



Comparison of Quality of Life, Dysfunctional Attitudes and Defense Mechanisms in Patients with Chronic Back Pain with Healthy Individuals

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Abstract

Background: Chronic pain is the leading cause of human suffering and disability worldwide, significantly impacting the quality of life for individuals. This study aimed to compare the quality of life, dysfunctional attitudes, and defense mechanisms between patients suffering from chronic back pain and individuals who are in good health.

Methods: The type of study conducted is descriptive causal-comparative research. Fifty male and female patients seeking treatment at the Rasht Pain Clinic were included in the study, chosen through purposive sampling. The control group, consisting of fifty individuals with no history of chronic back pain, was selected using convenience sampling in May 2021. The Quality-of-Life Questionnaire (WHOQOL-BREF), Dysfunctional Attitude Scale (DAS), and Defense Style Questionnaire (DSQ-40) were given to both healthy individuals and patients. An analysis of the data was conducted through multivariate analysis of variance (MANOVA) using SPSS 23 software.

Results: A multivariate analysis of variance in the current study revealed a significant difference between the two groups of patients and healthy individuals in terms of quality of life (physical, mental, relationships, environment), Dysfunctional Attitudes (perfectionism, need for approval, need to please others), and defense mechanisms (mature, neurotic, immature) ($P\text{-value} < 0.01$, $F_{11,88} = 16.63$). However, there was no significant difference in the vulnerability component of dysfunctional attitude between the two groups of patients and healthy subjects.

Conclusions: Identifying factors such as poor quality of life, maladaptive attitudes, and improper use of defense mechanisms can worsen chronic pain in individuals. Understanding the influences of these variables is crucial for enhancing the overall physical and mental well-being of patients experiencing chronic pain.

Keywords: Quality of life, Dysfunctional attitudes, Defense mechanisms, patients, Chronic back Pain, Healthy individuals.

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Introduction

Pain is a warning sign for critical issues in the body or can result from accidents and physical injuries, contributing to human survival. However, when pain becomes chronic, it can affect the psychological, physical, economic, and social well-being of the individual, their family, and society¹. Chronic pain is a complex issue characterized by biological, psychological, and social symptoms that impact various aspects of a person's

life, leading to specific cognitive and behavioral patterns. Once pain becomes persistent, it can negatively affect overall health, physical and social performance, and the person's role physically and psychologically². Back pain is the most prevalent type of chronic pain, accounting for 70 to 85% of all cases³.

Mutubuki et al (2020) found a strong link between functional disability and the severity of back pain. Furthermore, their research revealed a positive and significant correlation between the duration of pain and disability⁴. Chronic back pain may decrease a person's quality of life as it leads to the necessity for rest and can cause stress. This situation can be stressful for the patient, as they may feel unable to keep up with daily tasks like others. This stress can prompt the patient to seek ways to reduce it⁵. Patients with chronic back pain experience higher levels of anxiety, depression, and disability as pain intensity increases⁶. Higher levels of pain intensity correlate with decreased physical performance. Pain intensity also predicts quality of life, with higher pain levels leading to poorer quality of life. Problems with emotional processing, especially controlling emotions, are connected to ongoing back pain⁷. As reported by Alshehri et al (2023), there is an association between quality of life and back pain, with students experiencing back pain having a lower quality of life than those without pain⁸.

Dysfunctional attitudes are significantly related to stress, anxiety, and depression in breast cancer patients. Those with higher dysfunctional attitudes score higher levels of stress, anxiety, and depression. Conversely, low scores in ineffective attitudes can act as a protective factor against stress, anxiety, and depression in breast cancer patients⁹. Any dysfunction has a variety of psychological effects, and many studies have shown that people with low back pain have somatic, emotional, and psychological problems¹⁰. Dysfunctional attitudes and beliefs in patients with low back pain may interfere with pain, disability, and mood¹¹. Catastrophizing, fear of movement, negative beliefs about rest, and being socially isolated are all linked to negative outcomes in patients with lower back pain¹². Moreover, the perspective of a patient can impact their treatment progress. For instance, individuals who hold negative beliefs about LBP tend to experience more severe pain, longer duration of pain, and higher levels of disability¹³. On the other hand, patients with positive beliefs, such as self-efficacy, often have better outcomes in treatment¹⁴. Beliefs play a significant role in addressing musculoskeletal pain as they can be changed.



Identifying and addressing maladaptive beliefs from the patient's standpoint can lead to personalized treatment¹⁵. Maladaptive beliefs are viewed as inaccurate or dysfunctional cognitive beliefs about LBP, such as the notion that back issues require rest¹².

It has been identified that engaging in unhelpful coping mechanisms like catastrophizing is linked to heightened levels of pain, greater depression, a higher likelihood of experiencing chronic pain, disability, and slower recovery. In contrast, individuals who employ effective coping strategies experience lower levels of pain and stress¹⁶. The patient may not be mindful of how to deal with their stress effectively, leading them to defense mechanisms to help mitigate tension¹¹.

The results indicated that employing negative coping tactics, experiencing a perceived lack of control over pain, and ineffective attitudes are elements contributing to feelings of hopelessness in patients¹⁶. Research findings indicate a notable connection between the worsening of disease severity, decline in mature defense mechanisms, and rise in immature defense mechanisms among patients with fibromyalgia syndrome¹⁷. Individuals experiencing migraine headaches tend to primarily utilize neurotic defense mechanisms such as false friendship and denial, as well as underdeveloped defense mechanisms like reasoning and physicalization. These defense styles can result in a decline in overall physical health and may exacerbate migraine headaches¹⁸. According to a study, ineffective attitudes were found to be the most influential factor in explaining gastrointestinal ulcer disease when compared to emotion-oriented coping styles and problem-oriented coping styles. Researchers revealed that individuals with gastrointestinal ulcer disease showed a higher tendency to use underdeveloped defense mechanisms than their healthy counterparts¹⁹.

Research about chronic back pain prevalence and economic costs, along with ineffective treatment methods, has led to a study focusing on the quality of life, attitudes, and defense mechanisms of individuals with back pain. The aim is to understand the impact of these factors on chronic back pain and expand knowledge on the nature and factors influencing this condition. Specifically, the research examines the role of psychological factors, such as quality of life, attitudes, and defense mechanisms, in chronic back pain. Identifying and addressing the quality of life, attitudes, and defense mechanisms of individuals with chronic back pain is crucial to creating successful methods for enhancing their overall health and happiness. This study seeks to compare the quality of life, attitudes, and defense mechanisms of individuals with chronic back pain to those of healthy individuals to determine differences and understand which dimensions are involved in these factors.

Materials and Methods

This research is classified as descriptive causal-comparative research. In May 2021, 50 male and female patients seeking treatment at the Rasht Pain Clinic were chosen for the study using purposive sampling. The control group, consisting of 50 individuals with no history of chronic back pain, was selected using convenience sampling. According to a

research methodology book, it is recommended that causal-comparative research should have a sample size of at least 30 individuals in each group²⁰. The study involved 50 participants (36 women and 14 men) receiving treatment at the Rasht Pain Clinic. They were selected using a non-random (targeted) sampling method that involved screening for eligibility criteria. The participants had to have experienced their first episode of back pain, be able to read, write, and understand the questionnaire, provide consent to participate, and not have conditions such as cognitive disorders, severe anxiety, or depression before the onset of back pain, addiction to narcotics, undergoing psychiatric treatment, or a history of spine surgery, accidents, or trauma.

In the healthy group, a total of 50 individuals (34 women and 16 men) without chronic back pain were chosen from the companions and staff of Rasht Pain Clinic. These individuals met the criteria of having no history of chronic back pain, being able to comprehend and consent to participation in the research, and not having cognitive impairments or mental health issues that would affect their understanding of the study. They were also not suffering from severe anxiety, depression, chronic or incurable diseases, addiction to narcotics, or other health conditions that would impact their quality of life. Throughout the research implementation, the participants were provided with a detailed explanation of the questionnaire questions and the method of completing them. All three questionnaires, as well as a demographic form, were handed out to the participants. The researcher was available to address any issues the participants faced while completing the questionnaires. They closely monitored the participants as they filled out the questionnaires and expressed gratitude for their attention to the research's significance and their cooperation at the end.

World Health Organization's Quality of Life Questionnaire (WHOQOL-BREF): The WHOQOL-BREF is a 26-item instrument consisting of four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items); it also contains QOL and general health items²¹. Each item of the WHOQOL-BREF is scored from 1 to 5 on a response scale, which is stipulated as a five-point ordinal scale. The scores are then transformed linearly to a 0–100 scale^{16,17}. The physical health domain includes items on mobility, daily activities, functional capacity, energy, pain, and sleep. The psychological domain measures include self-image, negative thoughts, positive attitudes, self-esteem, mentality, learning ability, memory concentration, religion, and mental status. The social relationships domain contains questions on personal relationships, social support, and sex life. The environmental health domain covers issues related to financial resources, safety, health, and social services, living physical environment, opportunities to acquire new skills and knowledge, recreation, the general environment (noise, air pollution, etc.), and transportation. A confirmation factor analysis was conducted on the four domain scales of the WHOQOL-BREF, which showed a better fit compared to the one-factor model (P -value<0.001). The overall model fit was deemed good with Bollen's incremental fit index (IFI)=0.940, comparative fit index (CFI)=0.939, Bentler-Bonett normed fit index



(NFI)=0.933, and factor loadings for each subscale ranging from 0.48 to 1.3322.

Dysfunctional Attitude Scale (DAS): The original of this questionnaire consists of 40 items that were designed based on Beck's Cognitive Theory by Beck & Weissman (1978), and has appropriate validity and reliability²³. The questionnaire has 5 subscales, including the need to please others, the need to impress, the need for approval, vulnerability & success-perfectionism. The participant must show his/her agreement or disagreement by rating the 7-point scale in each item, where higher scores indicate dysfunctional attitudes. Different studies have reported its internal consistency at 0.90 and its reliability at 0.73²⁴. The study received Cronbach's alpha at 0.84.

Defense Style Questionnaire (DSQ-40): the survey was developed by Andrews, Singh and Bond (1993) as a research tool with 40 questions²⁵. It evaluates 20 defense mechanisms in terms of 3 defense styles of mature, neurotic, and immature in a 9-point Likert-type scale (from "strongly agree" to "strongly disagree"). Test-retest correlations in 4 weeks have been reported with an average of $r=0.66$ for the 20 scales²⁵. Cronbach's alpha coefficients for defense styles of mature, neurotic, and immature in a sample of university students were 0.75, 0.74, and 0.74, respectively; 0.74, 0.74, 0.72 for male students and 0.75, 0.74, and 0.74 for female students, which indicates acceptable internal congruency of the Persian version of DSQ²⁶. In this study, Cronbach's alpha for the 3 defense styles of mature, neurotic, and immature were obtained as 0.80, 0.79 and 0.76, respectively.

Following data collection, the statistical measures related to the description of data, including central tendency and dispersion, were examined in the quality-of-life surveys, unproductive attitudes, and defense mechanisms in two control groups and the patient. Following that, in the data analysis

portion, research hypotheses were assessed using statistical tests of multivariate analysis of variance (MANOVA). The statistical analysis of the data was conducted using SPSS-23 software.

Results

This study included 36 women in the patient group and 34 women in the healthy group. Additionally, there were 14 men in the patient group and 16 men in the healthy group. The results of the chi-square test indicated that there was no significant difference in the number of women and men between the patient and healthy groups. Among the patient group, the highest percentage of individuals fell within the age range of <41 years (48%) while the lowest percentage was in the 31-40 years age range (24%). In the healthy group, the lowest percentage was in the 31-40 years age range (32%) and the 21-30 and <41 years age ranges had an equal percentage (34%). However, the chi-square test demonstrated that there was no significant difference in the age distribution between the two groups. In terms of education level, individuals with below diploma education level had the highest frequency in the patient group (50%), while individuals with bachelor's level education had the highest frequency in the healthy group (40%). The patient group had the lowest frequency of individuals with a master's degree or higher (8%), compared to the healthy group with the lowest frequency being individuals with a post-graduate degree (12%). The chi-square test results revealed that there was no significant difference in education level between the patient and healthy groups. Interestingly, the majority of individuals in both the patient and healthy groups were married (76%). The chi-square test results also indicated that there was no significant difference in marital status between the two groups.

Table 1. Descriptive indicators of quality-of-life components, ineffective attitudes and defense mechanisms of two groups

Groups	Components of variables	Mean	SD	Skewness	kurtosis
Control people	Physical health	20.26	5.08	-0.457	-0.578
	Psychological health	18.22	3.54	0.100	1.10
	living environment	27.26	3.81	-0.587	1.12
	Relations with others	25.44	4.76	0.143	1.28
	Perfectionism	39.08	9.11	0.495	1.78
	The need for approval from others	18.30	4.57	-0.689	0.901
	Pleasing others	21.20	4.24	0.160	-0.260
	Vulnerability	14.16	3.96	-0.152	-0.201
	Developed defensive style	44.52	8.33	-0.483	-0.647
	Neurotic defensive style	50.5	12.84	0.132	-0.809
	Underdeveloped defensive style	125.7	16.09	0.010	-0.539
Healthy people	Physical health	26.02	4.19	-0.353	-0.282
	Psychological health	22.54	3.04	-0.707	-0.954
	living environment	29.36	3.99	-0.204	0.121
	Relations with others	30.28	3.43	0.073	0.289
	Perfectionism	27.70	6.73	-0.004	-0.145
	The need for approval from others	14.38	4.17	0.417	-0.269
	Pleasing others	14.68	4.27	0.063	-0.229
	Vulnerability	14.14	4.80	0.222	-0.412
	Developed defensive style	48.56	9.05	0.096	-0.577
	Neurotic defensive style	43.26	9.21	-0.169	-1.129
	Underdeveloped defensive style	107.82	21.35	0.837	1.68



Based on Table 1, it can be concluded that there is minimal variation between the average scores of quality-of-life, ineffective attitudes, and defense mechanisms in patients. The skewness coefficient falling within the range of -2 and 2 suggests that these distributions follow a normal distribution

assumption, making the mean a suitable descriptive statistic for parametric analysis. Similarly, Table 1 shows little difference in the average scores of quality of life, ineffective attitudes, and defense mechanisms in healthy individuals, with skewness coefficients also indicating normal distribution assumptions.

Table 2. The results of multivariate variance analysis of the difference in the mean scores variables in patients and healthy people

	Test	Value	df	Df error	F	P-value
Groups	Pillai's Trace	675.	11	88	16.632	0.000**
	Wilks' Lambda	325.	11	88	16.632	0.000**
	Hotelling's Trace	2.08	11	88	16.632	0.000**
	Roy's Largest Root	2.08	11	88	16.632	0.000**

*P-values<0.05, **P-values<0.01

Table 2 displays the outcomes of a multivariate analysis of variance. The F value calculated from the Wilkes Lambda test is 16.632, and compared to the F value in the table at the significance level of $\alpha=0.01$, it has 11 and 88 degrees of freedom. The F ratio is deemed significant at a 99% probability level. The results of the Wilkes Lambda test indicate a notable difference between patients and healthy individuals in at least one aspect of quality of life (physical, mental, relationships, environment), ineffective attitudes (perfectionism, the need for approval, the need to please others, vulnerability), and defense mechanisms (developed, neurotic, underdeveloped). In essence, individuals with chronic back pain have a distinct quality of life, dysfunctional attitudes, and defense mechanisms compared to healthy individuals.

Discussion

Table 2 displays the outcomes of multivariate analysis of variance. As per the F value calculated from the Wilkes Lambda, the main aim of the study was to explore whether the quality of life, ineffective attitudes, and defense mechanisms differed between individuals with chronic back pain and healthy individuals. The results indicated significant variances between the two groups in terms of quality-of-life components (physical, mental, relationships, environment), ineffective attitudes (such as perfectionism, need for approval, need for satisfaction), and defense mechanisms (developed, neurotic, underdeveloped). Prior research corroborates the significant contrast in general health between individuals with chronic back pain and those without^{4,6,27}.

The findings align with the current study, indicating that individuals with chronic back pain experience substantial physical and mental challenges throughout their lives, including diminished physical, cognitive, and social functioning, decreased overall health, and persistent or intermittent pain^{6,7,12}. These circumstances contribute to a decline in their quality of life^{4,6,27}. In a study, it was noted that chronic back pain negatively impacts an individual's personal and social life, resulting in physical, mental, and social dysfunction. Consequently, it significantly affects the quality of life of these patients²⁸. Researchers investigated the occurrence of back pain in patients and how it is related to psychological aspects. The study revealed that individuals who suffer from

chronic back pain for a prolonged period face a high likelihood of developing physical disabilities, along with experiencing a range of psychological and social challenges³⁻⁶.

Authors highlighted in their research on the psychology of chronic pain and its management that the utilization of negative coping mechanisms feelings of powerlessness over pain, and ineffective attitudes contribute to a sense of helplessness among these individuals. Ultimately, the reduction in the ability to carry out activities and societal roles due to ongoing pain, coupled with feelings of powerlessness over pain, can lead to the onset of depression in individuals with chronic pain²⁹. Studies indicated that mental well-being is influenced by using sophisticated defense mechanisms. Those who effectively utilize these defense mechanisms are better equipped to handle psychological stress and conflict. Conversely, rigid defensive styles are linked to numerous negative health outcomes, such as personality disorders and depression¹⁷.

Furthermore, Andrews et al (1993) noted that individual's resort to specific defense styles (developed, psychopathic, and underdeveloped) when confronted with stressors like pain and illnesses²⁵. Romeo et al. (2021) found in their research that there is a strong positive link between an underdeveloped defensive style and psychological vulnerability. They also discovered that underdeveloped styles are significantly associated with depression and anxiety³¹. A study indicated in their research that the well-being of individuals, both physically and mentally, is closely tied to their defense mechanisms¹⁶.

The current research explains that chronic pain can lead individuals to feel ineffective as it imposes limitations on their daily activities. Long-term experience of chronic pain results in social, personal, economic, and psychological issues, reducing self-confidence and increasing cognitive biases. This significantly affects the person's overall quality of life, limiting their participation in tasks that are both productive and free of pain^{4,6}. Chronic pain affects various dimensions of an individual's quality of life, including emotional, physical, interpersonal, and psychological aspects. Individuals with chronic pain often have negative and maladaptive beliefs about their condition and their ability to manage pain, leading to cognitive biases and ineffective attitudes that perpetuate the

disease. Prolonged exposure to mental and physical stressors like chronic pain can make individuals feel like failures, causing a sense of powerlessness and loss of control over stressful events in their lives, making it difficult for them to employ effective defense mechanisms. They shift from using neurotic and underdeveloped coping mechanisms⁷.

Chronic back pain can lead to limitations in daily activities and feelings of helplessness, resulting in various social, personal, economic, and psychological issues for an individual. This may also cause a decrease in self-esteem, an increase in fatigue, and a decline in overall performance. These effects can significantly impact the person's quality of life, preventing them from engaging in activities without experiencing pain or worry²⁷. In essence, back pain can affect all areas of a person's life and reduce their overall quality of life. Other findings from this study suggest that ineffective attitudes are seen as a risk factor during times of stress in the environment. Persistent pain in individuals can serve as a source of stress, ultimately resulting in feelings of helplessness among these individuals. The ongoing pain experienced by individuals with chronic pain can hinder their ability to engage in activities and fulfill social roles, leading to a sense of powerlessness over their pain²⁸. This sense of lack of control over their pain can give rise to psychological harm in those suffering from chronic pain. Negative and maladaptive beliefs about their condition and ability to manage the pain can lead to cognitive distortions and unhelpful attitudes in patients with chronic pain, potentially perpetuating the illness in them¹⁴.

The fact is that compromised defense styles are linked to both physical and mental health, while non-compromised defense styles are associated with negative health outcomes. When individuals experience prolonged mental and physical stress, such as chronic pain, they may feel a sense of failure and helplessness^{29,30}. Consequently, they lose control over stressful life events and are unable to utilize their developed defense mechanisms, leading them to rely on neurotic and underdeveloped mechanisms. Patients suffering from chronic back pain not only face physical problems and limitations but also encounter psychological challenges. These psychological issues hinder individuals from properly adapting and ultimately prevent the improvement of both their physical and mental health conditions^{30,31}.

Limitations of this study include the lack of consideration for the intensity and duration of pain experienced over the lifespan, which are important factors influencing quality of life. The sample used is not representative of the entire population of individuals with chronic back pain nationwide. Future research should gather information on the severity and longevity of chronic conditions involving a larger and more diverse group of patients with chronic pain. It is recommended that future studies include variables to compare outcomes between genders. Additionally, enhancing quality of life assessment and interventions should be incorporated into health programs and treatment evaluations. Specialty pain clinics and hospitals can benefit from the involvement of psychiatry and psychology experts to implement effective strategies for pain management and overall improvement in the quality of life among patients.

The findings of this research indicated a notable difference between the two groups, comprising patients and healthy individuals, in at least one aspect of quality of life (physical, mental, relationships, environment). Ineffective attitudes (such as perfectionism, seeking approval from others, desire to please others, hindered adaptability) and defense mechanisms (developed, neurotic, underdeveloped) played a significant role in this disparity. Developed defense mechanisms are considered normal and effective ways to handle stress. On the other hand, neurotic and underdeveloped defense mechanisms are seen as maladaptive and ineffective coping strategies. The more distorted a defense mechanism is cognitive, the lower the level of conscious awareness, thus making it harder to combat distorted thinking and dysfunctional behavior.

Ethical Considerations

The information in this article is taken from the author's thesis, which is known as the Ethics Code: IR.IAU.RASHT.REC.1400.146. The author expresses gratitude and thanks to all those who took part in the research.

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Conflict of Interest

There is no conflict of interest.

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References

1. Umar T, Egbu C, Honnurvali MS, Saidani M, Al-Mutairi M. An assessment of health profile and body pain among construction workers. In: Proceedings of the Institution of Civil Engineers-Municipal Engineer 2020 Sep (Vol. 173, No. 3, pp. 125-135). doi: 10.1680/jmuen.18.00019
2. Thomas Telford Ltd. Johnson MI. The landscape of chronic pain: broader perspectives. *Medicina*. 2019 May 21;55(5):182. doi: 10.3390/medicina55050182
3. Roseen EJ, McNaughton DT, Harrison S, Downie AS, Øverås CK, Nim CG, Jenkins HJ, Young JJ, Hartvigsen J, Stone KL, Ensrud KE. Association of back pain with all-cause and cause-specific mortality among older men: a cohort study. *Pain Medicine*. 2024 Aug;25(8):505-13. doi: 10.1093/pm/pnae040
4. Mutubuki EN, Beljon Y, Maas ET, Huygen FJ, Ostelo RW, Van Tulder MW, Van Dongen JM. The longitudinal relationships between pain severity and disability versus health-related quality of life and costs among chronic low back pain patients. *Quality of life research*. 2020 Jan;29:275-87. doi: 10.1007/s11136-019-02302-w
5. Timmers I, Quaedflieg CWEM, Hsu C, Heathcote LC, Rovnaghi CR, Simons LE. The interaction between stress and chronic pain through the lens of threat learning. *Neurosci Biobehav Rev*. 2019 Dec;107:641-655. doi: 10.1016/j.neubiorev.2019.10.007
6. Hnatešen D, Pavić R, Radoš I, Dimitrijević I, Budrovac D, Čebolin M, Gusar I. Quality of Life and Mental Distress in Patients with Chronic Low Back Pain: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2022 Aug 26;19(17):10657. doi: 10.3390/ijerph191710657
7. Bilen A, Kucukkepeci H. Pain intensity, depression, and anxiety levels among patients with chronic pain during COVID-19 pandemic. *The Journal of Nervous and Mental Disease*. 2022 Apr 1;210(4):270-5. doi: 10.1097/NMD.0000000000001466



8. Alshehri MM, Alqhtani AM, Gharawi SH, Sharahily RA, Fathi WA, Alnamy SG, Alothman SA, Alshehri YS, Alhowimel AS, Alqahtani BA, Alenazi AM. Prevalence of lower back pain and its associations with lifestyle behaviors among college students in Saudi Arabia. *BMC Musculoskelet Disord*. 2023 Aug 11;24(1):646. doi: 10.1186/s12891-023-06683-5
9. Velasco-Durantez V, Cruz-Castellanos P, Hernandez R, Rodriguez-Gonzalez A, Fernandez Montes A, Gallego A, Manzano-Fernandez A, Sorribes E, Zafra M, Carmona-Bayonas A, Calderon C. Prospective study of predictors for anxiety, depression, and somatization in a sample of 1807 cancer patients. *Scientific Reports*. 2024 Feb 7;14(1):3188. doi: 10.1038/s41598-024-53212-y
10. Jiang Y, Wang Y, Wang R, Zhang X, Wang X. Differences in pain, disability, and psychological function in low back pain patients with and without anxiety. *Front Physiol*. 2022 Nov 3;13:906461. doi: 10.3389/fphys.2022.906461
11. Barbosa FM, Vieira ÉB, Garcia JB. Beliefs and attitudes in patients with chronic low back pain. *BrJP*. 2018 Apr;1:116-21. doi: 10.5935/2595-0118.20180023
12. Corrêa LA, Mathieson S, Meziat-Filho NAM, Reis FJ, Ferreira AS, Nogueira LAC. Which psychosocial factors are related to severe pain and functional limitation in patients with low back pain?: Psychosocial factors related to severe low back pain. *Braz J Phys Ther*. 2022 May-Jun;26(3):100413. doi: 10.1016/j.bjpt.2022.100413
13. Hartvigsen J, Hancock MJ, Kongsted A, et al. What low back pain is and why we need to pay attention. *Lancet*. 2018;391(10137):2356-2367. doi: 10.1016/S0140-6736(18)30480-X
14. Wertli MM, Held U, Lis A, Campello M, Weiser S. Both positive and negative beliefs are important in patients with spine pain: findings from the Occupational and Industrial Orthopaedic Center registry. *Spine J*. 2018;18(8):1463-1474. doi: 10.1016/j.spinee.2017.07.166
15. Caneiro JP, Bunzli S, O'Sullivan P. Beliefs about the body and pain: the critical role in musculoskeletal pain management. *Braz J Phys Ther*. 2021;25(1):17-29. doi: 10.1016/j.bjpt.2020.06.003
16. Tabriz ER, Mohammadi R, Roshandel GR, Talebi R. Pain Beliefs and Perceptions and Their Relationship with Coping Strategies, Stress, Anxiety, and Depression in Patients with Cancer. *Indian J Palliat Care*. 2019 Jan-Mar;25(1):61-65.
17. Berk E, Baykara S. The relationship between disease severity and defense mechanisms in fibromyalgia syndrome. *Turk J Phys Med Rehabil*. 2020 Mar 3;66(1):47-53. doi: 10.5606/tftrd.2020.3331
18. Galvez-Sánchez CM, Montoro Aguilar CI. Migraine and Neuroticism: A Scoping Review. *Behav Sci (Basel)*. 2022 Jan 28;12(2):30. doi: 10.3390/bs12020030
19. Masoudnia E, pournaghi J, Bahemmat Z. The comparison of Coping Strategies against Stressful Situations in Patients with Peptic Ulcer Symptoms and Healthy People with Ages 20 to 50 Years Old. *North Khorasan University of Medical Sciences* 2016; 8 (2) :341-352. doi: 10.18869/acadpub.jnkums.8.2.341
20. Delavar A. Research methods in psychology and educational sciences. Tehran: Roshd. 2016:100-99.
21. Skevington SM, Tucker C. Designing response scales for cross-cultural use in health care: data from the development of the UK WHOQOL. *Br J Med Psychol*. 1999 Mar;72 (Pt 1):51-61. doi: 10.1348/000711299159817
22. Vahedi S. World Health Organization Quality-of-Life Scale (WHOQOL-BREF): Analyses of Their Item Response Theory Properties Based on the Graded Responses Model. *Iran J Psychiatry*. 2010 Fall;5(4):140-53.
23. Weissman AN, Beck AT. Development and validation of the dysfunctional attitude scale: a preliminary investigation. (1978).
24. Ebrahimi A, Samouei R, Mousavii SG, Bornamanesh AR. Development and validation of 26-item dysfunctional attitude scale. *Asia-Pacific Psychiatry*. 2013 Jun;5(2):101-7. doi: 10.1111/appy.12020
25. Andrews, G., Singh, M., & Bond, M. The Defense Style Questionnaire. *Journal of Nervous and Mental Disease*, 1993;181(4): 246-56. doi: 10.1097/00005053-199304000-00006
26. Besharat MA, Irawani M, Sharifi M. An investigation of the relationship between attachment styles and defense mechanisms. *Journal of Psychology*. 2001; 5(3): 277-89.
27. Husky MM, Ferdous Farin F, Compagnone P, Fermanian C, Kovess-Masfety V. Chronic back pain and its association with quality of life in a large French population survey. Health and quality of life outcomes. 2018 Dec;16:1-9. doi: 10.1186/s12955-018-1018-4
28. Pericot-Mozo X, Suñer-Soler R, Reig-Garcia G, Patiño-Masó J, Sitjar-Suñer M, Masià-Plana A, Bertran-Noguer C. Quality of Life in Patients with Chronic Low Back Pain and Differences by Sex: A Longitudinal Study. *Journal of Personalized Medicine*. 2024 May 8;14(5):496. doi: 10.3390/jpm14050496
29. Xia W, Ou M, Chen Y, Chen F, Yan M, Xiao Z, Xu X. Experiences of patients with advanced cancer coping with chronic pain: a qualitative analysis. *BMC Palliat Care*. 2024 Apr 10;23(1):94. doi: 10.1186/s12904-024-01418-2. PMID: 38600476; PMCID: PMC11005139. doi: 10.1186/s12904-024-01418-2
30. Békés V, Starrs CJ, Perry JC, Prout TA, Conversano C, Di Giuseppe M. Defense mechanisms are associated with mental health symptoms across six countries. *Res Psychother*. 2023 Dec 31;26(3):729. doi: 10.4081/ripppo.2023.729
31. Romeo A, Benfante A, Geminiani GC, Castelli L. Personality, Defense Mechanisms and Psychological Distress in Women with Fibromyalgia. *Behav Sci (Basel)*. 2022 Jan 7;12(1):10. doi: 10.3390/bs12010010

