

Abstract

Objectives: Psychological comorbidity is common in patients with chronic rhinosinusitis (CRS) and is correlated with decreased overall and disease-specific quality of life (QoL). Prior research reported that anxiety and depression, as measured by the hospital anxiety and depression score (HADS), are associated with worse CRS-specific QoL, as assessed via the Rhinosinusitis Disability Index (RSDI). Furthermore, patients prone to anxiety/depression may display an exaggerated response to real or anticipated discomfort; the pain catastrophizing scale (PCS) is a validated instrument designed to measure this phenomenon. This study is intended to explore the role of pain catastrophizing in relation to anxiety, depression, and disease-specific QoL in patients with facial pain attributed to CRS.

Methods:

Diagnosis of presumed CRS was based upon current AAO-HNS guidelines; all participants reported facial pain as a component of their CRS symptomatology. RSDI, HADS, and PCS questionnaires were administered upon presentation prior to intervention, and objective measurements of sinonasal inflammation were obtained via nasal endoscopy and computed tomography (CT).

Results:

Seventy-five patients were enrolled in the study. Significant positive correlations were found between PCS and HADS, total RSDI, and RSDI emotional sub-scores ($p < 0.05$). The incidence of objective evidence of disease, as measured via nasal endoscopy and CT, was not significantly different in catastrophizing patients.

Conclusion:

Pain catastrophizing correlates with anxiety/depression and worse disease-specific QoL in patients meeting symptomatic criteria for CRS. Otolaryngologists should be aware that catastrophic thinking can intensify a patient's perception of sinonasal symptoms, and clinicians may consider management of psychological comorbidity to optimize rhinologic outcomes.

Introduction

Chronic rhinosinusitis is a prevalent medical condition affecting up to 16% of the adult US population. Despite its widespread prevalence, symptomatology is imprecise in predicting the presence and magnitude of objective evidence of sinonasal inflammation with poor correlation between objective evidence of disease and symptom-based diagnostic criteria.¹ Facial pain has been shown to be an especially poor predictor of CRS as various other conditions have been shown to cause similar pain such as migraines, atypical facial pain, and temporomandibular joint disorders (TMJD).² Due to the potential impact to QoL, there is also a high prevalence of depression and anxiety in patients with CRS, which has been shown to result in worse disease specific outcomes. Despite aggressive medical and surgical management, many CRS patients continue to report decreased QoL out of proportion to objective evidence of disease as seen on CT or endoscopy. Recent studies have related this discrepancy to external factors such as age, expectations, and comorbid conditions, notably psychiatric illness such as depression and anxiety.³⁻⁵ Anxiety and depression are through to cause accentuated impact of chronic illness, in this case CRS on QoL, through pain catastrophizing (PC).^{6,7} The goal of our study was to determine the relationship between PC, psychological comorbidity, and CRS-specific QoL. We hypothesized that PC would positively correlate with presence of anxiety and depression, as well as worse CRS-specific QoL, but would not predict objective evidence of sinonasal disease.

Methods and Materials

A prospective cross-sectional study was conducted including adults aged 18+ with symptoms consistent with CRS. All included patients had facial pain plus at least one other cardinal symptom (hyposmia, nasal obstruction, rhinorrhea). Exclusion criteria included pregnancy, mental disability, current illicit drug use, sinonasal neoplasm, and incarcerated status. All patients had RSDI, HADS, and PCS at initial visit. Patients were treated with appropriate medications according to the International Consensus Statement on Rhinosinusitis (ICOR) guidelines. This included oral antibiotics, high volume nasal saline irrigation, and topical nasal corticosteroids. Nasal endoscopy was performed and scored using Lund-Kennedy Scoring system while CT scans (performed after at least 4 weeks of maximal medical therapy) were scored using Lund-Mackay Scoring system.

Results

Demographics	
Total patients	75
Age, mean (SD), years	47.6 (14.3)
Sex, No (%) of patients	
--Male	23 (31)
--Female	52 (69)
Previous FESS, No (%) of patients	18 (24)
Comorbidities, No (%) of patients	
--Asthma	19 (25.3)
--Migraine	28 (37.3)
--Anxiety / Depression	9 (12)
--Fibromyalgia	3 (4)
--Chronic Pain	3 (4)
Objective Evidence of Sinonasal disease, No (%) of patients	
--Abnormal nasal endoscopy (LK > 3)	28 (37)
--Abnormal CT scan (LM > 3)	31 (41)

Table 1. Demographics of the study cohort

	No Disease*		Disease*		Correlation with Total PCS	
	Mean	SD	Mean	SD	r	p-value
RSDI						
Total	36.3	27	43.5	25.7	0.638	<0.001
Emotional	10.7	10.8	12.1	10	0.605	<0.001
Functional	9.1	8.3	12.8	9.1	0.626	<0.001
Physical	16.6	11.3	18.2	9.8	0.506	<0.001
HADS						
Total	13.6	7.7	14.8	8.1	0.705	<0.001
Anxiety	7.6	4.6	8.3	4.2	0.647	<0.001
Depression	6	3.9	6.5	4.5	0.644	<0.001
PCS						
Total	17.5	13	20.2	14.8	-	-
Rumination	6.1	4.7	6.5	4.9	-	-
Magnification	3.8	3.3	4.3	3.3	-	-
Helplessness	7.4	6	9.4	7.1	-	-

Table 2. Mean scores of questionnaires stratified by presence of objective evidence of disease

Results

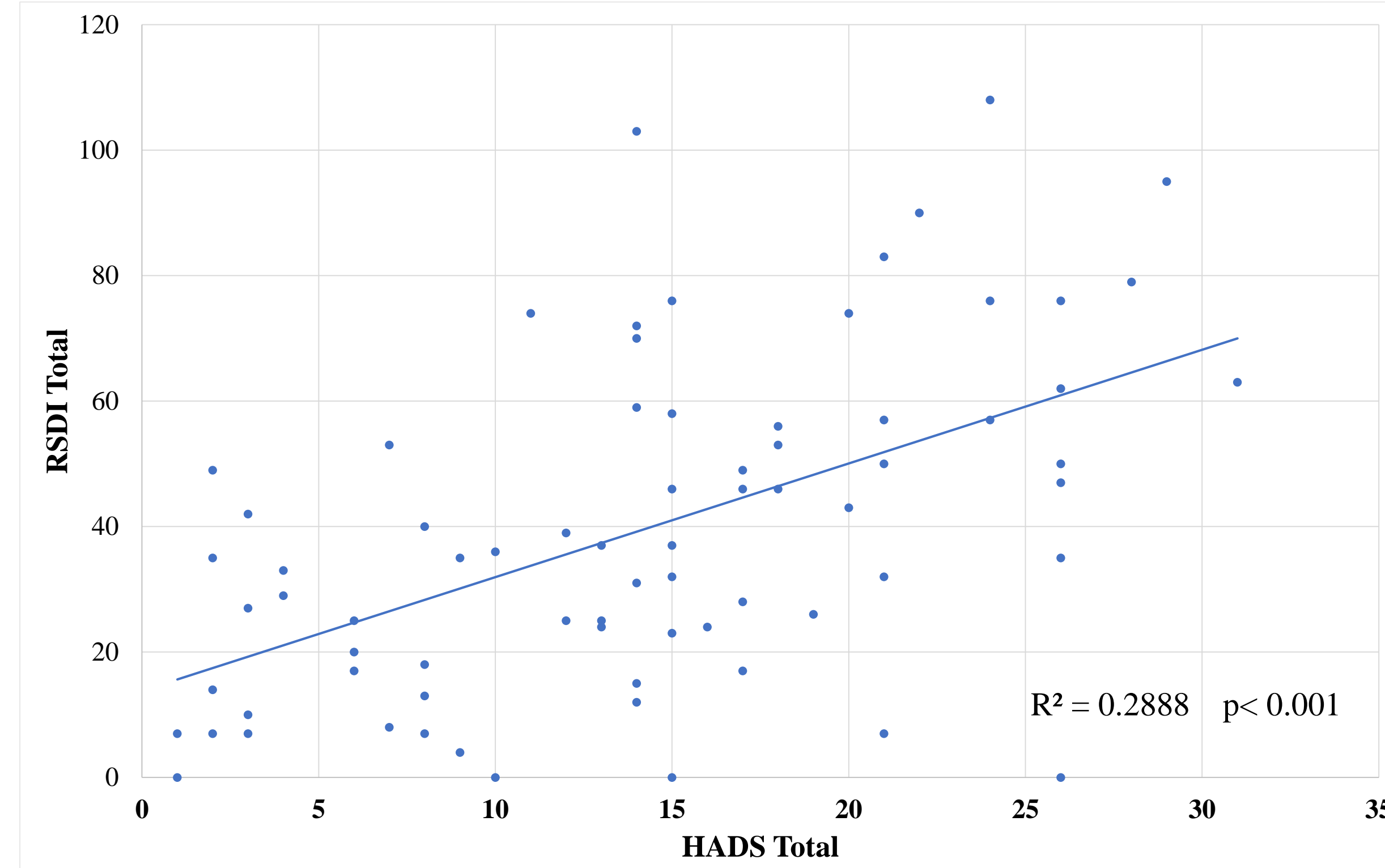


Figure 1. Correlation between HADS and RSDI totals

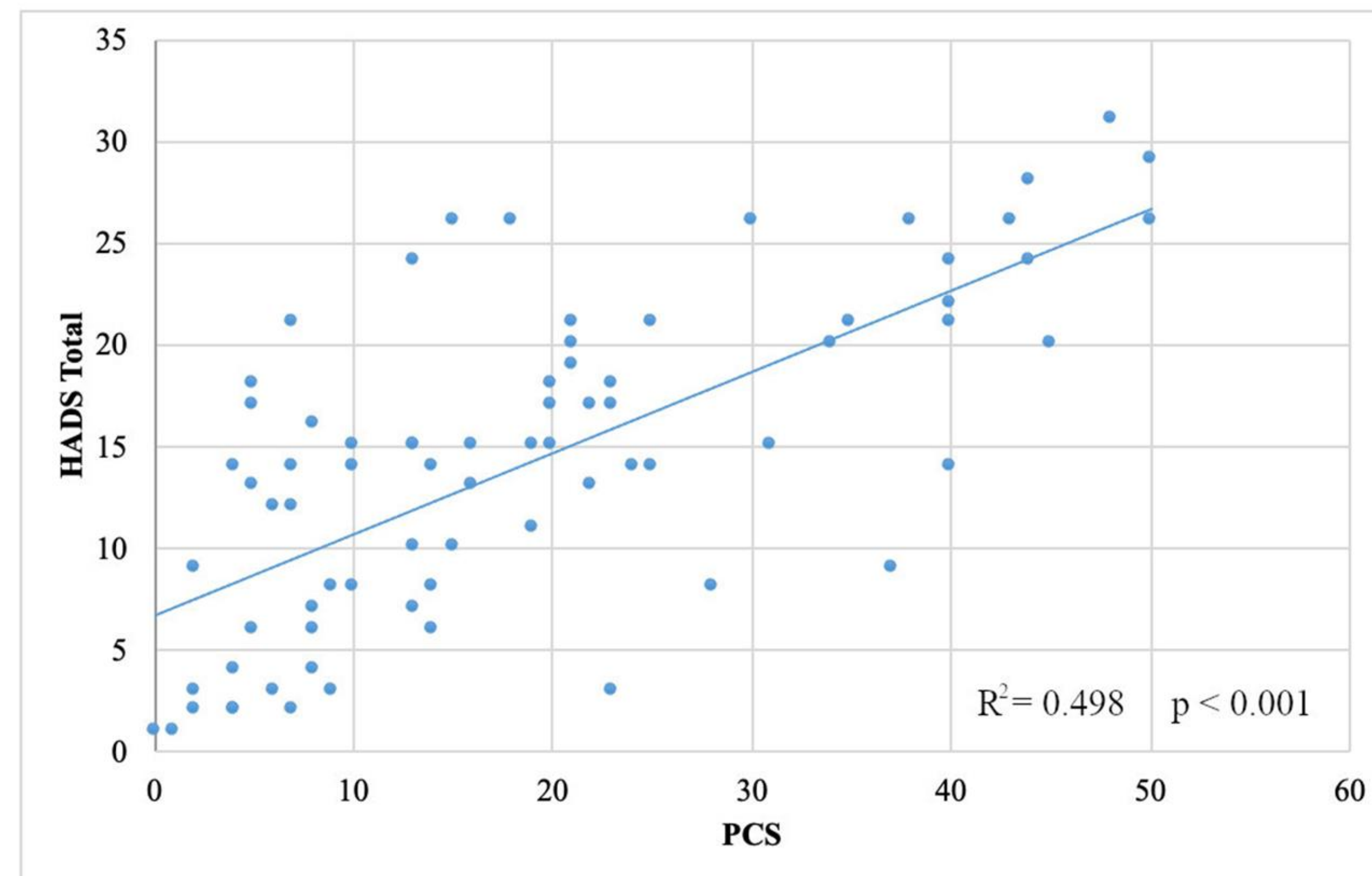


Figure 2. Correlation between PCS and HADS totals

Discussion

Chronic rhinosinusitis is a prevalent condition that, despite aggressive medical and surgical therapy, is commonly associated with poor overall and disease-specific QoL. The impact on QoL due to CRS has been reported to be greater than that associated with other chronic disease such as congestive heart failure and chronic obstructive pulmonary disease, demonstrating the significant impact of this problem on affected patients.⁸

Prior studies have explored the relationship between psychiatric comorbidities, specifically anxiety and depression, and patient-reported QoL in multiple chronic diseases. With CRS specifically, an elevated prevalence of anxiety and depression has been reported, and disease-specific QoL is decreased in patients with these psychological comorbidities.⁹ This association between psychiatric disease and impaired CRS-specific QoL was replicated in our study, which demonstrated a significant and positive correlation between total HADS and RSDI in CRS patients (see Table 2, Figure 1).

Patients with depression have a higher prevalence of pain than the general population, and, as pain is a cardinal symptoms of CRS, it follows that depressed patients with CRS are more likely to have a significant burden of pain-related QoL impairment. The mechanism of this interaction has not been fully elucidated, but some have suggested a positive feedback loop between pain and emotional angst that leads to a cycle of worsening disability/QoL.^{2,9,10} Our study demonstrated that pain catastrophizing (PC) behavior correlated with objective measures of anxiety and depression in the form of HADS scoring (see Table 2, Figure 2). Our study also demonstrated that, in patients with CRS reporting facial pain as a cardinal symptom, PC was associated with worse disease-specific QoL.

The burden of PC in chronic disease is significant, raising the question of whether targeting treatments for these behaviors can positively impact QoL. Some studies have demonstrated that recognition and management of catastrophic thinking can result in reduction of subjective levels of pain and disability as well as improved PC and QoL scores. Management strategies can include physical therapy, psychological therapy, and appropriate medical therapy of underlying anxiety/depression.^{11,12}

This study did have several limitations. Gender has been shown to impact perception of disease burden and women composed of 69% of the study population, however, subgroup analysis revealed no difference between men and women in any of the measured endpoints. A second limitation was the reliance on self-reported anxiety and depression rather than formal evaluation by a psychiatrist or other qualified physician. The cross sectional nature of the study limits the ability to assess how variables impact each other. Finally, the study cohort may not reflect the general population as all patients were treated at a tertiary academic center, thus likely reflecting a higher number of patients who failed initial therapy.

Conclusions

1. Our results demonstrate that pain catastrophizing behavior had a positive correlation with anxiety and depression, which are known to be common in patients with CRS.
2. Patients with CRS reporting facial pain as a cardinal symptom have been found to have worse disease specific QoL when catastrophizing.
3. Early recognition of catastrophic thinking can help improve QoL by utilizing a multidisciplinary approach to provide appropriate psychological intervention resulting in decreased subjective levels of pain and disability.

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