



THE IMPACT OF PSYCHOLOGICAL FACTORS ON REHABILITATION OUTCOMES IN PATIENTS WITH CHRONIC PAIN

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ABSTRACT

BACKGROUND: Chronic pain, affecting a significant portion of the population, contributes to diminished quality of life and increased disability rates. Emerging evidence points towards the substantial role of psychological characteristics, including pain catastrophizing, fear-avoidance attitudes, depression, and anxiety, in shaping pain perception and rehabilitation response. These factors also appear to influence recovery rates following injuries.

OBJECTIVE: The purpose of this study was to determine the influence of these psychological factors on the rehabilitation progress in patients suffering from chronic pain.

METHODS: A prospective study was carried out with 200 chronic pain participants. Psychological factors were evaluated at the outset using validated tools (Pain Catastrophizing Scale, Fear-Avoidance Beliefs Questionnaire, Patient Health Questionnaire-9, and Generalized Anxiety Disorder-7). Rehabilitation

outcomes, specifically pain intensity and disability, were measured both at the baseline and after 12 months.

RESULTS: Over the 12-month follow-up period, participants reported significant enhancements in their physical and psychological outcomes. Nevertheless, a correlation was observed between elevated initial levels of psychological distress and subpar results, even after accounting for demographic and clinical characteristics.

CONCLUSION: The findings of this study highlight the critical need to identify and address psychological disorders present in chronic pain patients undergoing rehabilitation. This becomes a point of emphasis for improving their rehabilitation outcomes. Future research should prioritize the development of comprehensive treatments that can significantly enhance rehabilitation outcomes in this population.

KEYWORDS: Chronic Pain; Rehabilitation Outcomes; Pain Catastrophizing; Fear-Avoidance Beliefs; Depression; Anxiety; Biopsychosocial Model.

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INTRODUCTION

Chronic pain, affecting millions globally, significantly diminishes individuals' quality of life. Research highlights the most common consequences to include physical impairment, psychological distress, and a reduction in social engagement(1, 2). Chronic pain, which persists for extended periods, presents a therapeutic

challenge due to its multidimensional nature, encompassing physical, psychological, and social facets. (3, 4)

Psychological factors have been found to markedly influence how individuals experience pain and its impact on their lives. A researcher proposed that these factors

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could affect patients' pain management, adherence to treatment plans, and rehabilitation success.(4, 5)

Recent research has focused on the association between psychological characteristics and chronic pain. A study by suggested that elements such as pain catastrophizing, fear-avoidance attitudes, depression, and anxiety can influence chronic pain severity, the level of disability, and treatment efficacy(6, 7). Pain catastrophizing, as an overly negative perspective on current or anticipated pain, has been linked to heightened pain levels, increased disability, and poor treatment outcomes.(8, 9)

Similarly, fear-avoidance beliefs contribute to disability and inactivity, leading to deconditioning and perpetuating chronic pain. According to another author, these beliefs distinguish themselves by the avoidance of behaviors believed to cause or exacerbate pain.(10, 11)

Moreover, chronic pain patients are more susceptible to mental health conditions such as depression and anxiety(12, 13). As per a 2021 study, these conditions may heighten pain perception, diminish coping mechanisms' effectiveness, and negatively impact treatment adherence and rehabilitation outcomes.(14, 15) Recognizing the role of these psychological factors in chronic pain onset is crucial for devising effective treatments(16, 17). Cognitive-behavioral therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness-based therapies have demonstrated potential in alleviating chronic pain and enhancing rehabilitation outcomes. (18, 19)

MATERIALS AND METHODS

STUDY DESIGN:

The research was designed as a prospective cohort study, with a duration of 12 months to evaluate the impact of psychological variables on rehabilitation outcomes.

PARTICIPANTS:

Two hundred individuals, aged 18-75 years, who had been suffering from chronic pain for more than six months were enrolled from pain management clinics and rehabilitation centers.(20)

INCLUSION CRITERIA:

Eligible participants were those aged between 18 and 75, with a diagnosis of chronic pain persisting for at least six months, capable of providing informed consent, and expressing a willingness to participate in the study.(21)

EXCLUSION CRITERIA:

Individuals with severe mental illnesses, cognitive impairments, at the end-stage of life, or those incapable of understanding or communicating in English were excluded.(22)

DATA COLLECTION PROCEDURE:

At baseline, participants completed a self-report questionnaire assessing their pain intensity, pain-related disability, quality of life, and psychological factors (pain catastrophizing, fear-avoidance beliefs, depression, and anxiety). Follow-up assessments were performed at six and twelve months. Participants' treatment plans, pain levels, and adherence were reviewed from their medical records.(23)

Psychological factors were evaluated using the Pain Catastrophizing Scale (PCS), the Fear-Avoidance Beliefs Questionnaire (FABQ), the Patient Health Questionnaire-9 (PHQ-9) for depression, and the Generalized Anxiety Disorder-7 (GAD-7) for anxiety. The effectiveness of the rehabilitation program was measured using the Brief Pain Inventory (BPI) and a scale from the Patient-Reported Outcomes Measurement Information System (PROMIS) to assess physical function.

DATA ANALYSIS:

The collected data was processed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics for each variable were computed. A multiple regression analysis was conducted to determine the influence of psychological factors on rehabilitation outcomes, adjusting for demographic and clinical factors.

ETHICAL CONSIDERATIONS:

The study protocol was reviewed and approved by the local Ethics Committee. Written informed consent was obtained from each participant prior to their involvement in the research. Confidentiality of participants' personal information was strictly maintained, and anonymity was assured. Participants were informed about their right to withdraw from the study at any point, with no repercussions on their clinical care.

RESULTS

The study cohort comprised 200 participants, with an average age of 55.4 years and a standard deviation of 12.8 years. The majority of participants were women, accounting for 60% of the sample. On average, participants had experienced chronic pain for 8.6 years, with a standard deviation of 4.2 years. Low back pain was the primary source of pain for 35% of participants, followed by osteoarthritis (30%), and fibromyalgia (20%).

Table 1. Demographic characteristics of the study participants

Characteristics	Total (N=200)
Age, years (Mean \pm SD)	55.4 \pm 12.8



Gender, n (%)	
Male	80 (40%)
Female	120 (60%)
Pain duration, years (Mean \pm SD)	8.6 \pm 4.2
Pain condition, n (%)	
Low back pain	70 (35%)
Osteoarthritis	60 (30%)
Fibromyalgia	40 (20%)
Others	30 (15%)

At the onset of the study, participants demonstrated high levels of pain intensity and disability, as well as notable psychological distress, as reflected in their scores on the PCS, FABQ, PHQ-9, and GAD-7 scales.

Table 2. Baseline and 12-month follow-up scores for outcome variables

Variable	Baseline (Mean \pm SD)	12-month follow-up (Mean \pm SD)	p-value
Pain intensity (BPI)	7.5 \pm 1.2	6.3 \pm 1.4	<0.001
Disability (PROMIS)	50.2 \pm 10.5	42.1 \pm 11.3	<0.001
Pain catastrophizing (PCS)	30.3 \pm 6.5	25.4 \pm 7.2	<0.001
Fear-avoidance beliefs (FABQ)	44.2 \pm 10.1	38.3 \pm 9.7	<0.001
Depression (PHQ-9)	14.8 \pm 4.5	11.5 \pm 4.8	<0.001
Anxiety (GAD-7)	12.4 \pm 3.6	9.7 \pm 3.8	<0.001

By the time of the 12-month follow-up, there was a significant reduction in participants' reported pain intensity, disability scores ($p < 0.001$), and psychological factors such as pain catastrophizing, fear-avoidance beliefs, depression, and anxiety ($p < 0.001$).

It was observed that participants who had higher baseline scores on the PCS, FABQ, PHQ-9, and GAD-7 scales had poorer rehabilitation outcomes after 12 months ($p < 0.001$). These results remained significant even after accounting for factors such as age, gender, duration of pain, and the type of pain condition. Interestingly, these higher baseline scores did not correlate with any other variables.

These findings underscore the influential role of psychological factors in chronic pain management. It further highlights the necessity to incorporate

psychological interventions in rehabilitation programs for those struggling with chronic pain.

DISCUSSION

The results of this study emphasize the profound role that psychological variables can have on rehabilitation outcomes in patients with chronic pain. This aligns with previous research, which highlighted the associations between chronic pain, disability, and psychological factors like pain catastrophizing, fear-avoidance beliefs, depression, and anxiety (24, 25). These psychological states are not only linked to enduring pain but also to impaired daily functioning, reinforcing the necessity of adopting a comprehensive biopsychosocial approach in the treatment of chronic pain (26, 27). This approach advocates for a holistic understanding of pain that not only takes into account its physical manifestations but also the psychological and social implications. (28)

The substantial improvements in both physical and psychological outcomes reported at the one-year follow-up suggest that traditional rehabilitation approaches can indeed be beneficial. However, the data also revealed that patients presenting higher levels of psychological distress at baseline experienced less favorable outcomes. This observation underscores the potential need for additional or more intensive psychological interventions for these individuals. (29)

Contemporary research supports the integration of psychological therapies in the treatment of chronic pain. Methods such as cognitive-behavioral therapy, mindfulness-based therapies, and acceptance and commitment therapy have shown promising results and may provide additional support to patients who exhibit higher levels of psychological distress. (30)

CONCLUSION

In conclusion, this study highlights the impact of psychological variables on the outcomes of chronic pain rehabilitation. These findings suggest that addressing these psychological elements in conjunction with traditional physical treatments may enhance the effectiveness of rehabilitation programs. Consequently, the future direction of research should aim to develop and evaluate integrative approaches that effectively combine physical and psychological treatments, thereby maximizing rehabilitation outcomes in the chronic pain population.

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