RESEARCH ARTICLE

Exploring the Psychological Impact of Generalized Pain: The Role of Anxiety, Depression, and Social Support

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Abstract

Background: Persistent pain, whether acute or chronic, often has profound psychological consequences, commonly manifesting as anxiety and depression. Generalized pain, in particular, poses diagnostic and therapeutic challenges due to its non-specific nature. While numerous studies have assessed pain's impact on mental health, the moderating effect of social support remains underexplored. **Objective**: This study investigates the link between generalized pain and psychological distress, specifically focusing on anxiety and depression, and evaluates the potential buffering role of perceived social support. **Methods**: A cross-sectional survey was administered to 70 individuals experiencing generalized pain. Standardized instruments, including the Brief Pain Inventory (BPI), Hospital Anxiety and Depression Scale (HADS), and Multidimensional Scale of Perceived Social Support (MSPSS), were employed. Data were analyzed using correlation and regression techniques to determine significant associations. **Results**: Individuals experiencing continuous pain exhibited elevated levels of psychological distress compared to those with intermittent pain. Regression analysis identified pain severity and avoidance behaviors as significant predictors of distress, explaining 46% of the variance. Although social support was negatively correlated with distress, it did not significantly predict psychological outcomes. **Conclusion**: The findings underscore the critical role of pain-related avoidance and intensity in mental health outcomes. Social support, while related to lower distress levels, did not emerge as a significant predictor. Interventions targeting avoidance behavior and integrating social support structures may enhance pain management strategies.

Keywords: Generalized pain, psychological distress, anxiety, depression, social support

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1. Introduction

Pain is a complex and multidimensional experience that serves as a warning signal to potential harm [1, 2]. It encompasses not only sensory responses but also emotional and cognitive dimensions that can significantly affect an individual's physical and psychological well-being. According to the International Association for the Study of Pain (IASP) [3, 4], pain is defined as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage"[4]. In clinical practice and research, pain is broadly categorized as acute or chronic. Acute pain is typically short-term and associated with a specific cause, such as injury or surgery, serving a protective function by prompting treatment-seeking behavior [5]. Chronic pain, in contrast, persists beyond the usual recovery period, often for months, and is considered a major public health issue worldwide due to its long-lasting impact on functionality and quality of life [6, 7]. Generalized pain is the primary variable of this study; it refers to a widespread, often chronic, musculoskeletal condition causing discomfort in multiple body areas, frequently accompanied by fatigue, sleep disturbances, and cognitive issues. Also known as fibromyalgia, a condition in which a person has long-term pain that is spread throughout their body, its management often requires a multidisciplinary approach, including exercise, stress reduction, and, if necessary, pharmacological strategies are also considered [8-10]. Such pain can significantly disturb daily routine and has been associated with psychological disorders such as anxiety and depression. These psychological conditions are not only consequences of pain but also contribute to its intensity and duration, creating a vicious cycle of distress [11, 12]. Anxiety is characterized by excessive worry or fear and can be triggered by the anticipation of pain. It heightens pain sensitivity and increases the likelihood of avoidance behaviors, which can further restrict daily activities. Depression, another key variable, involves persistent sadness, hopelessness, and reduced motivation, all of which exacerbate the psychological toll of chronic pain and reduce treatment adherence [13, 14]. Perceived social support is the third variable in this study, which refers to an individual's subjective evaluation of the emotional, informational, and practical support they receive from others. Social support is considered a potential buffer that may mitigate the negative effects of pain on psychological health [15]. However, its protective role remains debated, particularly in relation to generalized pain. Given the interconnected nature of these variables, this study adopts a biopsychosocial perspective [16, 17]. It aims to investigate the relationship between generalized pain and psychological distress (anxiety and depression), and to examine the moderating role of perceived social support in this association. Clearly defining and sequencing these variables is essential for understanding how they interact and for guiding the development of holistic, patient-centered interventions. This study aimed to investigate the relationship between generalized pain and anxiety and depression as forms of psychological distress. A secondary objective was to evaluate whether perceived social support moderates or ameliorates distress in individuals who are in pain.

2. Hypothesis

H_1: There is a positive correlation between increased pain severity and heightened psychological distress.

H_2: Increased participation in pain avoidance behaviors is associated with higher psychological distress.

H_3: Stronger social support that one perceives as being available is associated with lower levels of psychological distress.

H_4: Social support that one perceives as being available influences the degree to which pain impacts psychological distress, thus acting as a moderator.

3. Methods

Study Design

This research was conducted using a cross-sectional online survey-based questionnaire, which involved examining participants at a single time point without applying any experimental manipulation or treatment. The primary objective was to explore the naturally occurring relationships among pain intensity, psychological conditions (including anxiety and depression), and perceived levels of social support. Participants were asked to complete structured, self-administered questionnaires over two weeks. The design was guided by a biopsychosocial perspective, which emphasizes the interconnected roles of biological, psychological, and social influences in shaping individual pain experiences.

Sampling and Recruitment

Purposive sampling was used to find participants from online resources, pain management facilities, and outpatient clinics. Posters, ads, and referrals from medical professionals were used in the recruitment process to guarantee sample diversity and reduce selection bias.

Eligibility Criteria

Inclusion Criteria:

- Individuals aged **18** to 65 years, to ensure inclusion of adult participants within a working-age population.
- Experiencing acute or chronic generalized pain for a minimum duration of one month.
- Able to provide informed consent and independently complete self-report questionnaires in written form.

Exclusion Criteria:

- Individuals currently undergoing psychiatric treatment for conditions not related to pain.
- Presence of cognitive impairments, illiteracy, or other communication barriers that could interfere with completing the survey tools.

Sample Size

A total of **70 participants** were included in the study. The sample size was determined based on practical considerations rather than a formal power calculation, but it is consistent with similar cross-sectional studies in this field. Participants ranged in age from **19 to 62 years**, representing a diverse adult population experiencing various types of generalized pain.

Study tool

The questionnaire was adapted and developed after an extensive literature review. Some points were adapted from the following pre-validated checklists/questionnaires. Brief Pain Inventory (BPI): Measured pain severity and its interference with daily activities [18]. Hospital Anxiety and Depression Scale (HADS): Measured symptoms of anxiety and depression [19]. Multidimensional Scale of Perceived Social Support (MSPSS): Measured perceived social support from family, friends, and significant others [20].

Reliability of Instruments

To evaluate internal consistency, Cronbach's alpha was calculated for the composite questionnaire used in this study, which included items from the Brief Pain Inventory (BPI), the Hospital Anxiety and Depression Scale (HADS), and the Multidimensional Scale of Perceived Social Support (MSPSS). The overall alpha coefficient was 0.73, indicating an acceptable level of reliability for the combined survey tool in this context [21]. Previous literature showed that the Brief Pain Inventory's (BPI) Cronbach's alpha reliability ranges from 0.77 to 0.91, whereas the internal consistency of the HADS was high (alpha=0.88), and the Cronbach value for the Multidimensional Scale of Perceived Social Support (MSPSS) was 0.96 [22-24].

Statistical Analyses

SPSS version 25 was used to analyze the data. Sample characteristics were summed up using descriptive statistics. Multiple linear regression analyses found predictors of psychological distress, and Pearson correlation coefficients looked at the relationships between variables.

Ethical Considerations

The Declaration of Helsinki's guidelines were adhered to in this study [25]. Because the research was non-clinical, the requirement of ethical approval was waived by the ethical review committee (ERC). Written informed consent was given by participants, and privacy was maintained.

4. Results

Descriptive Statistics

The sample included 70 participants with a mean age of *M* = 37.4 years (*SD* = 12.3). Of the total, 33 were male (47%), and 37 were female (53%). Regarding pain duration, 38.6% reported experiencing pain for less than one month, 22.9% for 1–6 months, and another 22.9% for more than two years. Pain frequency was reported as occasional by 64.3%, frequent by 25.7%, and constant by 10% of the participants. Participants reported a mean pain severity score of *M* = 2.06 (*SD* = 1.28) on a 0–10 scale. The average psychological distress score was *M* = 1.19 (*SD* = 1.08) on a 0–3 scale, and perceived social support averaged *M* = 3.61 (*SD* = 1.60) on a 1–7 scale. Notably, those who reported constant pain experienced higher levels of psychological distress compared to participants with less frequent pain.

Table 1: Demographic and Clinical Characteristics of Participants (N = 70)

Variable	N (%)
Sample Size	70
Age (M ± SD)	37.4 ± 12.3
Gender: Male	33 (47%)
Gender: Female	37 (53%)
Pain Duration < 3 month	27 (38.6%)
Pain Duration 1–6 months	16 (22.9%)
Pain Duration > 2 years	16 (22.9%)
Pain Frequency: Occasional	45 (64.3%)
Pain Frequency: Frequent	18 (25.7%)
Pain Frequency: Constant	7 (10.0%)

*Note. * Percentages may not total 100 due to rounding.

Table 2: Descriptive Statistics for Key Variables

VARIABLE	MEAN	SD	RANGE
PAIN SEVERITY (0–10)	2.06	1.28	0–10
PSYCHOLOGICAL DISTRESS (0–3)	1.19	1.08	0–3
SOCIAL SUPPORT (1–7)	3.61	1.60	1–7

Correlation

Pearson correlation analysis showed a strong positive association between pain avoidance behaviors and both sadness ($r = .67$) and lack of motivation ($r = .68$, $p < .01$). Perceived social support had a significant negative correlation with sadness ($r = –.21$, $p < .05$).

Table 3: Correlation Matrix for key variables

VARIABLES	PAIN SEVERITY	PSYCHOLOGICAL DISTRESS	SOCIAL SUPPORT
PAIN SEVERITY	1	0.67	-0.21
PSYCHOLOGICAL DISTRESS	0.67	1	-0.19
SOCIAL SUPPORT	-0.21	-0.19	1

Regression Analysis

A multiple linear regression was conducted to identify predictors of psychological distress. The model was statistically significant: $F(4, 65) = 9.12$, $p < .001$, $R^2 = .46$

Significant predictors included:

- Pain avoidance behaviors ($\beta = .41$, $t = 4.10$, $p < .01$)
- Worst pain severity ($\beta = .22$, $t = 2.75$, $p = .01$)
- Feeling slowed/unmotivated ($\beta = .19$, $t = 2.11$, $p = .04$)

Perceived social support (talking about problems) was not a significant predictor ($\beta = –.01$, $t = –0.12$, $p = .75$).

Table 4: Multiple Linear Regression Predicting Psychological Distress

PREDICTOR VARIABLES	B	SE	T	P
PAIN AVOIDANCE BEHAVIORS	0.41	0.10	4.10	< .01
PAIN SEVERITY (LEAST)	0.22	0.08	2.75	= .05
FEELING SLOWED/UNMOTIVATED	0.19	0.09	2.11	= .05

SOCIAL SUPPORT (TALK ABOUT PROBLEMS)	-0.01	0.05	-0.12	= .75

Note. $R^2 = .46$, $F(4, 65) = 9.12$, $p < .001$.

The regression model explained 46% of the variance in psychological distress ($R^2 = 0.46$). Significant predictors were:

- Pain avoidance behaviors ($\beta = 0.41$, $p < 0.01$)
- Minimal pain severity ($\beta = 0.22$, $p < 0.05$)
- Unmotivated feelings ($\beta = 0.19$, $p < 0.05$)

Although social support was negatively correlated with distress, it did not significantly predict it in the regression model ($\beta = -0.01$, $p = 0.75$).

5. Discussion:

The findings of this study highlight the central role of pain severity and avoidance behaviors in contributing to psychological distress among individuals experiencing generalized pain [26, 27]. In particular, avoidance behaviors showed a strong positive correlation with emotional indicators such as sadness and lack of motivation, suggesting that maladaptive coping responses may intensify emotional burden. These results are consistent with the Fear-Avoidance Model, which proposes that fear-related avoidance of pain leads to sustained distress and long-term functional impairment [28, 29]. Our results align with prior studies showing that pain-related avoidance is a significant predictor of depressive symptoms and disability in chronic pain patients [30, 31]. Vlaeyen and Linton's research specifically emphasized that individuals with firm fear-avoidant beliefs were more likely to develop persistent disability in musculoskeletal conditions. This highlights the clinical importance of early intervention strategies aimed at reducing avoidance behaviors. Psychological interventions such as Cognitive Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) are especially relevant here, as they have been shown to improve coping, reduce depressive symptoms, and restore function in chronic pain populations [32-34]. While perceived social support was not a statistically significant predictor in our regression analysis, its negative correlation with sadness suggests a potentially protective role. This supports the Stress-Buffering Hypothesis, which posits that emotional and practical support can help individuals cope with distress [35]. Interventions such as peer support groups and family-based therapies may thus offer indirect benefits, even if the quantitative impact was limited in our findings. Previous studies have similarly identified social support as a moderator of depression and stress in individuals with chronic illness [36, 37]. Although our model did not establish a strong predictive effect, this does not rule out its practical importance, especially when considering that social support is often underutilized or unevenly distributed across populations. Overall, these findings reinforce the value of applying a biopsychosocial approach to pain management. This model recognizes the interconnected influences of physical symptoms, emotional regulation, and social context. Meta-analyses support the effectiveness of multidisciplinary care, where medical treatment is combined with psychological

and social interventions [38, 39]. For instance, Kamper et al. demonstrated that multidisciplinary rehabilitation significantly improves functional outcomes compared to standard care. By addressing both the psychological and behavioral dimensions of pain, such integrative strategies may offer more sustainable improvements in patient well-being.

6. Limitations:

While this study provides valuable insight into the relationship between pain, psychological health, and social support, certain limitations must be taken into consideration. Foremost, the use of a cross-sectional study design in this research limits our ability to understand causal relationships among these variables. Another limitation of this study is the use of a relatively small sample size, and recruitment from a limited geographic area reduces the generalization of our findings. Additionally, the reliance on self-reported questionnaires increase risk of response bias even though validated tools were used. In future research, objective measures and clinician-rated assessments must be included to strengthen data accuracy and mitigate response bias. Despite these limitations, this study provides meaningful groundwork for future research.

7. Future Directions:

The study provides crucial information about how psychological distress is connected to avoidance behaviors, generalized pain, and social support, but the findings cannot be universally accepted due to several constraints. Bridging these gaps will solidify the evidence base and guide more nuanced, evidence-based approaches. Simultaneously, randomized controlled trials (RCTs) of social-support-enhancing or avoidance-targeting interventions (e.g, group CBT vs. standard care) can establish causality. Likewise, multi-center collaborations will enable analyses of subgroups with appropriate power. Using smartphone apps, the simultaneous use of ecological momentary assessment (EMA) can help identify immediate changes in pain and mood by providing insight into how people cope with specific situations. Through systematic attention to these fields, future studies can progress from describing to intervention, ultimately leading to the development of best practice models of pain management that incorporate psychological and social dimensions in order to model patient-centered models.

8. Conclusion

In conclusion, this study highlights how pain not only affects physical health but also significantly affects individuals emotional and social well-being. Our findings show that the most significant factors contributing to physiological distress are pain severity and avoidance behaviours. Although it appears social support helps reduce emotional distress to some extent, it wasn't a strong enough predictor in our results, indicating the need for further exploration of its role. These findings suggest that an interdisciplinary biopsychosocial approach is needed for effective pain management that integrates therapies like Cognitive Behavioral Therapy (CBT) and Acceptance and Commitment

Therapy (ACT), along with efforts to strengthen the social support system for people living with chronic pain. Despite having some limitations, such as a relatively small sample size and a cross-sectional study design, this research still provides valuable insights while also highlighting promising directions for future research, particularly in the exploration of digital health tools and community-based programs, which may help strengthen psychological resilience. Moving forward to improve the quality of life and overall psychological health of individuals living with chronic pain, a comprehensive, holistic, patient-centered care model that conceptualizes the emotional, social, and psychological aspects of pain is needed.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

No Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

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