



## DISCUSSION

According to the results of current study it showed that The Prevalence of FS Patients in current study was 66.1% in females and 33.9% in males. The divergence of FS patient's prevalence might be related to age, gender and working hours. By Applying Independent T Test, we divided the depression and Anxiety score into two subgroups according to reference study of Ding et al, ≥9 showed the patients who have anxiety or depression and ≤9 showed the FS patients were without depression or Anxiety.

Literature indicated that 28.2 and 24.2% of the Adhesive capsulitis in Patients of China had high risk of depression and anxiety, respectively AC patients with anxiety or depression showed increased shoulder pain and higher prevalence of sleep disturbances. The mean and standard deviation of SPADI was 65.35±13.90 according to the study conducted by Ding et al in 2014.<sup>7</sup> This study provided strong evidence that 37.5% had a high risk of anxiety while 33.9% had a high risk of depression. This study also enumerates mean and standard deviation of SPADI that is 65.26±18.19 whose value is closer to the value in a study of Ding et al. The current study showed correlation between SPADI and HADS-A and between SPADI and HADS-D and the results we find out that correlation is significant at the 0.01 level (2-tailed). We apply Pearson correlation test to find association between SPADI and HADS-A i.e.: r value =0.543 and p value=<0.05, and between SPADI and HADS-D i.e.: r value =0.617 and p value=<0.05. These results show a strong association of anxiety & depression in FS patients.

Previous study of Ding et al stated the clinical results of SPADI with patients of frozen shoulder having anxiety was 72.15±23.62 and with patients of FS not having anxiety was 59.23±29.31 (p =0.013). Similarly, mean and standard deviation of SPADI in patients of FS with depression was 72.28±8.94 and without depression was 63.61±14.42 (p =0.000). These findings strongly supported current study findings of SPADI in FS patients having anxiety was 75.33±16.90 and without anxiety was 59.21±16.18. While the mean and standard deviation of SPADI in patients of FS with depression was 78.22±15.85 and without depression was 58.60±15.56<sup>7</sup>.

Ding et al stated the mean and standard deviation of VAS in patients of FS with and without anxiety were 7.75±1.13 and 6.78±1.30(p =0.000) respectively. Present study also enumerates mean and standard deviation of VAS in FS patients with and without depression were 7.72±1.19 and 6.83±1.30 with p value p =0.000. Findings of this study shows that by applying Independent t test, mean and standard deviation of NPRS in patients of FS with and without anxiety were 6.97±1.99 and 5.49±1.62 (p =<0.05) that is significantly correlated with a findings of Ding et al, similarly using Independent t test mean and standard deviation of NPRS in

FS patients with and without depression were  $2.62 \pm 0.56$  and  $2.13 \pm 0.54$  with  $p = < 0.05$ .

Menendez et al in 2015 stated that Catastrophic thinking and decreased self-efficacy are associated with greater shoulder pain and disability. The SPADI score showed medium correlation with the PCS ( $r=0.43$ ;  $p < 0.001$ ), PHQ-2 ( $r=0.39$ ;  $p < 0.001$ ), and PSEQ ( $r = -0.45$ ;  $p < 0.001$ ). The following scales were used in this study; Pain Self-Efficacy Questionnaire (PSEQ), Pain Catastrophizing Scale (PCS), and Patient Health Questionnaire Depression Scale (PHQ-2)<sup>10</sup>. In Present study, The SPADI score showed medium correlation with HADS-A  $r=0.543$ ;  $p < 0.01$  and with HADS-D  $r = 0.617$ ;  $p < 0.01$ . The current study strongly supported by a study of Menendez et al (2015).

**Limitations:** Small sample size with limited resources. Financial constrains and Covid pandemic caused problems.

## CONCLUSION

It was concluded that there was strong association of depression and anxiety with Shoulder pain and Disability index in Adhesive Capsulitis. So, there is a high prevalence of depression and anxiety in Frozen Shoulder patients. Interventional study can be applied on this study. A part from the Physical therapy, Patients of Frozen Shoulder should also be given sessions of Counseling in order to treat Frozen shoulder related depression and anxiety.

**Author's contribution:** **SN&SAH:** Conceptualized the study, analyzed the data, and formulated the initial draft, **MMK&RA:** Contributed to the proof reading, **NK&MUI:** Collected and analyzed data.

**Conflict of interest:** None

**Funding:** None

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