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Prevalence and Multidimensional Impact of Pain Catastrophizing in Patients with Spondyloarthritis

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Abstract **Original Research Article**

Background: Spondyloarthritis (SpA) is characterized by chronic inflammatory pain and functional impairment that may be influenced by maladaptive cognitive responses such as pain catastrophizing. This study aimed to determine the prevalence of pain catastrophizing and to evaluate its association with clinical, functional, and psychosocial dimensions in patients with SpA. ***Methods:*** we conducted a cross-sectional observational study including 200 patients with spondyloarthritis (SpA), diagnosed according to ASAS, and followed in the rheumatology department of Mohammed VI University Hospital in Marrakech between October 2024 and October 2025. Statistical analyses involved descriptive statistics, correlation and intergroup comparisons. ***Results:*** the median PCS was 20,4 [5–39], and high pain catastrophizing (PCS ≥ 20) was observed in 51.5 % of patients. Patients with elevated PCS scores more frequently exhibited anxiety (80 % vs. 40 %, $p < 0.001$), depression (67 % vs. 16 %, $p < 0.001$), and insomnia (46 % vs. 26 %, $p = 0.006$) compared to those without elevated catastrophizing. SF-12 physical and mental component scores were significantly lower in the high catastrophizing pain group (37.1 vs 41.1, $p < 0.001$ vs 42.9 vs 45.8, $p < 0.001$, respectively). Pain catastrophizing showed significant correlations with anxiety, depression, and reduced quality of life. ***Conclusions:*** Pain catastrophizing was frequently observed among patients with spondyloarthritis and was significantly associated with psychological distress and reduced quality of life. Incorporating its assessment into routine clinical evaluation may support an individualized and comprehensive approach to patient care. ***Categories:*** Rheumatology, Pain management, Psychology.

Keywords: Spondyloarthritis, Pain Catastrophizing, Chronic Pain.

INTRODUCTION

Catastrophizing refers to a negative cognitive and emotional response to an anxiogenic stimulus, typically pain. It manifests itself as excessively pessimistic anticipation and leads to a distortion of pain perception, both cognitively and emotionally [1]. While this reaction may occasionally help patients cope with acute pain, it becomes particularly harmful when the pain becomes chronic.

Spondyloarthritis (SpA) is a chronic inflammatory rhematic disease in which pain is the predominant symptom. Often debilitating, it leads to functional limitations, significant absenteeism, and a noticeable deterioration in quality of life. In this context, catastrophizing could contribute to the maintenance and persistence of pain, making it a psychosocial factor of major interest in the management of SpA.

The objective of this study is to assess the prevalence of catastrophizing among patients with SpA and to analyze its impact on clinical, functional, and psychosocial dimensions. Such an approach enriches our understanding of the psychosocial influences on disease progression and guides us toward integrated care that can optimize clinical outcomes and quality of life.

MATERIALS AND METHODS

Catastrophizing was assessed using the Pain Catastrophizing Scale (PCS), a standardized questionnaire that has been widely validated in the literature since its development by Sullivan [2]. This tool, commonly used in several medical specialties and particularly in rheumatology, comprises 13 items grouped into three dimensions: helplessness, rumination, and magnification. The total score ranges from 0 to 52, with a high score indicating a significant level of catastrophizing. A PCS ≥ 20 is generally accepted to

define clinically significant catastrophizing, although some authors propose a stricter threshold of 30.

This is a cross-sectional observational study conducted in the rheumatology department of Mohammed VI University Hospital in Marrakech between October 2024 and October 2025. Our study included 200 patients with spondyloarthritis (SpA) diagnosed according to ASAS criteria. Recruitment was carried and during follow-up consultations or during hospitalization, after obtaining the informed consent of all participants.

The sociodemographic data collected included age, gender, and age at disease onset. At inclusion, the following activity and impact scores were collected: **BASDAI** (Bath Ankylosing Spondylitis Disease Activity Index).

BASFI (Bath Ankylosing Spondylitis Functional Index). Catastrophizing was assessed using the PCS. We used a PCS threshold of ≥ 20, which is frequently used to define clinically relevant catastrophizing in chronic pain studies.

Associated factors were explored using the following tools:
HAQ (Health Assessment Questionnaire) for functional disability,
HADS (Hospital Anxiety and Depression Scale) for anxiety and depression,
ISI (Insomnia Severity Index) for insomnia,
SF-12 (12-Item Short Form Health Survey) for quality of life. Patients were included if they:
Were aged ≥ 18 years

Had a confirmed diagnosis of SpA according to ASAS: axial, peripheral, or enthesitic. The exclusion criteria defined for this study were:

Absence of a confirmed diagnosis of SpA.
Severe psychiatric comorbidities that could bias the assessment of catastrophizing. Inability to understand the questionnaires.

The clinical thresholds used were a HADS score ≥ 8 for anxiety and depression and an ISI ≥ 15 indicating moderate to severe insomnia. For comparative analyses, we used the means of the different variables and a p-value < 0.05 was considered statistically significant.

RESULTS

A total of 200 patients meeting the criteria of the Assessment of Spondyloarthritis International Society (ASAS) were included. The mean age was 41.1 ± 11.9 with a male predominance (56%). The age of disease onset was 33.6 ± 11.8.

The mean activity and functional impact scores were 3.9 ± 1.8 for the BASDAI, 3.8 ± 2.1 for the BASFI and 1.3 ± 2.7 for the HAQ. The mean catastrophizing score (PCS) was 20.4 [5–39]; a high level of catastrophizing (PCS ≥ 20) was observed in 51.5 % of participants.

The prevalence of clinically significant anxiety and depression was 60.5% and 42.5%, respectively. Moderate to severe insomnia was reported by 36.5% of patients. Quality of life, assessed using the SF-12, showed an average physical component of39.1 and an average mental component of 44.3, reflecting a significant functional and psychological impact.

When comparing patients with a PCS ≥ 20 to those with a PCS< 20, rates of anxiety (80 % vs 40 %, p < 0.001), depression (67 % vs 16 %, p < 0.001), and insomnia (46 % vs 26 %, p = 0.001) were significantly higher among catastrophic patients. They also had a significantly impaired quality of life, with lower scores for: the physical component (37.1 vs 41.1, p < 0.001) and the mental component (42.9 vs 45.8, p <0.001).

Statistical analyses revealed a significant correlation between the level of catastrophizing and the psychological variables assessed. Patients with more severe insomnia also reported higher levels of anxiety and depression (p < 0.001). Pearson correlations showed that high scores for catastrophizing were associated with a deterioration in quality of life, both physical and mental (p < 0.001).

These results show the deleterious impact of catastrophizing in spondyloarthritis. It appears to be a major determinant of psychological and functional impact, underscoring the need to integrate specific psychological care into the therapeutic approach for these patients.

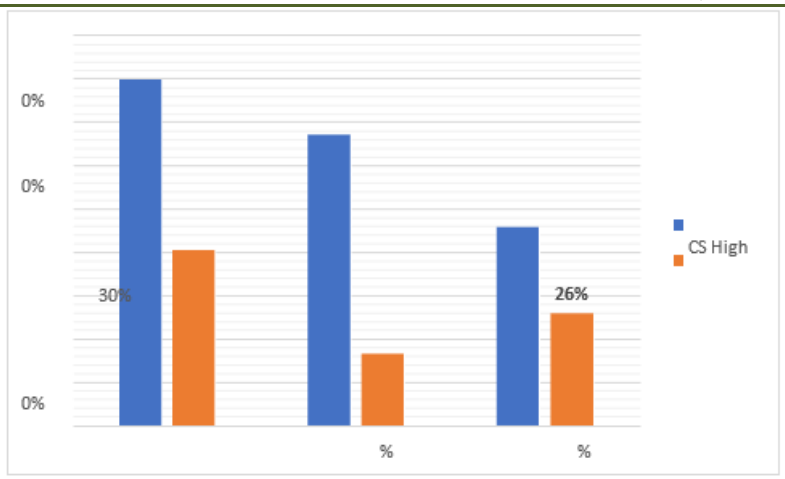

Figure 1: Prevalence of Anxiety, Depression, Insomnia in High and Low Catastrophism Groups

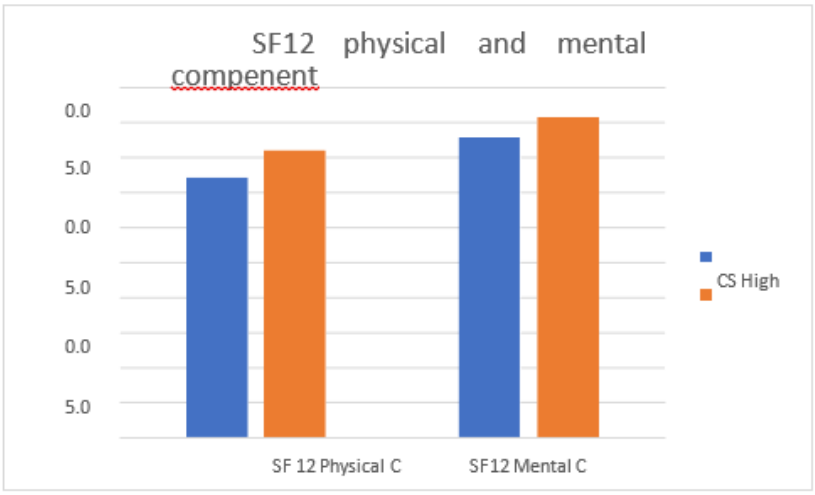

Figure 2: Mean Quality of life by Catastrophism Level

DISCUSSION

This study of 200 patients with spondyloarthritis reveals significant associations between catastrophizing, sleep disorders, anxiety and depression symptoms, and impaired quality of life. More than half of the participants (51.5%) exhibited high levels of catastrophizing, which was strongly associated with increased prevalence of anxiety (80%), depression (67%), and insomnia (46%), compared to the low catastrophizing group (40%,16% et 26%, respectively). These results highlight the central role of catastrophizing in the worsening of emotional distress and sleep disorders [1]. Our cross-sectional data do not allow us to formally conclude a causal relationship or a mediating effect, but they are consistent with the models proposed in literature.

Catastrophizing is a major cognitive factor that modulates pain perception. It is characterized by a tendency to amplify the perceived threat, ruminate on symptoms, and feel powerless in the faces of pain [2]. Several previous studies have shown that a high level of catastrophizing is linked to an exacerbation of anxiety and depressive disorders and an increase in functional impact [3,4]. This negative thought pattern contributes to a vicious circle in which psychological suffering intensifies pain, thereby reducing tolerance and amplifying disability [5].

The prevalence of moderate to severe insomnia reaching 36.5% in our cohort corroborates the data in the literature on the link between chronic pain and sleep disorders. The association between catastrophizing, anxiety, and insomnia suggests a mechanism of nocturnal cognitive hyperactivation, characterized by mental rumination and anxious anticipation of sleep, which disrupts sleep onset and exacerbates emotional distress [6]. Longitudinal studies have also identified insomnia as a predictor of chronic pain and psychological symptoms, with a probable mediating effect of catastrophizing [7].

The SF-12 scores reveal a significant deterioration in quality of life, both physically (39.1) and mentally (44.3). This deterioration is significantly more pronounced in patients with high levels of catastrophizing (37.1 and 42.9) than in those with low levels (41.1 and 45.8). These data are consistent with

previous studies showing that catastrophizing and psychological distress contribute to the deterioration of the physical and mental dimensions of quality of life in musculoskeletal disorders [8,9]. Additionally, models based on fear and behavioral avoidance explain how these cognitive factors can limit participation in daily activities and perpetuate chronic pain.

Clinical implications

Systematic assessment of catastrophizing in chronic pain conditions such as spondyloarthritis appears justified. Cognitive behavioral interventions and mindfulness programs have been shown to be effective in reducing catastrophizing, improving sleep quality, and strengthening emotional resilience in patients [10,11]. Integrating these approaches into the care pathway could enable more comprehensive and patient-centered care.

Limitations of the study

The main limitations of this study lie in its monocentric nature, which prevents the results from being generalized to other populations or healthcare systems. The cross- sectional design, does not allow us to establish whether catastrophizing is a cause of consequence of psychological distress, nor to study the evolution or impact of psychological interventions, thus limiting us to associations. Missing data, particularly on ongoing treatments, diagnosed psychiatric comorbidities, and associated fibromyalgia, constitute an additional limitation. The translation and cultural adaptation of the scales used is a potential source of linguistic bias. Certain differences in the understanding of the items may have affected the responses.

Nevertheless, the consistency of the associations identified with the data in the literature gives our results a certain robustness.

CONCLUSION

This study highlights the impact of catastrophizing on the psychological and functional well-being and quality of life of patients with spondyloarthritis. Screening for catastrophizing should be incorporated into routine clinical assessment. Large-scale studies are needed to refine our understanding of its predictive role and to evaluate the impact of targeted psychotherapeutic approaches on patient's pain experience and quality of life.

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