

# The Relationship Between Pain Acceptance and Acceptance of Illness in Individuals with Rheumatoid Arthritis

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## Abstract

**Objective:** Managing treatment and symptoms of chronic diseases without accepting the illness is challenging. This study aimed to determine the relationship between pain acceptance and the acceptance of illness in individuals with rheumatoid arthritis (RA).

**Methods:** In this descriptive study of 123 people diagnosed with rheumatoid arthritis (RA), data were collected through a questionnaire. The questionnaire included a Patient Information Form, Visual Analog Scale (VAS), Health Assessment Questionnaire (HAQ), Disease Activity Score 28 (DAS28), Chronic Pain Acceptance Questionnaire (CPAQ), and Acceptance of Illness Scale (AIS).

**Results:** The mean chronic pain acceptance score of individuals with RA was  $55.32 \pm 12.96$ , and the mean acceptance of illness score was  $25.00 \pm 8.02$ . A statistically significant relationship existed between levels of pain measured by VAS and CPAQ ( $r = -0.184, P = .042$ ). A statistically significant correlation existed between AIS and CPAQ total score ( $r = 0.284, P = .001$ ).

**Conclusion:** As the levels of pain acceptance increased in RA patients, the levels of pain decreased, and the levels of acceptance of the illness increased. Patients must first acknowledge and accept their illness to follow their treatment plan effectively. Considering that the pain acceptance of individuals diagnosed with RA affects the level of acceptance of illness, it is essential to evaluate patients' pain and disease acceptance processes and support patients to increase treatment success.

**Keywords:** Acceptance process, illness behavior, pain, physically disabled, rheumatoid arthritis

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## Introduction

Rheumatoid arthritis (RA) is a persistent autoimmune condition marked by joint inflammation, leading to pain, cartilage degradation, and structural alterations within the affected joints.<sup>1</sup> Individuals with RA commonly experience pain as their primary symptom.<sup>2</sup> Although the illness has improved considerably in recent years with more comprehensive treatment, a significant proportion of patients continue to complain of pain.<sup>1,3</sup> Pain in individuals with RA is associated with decreased health, functionality,<sup>4</sup> self-efficacy,<sup>5,6</sup> and quality of life.<sup>3,4</sup>

Clinical findings, such as increased disease activity and functional dependence, contribute to worsening pain perception in individuals with RA.<sup>4,7,10</sup> Pain experience is influenced by many factors, such as socio-economic status, lifestyle, and culture.<sup>11</sup> Acceptance is one of the factors to consider.<sup>12,13</sup> Acceptance is "the willingness to experience continuing pain without needing to reduce, avoid, or otherwise change it."<sup>14</sup> In addition to pain acceptance, acceptance of illness is also very important in chronic disease management as it affects self-care practices, lifestyle, and quality of life.<sup>15,16</sup>

When analyzing studies involving individuals with various chronic diseases, it was found that those with a higher acceptance of their illness tended to have better treatment adherence.<sup>17,18</sup> Additionally, they experienced fewer uncomfortable and side effects associated with the treatments.<sup>18,19</sup> Considering that compliance with treatment increases as the level of acceptance of the illness increases, it is essential to evaluate the level of acceptance. Studies evaluate pain experience and acceptance in individuals with RA.<sup>5,12,13,20,21</sup> However, no study examines pain and disease acceptance in individuals with RA. Based on this information, this study aims to determine the relationship between pain acceptance and the acceptance of illness in individuals with RA.

## Material and Methods

This descriptive study was conducted with individuals diagnosed with RA who applied to the Rheumatology outpatient clinic between June 2022 and March 2023. According to the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) 2010 criteria,<sup>22</sup> being diagnosed with RA, being 18 years of age or older, being able to communicate, and agreeing to participate in the study are among the inclusion criteria. Individuals with a diagnosis of less than 1 year, who could not communicate and had a diagnosed psychological disorder, were excluded from the study. Data from 123 patients were analyzed. A post-hoc statistical power analysis was performed using G\*Power software, version 3.1.9.6 for Mac (Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany) to assess whether the sample size was sufficient. Considering the correlation analysis between AIS and CPAQ, the “post hoc” power analysis resulted in a calculated value of 0.895 ( $\alpha=0.05$ ). The analysis results demonstrated that the sample size in our study adequately represents the population.<sup>23</sup>

## Data Collection

The study's data were collected through a questionnaire prepared by the researchers. The questionnaire consisted of a patient information form to determine the descriptive characteristics of the participants, the Visual Analog Scale to assess levels of pain, the Health Assessment Questionnaire to evaluate functional status, the Disease Activity Score 28 to assess current disease activity, the Chronic Pain Acceptance Questionnaire to measure pain acceptance, and the Acceptance of Illness Scale to measure the individual's level of illness acceptance. This questionnaire was administered by the face-to-face interview method in approximately 15 minutes.

## Patient Information Form

The questionnaire, prepared by the researchers in line with the literature review, consisted

of twelve questions about the participants' sociodemographics (age, gender, marital status, educational status, etc.) and disease characteristics (duration of disease, additional chronic diseases, etc.).

## Visual Analog Scale

The Visual Analog Scale (VAS) is a measurement method that can be easily applied and used to assess subjective experiences. Individuals make a mark on a 10 cm or 100 mm line.<sup>24</sup> Today, nurses frequently use VAS to assess pain.<sup>25</sup> In this study, the scale used for pain assessment was used by marking a 10 cm line. Each end of the line indicates extremes of pain sensation from “no pain (0)” to “very severe pain (10).”

## Health Assessment Questionnaire

The Health Assessment Questionnaire (HAQ) was developed by Pincus et al in 1983<sup>26</sup> and adapted into Turkish in 2004 by Küçükdeveci et al.<sup>27</sup> The questionnaire examines 8 activities with 20 questions. The scores are summed and then divided by 8. The total score obtained varies between 0 and 3. A high score indicates a high level of functional dependence.

## Disease Activity Score 28

The Disease Activity Score 28 (DAS28) based on C-reactive protein (CRP) was used to measure disease activity. The DAS28 incorporates information on general health, the number of tender/swollen joints, serum CRP levels, and VAS level into an overall score. The DAS28 scores are grouped as follows: 2.6 and below: remission, 2.6 to 3.2: low disease activity, 3.2 to 5.1: moderate disease activity, and above 5.1: high disease activity.<sup>28</sup>

## Chronic Pain Acceptance Questionnaire

The Chronic Pain Acceptance Questionnaire (CPAQ) was designed to measure pain acceptance. Based on content and factor structure analyses, the original 34-item revised questionnaire<sup>29</sup> was validated in an adult population.<sup>14,30</sup> Cronbach's  $\alpha$  value of the CPAQ was 0.78.<sup>30</sup> The Turkish validity and reliability study of the CPAQ was conducted by Akmaz et al,<sup>25</sup> and Cronbach's  $\alpha$  value was reported as 0.94. The questionnaire consists of 20 items. The questionnaire consists of 2 sub-dimensions: activity engagement and pain willingness. The CPAQ has a total score (between 0 and 120) and subscale scores (activity engagement between 0 and 66; pain willingness between 0 and 54). High scores mean high pain acceptance.

## Acceptance of Illness Scale

Felton and Revenson developed the Acceptance of Illness Scale (AIS) to determine the level of acceptance of illness.<sup>31</sup> It was adapted into Turkish by Besen and Esen in 2011. The 5-point Likert-type scale consists of 8 items. Cronbach's  $\alpha$  value of the AIS was 0.79.<sup>15</sup> The lowest score obtained from the scale is 8, and the highest is 40. A high score indicates a high level of disease acceptance.

## Statistical Analysis

The data were analyzed using SPSS 28.0 (SPSS, An IBM Company, Chicago, IL, USA). Compliance with normal distribution was evaluated with the Kolmogorov–Smirnov test. Continuous variables were expressed as mean, SD, median, minimum (min), and maximum (max) and categorical variables as numbers (percentage). Mann–Whitney *U* test was used to evaluate non-normally distributed categorical data. The relationships between numerical variables were evaluated using Spearman correlation analysis. The significance level was accepted as  $P < .05$ .

## Ethical Considerations

This study was approved by the university's Ethics Committee (Decision date and number: April 27, 2022, 2022/04). Permission was obtained from the institution where the study was conducted and from the responsible authors for the scales used. Informed consent was obtained from the individuals participating in the study.

## Results

### Sociodemographic and Disease Characteristics

The mean age of 123 individuals with RA included in the study was  $52.21 \pm 13.25$  years. Among the individuals with RA, 88.6% were female, 74.0% were married, 61.0% had 5 years of education or less, 75.6% were unemployed, and 51.2% had income equal to expenses (Table 1). It was observed that 57.7% of the participants had no additional chronic diseases, 75.6% used DMARDs, 7.3% used corticosteroids, and 81.3% used biologic drugs (Table 2).

The mean disease duration of RA patients was  $13.37 \pm 7.70$  years, the mean disease activity score DAS28 was  $2.60 \pm 1.37$ , and the mean HAQ score was  $0.28 \pm 0.31$  (Table 3). According to the DAS28 score, 82 (66.7%) patients were in remission, 8 (6.5%) were in low disease activity, 22 (17.9%) were in moderate disease activity, and 11 (8.9%) were in the

## Main Points

- Acceptance is essential to manage the disease and its symptoms effectively.
- Increased pain acceptance in individuals with RA is associated with decreased pain levels and increased acceptance of illness.
- Healthcare providers should support pain and illness acceptance to enhance treatment outcomes in RA.

**Table 1.** Distribution of Sociodemographic Characteristics of the Participants

Characteristics	n (%)	CPAQ			AIS		
		Median (Min–Max)	Mean ± SD	Z/P	Median (Min–Max)	Mean ± SD	Z/P
<b>Gender</b>							
Male	14 (11.4)	64 (19-98)	62.36 ± 17.87	-2.291	27.5 (9-40)	26.64 ± 10.45	-.945
Female	109 (88.6)	55 (28-93)	54.42 ± 12.01	0.022	24 (12-40)	24.80 ± 7.69	0.345
<b>Marital status</b>							
Married	91 (74.0)	55 (28-98)	56.58 ± 12.06	-1.644	25 (9-40)	24.95 ± 8.33	-.141
Single	32 (26.0)	50 (19-88)	51.75 ± 14.88	0.100	24.5 (12-40)	25.19 ± 7.21	0.888
<b>Educational status</b>							
≤5 years	75 (61.0)	53 (19-93)	53.01 ± 12.06	-2.779	23 (12-40)	23.44 ± 7.47	-2.200
>5 years	48 (39.0)	58 (32-98)	58.94 ± 13.62	0.005	28.5 (9-40)	27.46 ± 8.33	0.028
<b>Employment status</b>							
Employed	30 (24.4)	61.5 (38-98)	62.03 ± 13.15	-3.187	32.5 (11-40)	29.03 ± 8.54	-3.182
Unemployed	93 (75.6)	53 (19-93)	53.16 ± 12.21	0.001	23 (9-40)	23.71 ± 7.44	0.001
<b>Income status</b>							
Income less than expenses	60 (48.8)	52 (28-93)	52.42 ± 12.53	-2.910	22.5 (9-40)	22.82 ± 6.87	-2.747
Income equal to expenses	63 (51.2)	60 (19-98)	58.09 ± 12.85	0.004	30 (11-40)	27.10 ± 8.52	0.006

Data are shown as n (%) for categorical variables. AIS, Acceptance of Illness Scale; CPAQ, Chronic Pain Acceptance Questionnaire; Max, Maximum; Min, Minimum; Z, Mann–Whitney U test.

high disease activity group. Among the 52 (42.3%) individuals with additional chronic diseases, the most common diseases were hypertension (21, 40.4%), diabetes mellitus (9, 17.3%), asthma (7, 13.5%), and heart failure (7, 13.5%). Of the 119 (96.7%) individuals who stated that they received information about RA, 116 (94.3%) received information from a physician. The most common source of information about the disease was physicians for 93 (75.6%) of the participants, nurses for 26 (21.1%), and the internet for 4 (3.3%).

#### Chronic Pain Acceptance Questionnaire and Acceptance of Illness Scale According to Patients' Characteristics

The mean score of chronic pain acceptance of individuals with RA was  $55.32 \pm 12.96$ , while the mean scores of the subscales were determined as activity engagement  $36.02 \pm 12.97$  and pain willingness  $19.30 \pm 10.13$ , respectively. The RA patients' mean acceptance of illness score was  $25.00 \pm 8.02$  (Table 3). The mean VAS pain score of the patients was  $3.26 \pm 2.81$ .

When the mean scores of CPAQ and AIS were analyzed according to the sociodemographic characteristics of the participants, it was found that the mean scores of patients with more than 5 years of education, who were employed, and whose income was equal to/more than their expenses were statistically significantly higher. While the mean AIS score did not show a significant difference according to the gender variable, the mean CPAQ score was statistically significantly higher in men (Table 1). No relationship was found between disease characteristics and mean CPAQ and AIS scores (Table 2).

#### The Relationship Between CPAQ and AIS Scores

A statistically positive, weak, and significant relationship existed between levels of pain measured by VAS and age in individuals with RA. A statistically positive, strong, and significant relationship existed between VAS, HAQ, and DAS28. A statistically negative, weak, and significant relationship was found between AIS and age. The Acceptance of Illness Scale (AIS)

was found to have a weak and significant negative correlation with HAQ and DAS28. A positive, weak, and significant relationship existed between AIS and CPAQ total score and sub-dimensions. There was a weak and significant negative correlation between CPAQ and HAQ and a weak and significant positive correlation between CPAQ and AIS (Table 3).

#### Discussion

Pain is a personal and economic burden that affects daily life. It is one of the primary reasons individuals seek medical assistance.<sup>11,32,33</sup> This study evaluated the relationship between pain acceptance levels and acceptance of illness levels in individuals with RA.

In our study, pain acceptance and the acceptance of illness levels of RA patients were found to be moderate. Compared to other studies, the mean score of pain acceptance level was lower.<sup>5,34,36</sup> It is thought that patients with different diseases and sociodemographic characteristics may affect this difference. This

**Table 2.** Distribution of Disease Characteristics of the Participants

Characteristics	n (%)	CPAQ			AIS		
		Median (Min–Max)	Mean ± SD	Z/P	Median (Min–Max)	Mean ± SD	Z/P
Additional chronic disease							
Yes	52 (42.3)	54 (19-93)	54.15 ± 13.96	-1.345	24 (9-40)	23.87 ± 7.40	-0.797
No	71 (57.7)	55 (29-98)	56.18 ± 12.21	0.179	25 (11-40)	25.85 ± 8.41	0.426
DMARD use							
Yes	30 (24.4)	54 (33-73)	23.97 ± 8.19	-0.908	23.5 (12-40)	23.97 ± 8.19	-0.996
No	93 (75.6)	55 (19-98)	55.99 ± 13.65	0.364	25 (9-40)	25.34 ± 7.99	0.319
Corticosteroid use							
Yes	9 (7.3)	45 (33-66)	49.44 ± 12.45	-1.726	16 (12-36)	20.56 ± 9.07	-1.414
No	114 (92.7)	55 (19-98)	55.79 ± 12.94	0.084	25 (9-40)	25.36 ± 7.87	0.157
Biological drug use							
Yes	100 (81.3)	55 (19-98)	55.48 ± 13.51	-0.227	25 (9-40)	25.05 ± 7.93	-0.042
No	23 (18.7)	58 (33-73)	54.65 ± 10.48	0.820	24 (13-40)	24.82 ± 8.62	0.966

Data are shown as n (%) for categorical variables. AIS, Acceptance of Illness Scale; CPAQ, Chronic Pain Acceptance Questionnaire; DMARDs, disease-modifying antirheumatic drugs; Max, Maximum; Min, Minimum; Z, Mann–Whitney U test.

study found that RA patients with higher education and income levels and who were employed had higher levels of pain and acceptance of illness. This result suggests that individuals with higher levels of education and economic power may have more resources and different approaches to coping with health problems.<sup>17,34,37,40</sup> Access to health services should be facilitated, and individuals should be supported in health education and management.<sup>41</sup>

In individuals with RA, physical function is 24%-34% lower compared to healthy individuals.<sup>10</sup> Rheumatoid arthritis is a chronic disease that affects multiple systems and is typically characterized by symmetrical, deforming polyarthritis, often resulting in bone erosions, deformities, and impaired functionality.<sup>42</sup> These problems that develop in RA may affect physical function and cause patients to have difficulty performing activities of daily living.<sup>5,43</sup> High scores on the HAQ, whose aim is to assess patients'

physical function and determine functional dependence, indicate a high level of functional dependence.<sup>28,42</sup> In this study, VAS pain scores increased as the HAQ scores of the participants increased. It has been reported in the literature that pain predicts functional capacity and is associated with high values of HAQ, which is consistent with the study results.<sup>4,7,10</sup>

In this study, it was observed that levels of pain increased as the DAS28 score increased.

**Table 3.** Correlation Analysis Between Mean Age, Disease Duration, VAS, HAQ, DAS28, AIS, and CPAQ

			VAS		AIS		CPAQ	
	Median (Min–Max)	Mean ± SD	r	P	r	P	r	P
Age	53 (19-75)	52.21 ± 13.25	0.178	.049	-0.262	.003	-0.129	.154
Disease duration	12 (1-37)	13.37 ± 7.70	-0.073	.424	0.022	.810	0.029	.752
HAQ	0.25 (0.00-1.10)	0.28 ± 0.31	0.782	<.001	-0.254	.005	-0.239	.008
DAS28	1.96 (1.19-6.70)	2.60 ± 1.37	0.825	<.001	-0.214	.017	-0.116	.201
AIS	25 (9-40)	25.00 ± 8.02	-0.173	.056	–	–	0.284	.001
CPAQ	55 (19-98)	55.32 ± 12.96	-0.184	.042	0.284	.001	–	–
Activity engagement	37 (2-66)	36.02 ± 12.97	-0.063	.488	0.184	.041	0.724	<.001
Pain willingness	10 (0-50)	19.30 ± 10.13	-0.191	.034	0.197	.029	0.321	<.001

Significant values ( $P > .05$ ) are shown in bold. AIS, Acceptance of Illness Scale; CPAQ, Chronic Pain Acceptance Questionnaire; DAS28, Disease Activity Score; HAQ, Health Assessment Questionnaire; Max, maximum; Min, minimum; r, Spearman correlation analysis; VAS, Visual Analog Scale.

Previous studies have reported that pain in individuals with RA is associated with high values of DAS28.<sup>7,8,44</sup> Bilberg et al<sup>8</sup> concluded that the number of tender joints, activity limitation, and general health were worse in patients with pain. These results, which were also reported in previous studies, can be interpreted as the severity of the disease, that is, the severity of inflammation causes pain.<sup>4,7,8</sup>

Acceptance is an essential process in responding to and adapting to pain.<sup>13</sup> This process involves the person being experientially open to the present moment, promotes a change in how symptoms are experienced, and influences the behavior of individuals.<sup>13,30</sup> In this study, there was a statistically negative, weak, and significant relationship between levels of pain and levels of pain acceptance. Similarly, Costa et al<sup>12</sup> reported that high levels of pain experienced by individuals with RA were associated with low levels of pain acceptance. Pinto-Gouveia et al<sup>13</sup> concluded that higher levels of pain at the onset of RA are associated with lower levels of pain acceptance. These results indicate that the patient finds low levels of pain acceptable but does not accept high levels of pain. In addition, the fact that the mean score of the *pain willingness* subscale of the pain acceptance scale was relatively low supports this finding.

Acceptance is about both reaction and adaptation in situations such as chronic pain.<sup>13</sup> In a qualitative study of individuals with RA, it was reported that patients experienced negative emotions before the acceptance process, but after the acceptance process, they reevaluated their priorities and developed strategies to continue valuable activities.<sup>45</sup> In this study, high acceptance of illness level was associated with an increased pain acceptance level. Those who accept their illness also tolerate pain more easily. Therefore, evaluating their acceptance level after an RA diagnosis is essential. This evaluation will contribute to more effective disease management by providing an individualized approach to the patient.

It has been reported that individuals with higher levels of disease acceptance have better treatment compliance and experience fewer side effects.<sup>17-19</sup> Identifying the factors that influence patients' compliance with the recommended treatment can better control disease activity, influence the course of the disease, and prevent disease-related complications.<sup>46</sup> This study found a relationship between high AIS levels and low HAQ and DAS28 levels in RA patients. Considering that

the level of acceptance in individuals with RA is associated with disease activity and functional dependence levels, it is thought that the assessment of acceptance levels is important in terms of the course of the disease. Therefore, health professionals should perform these assessments through effective communication with patients and provide appropriate support and guidance according to the results.

This study has some limitations. Since the study was limited to individuals with rheumatoid arthritis admitted to a university hospital in a certain period, the results can only be generalized to the relevant population. The scales used in the study are valid and reliable, but the data obtained are based on self-report. The results of this descriptive study do not prove causality.

In conclusion, high pain acceptance was associated with low levels of pain and increased acceptance of illness in individuals with RA. Pain is a common finding in individuals with RA, and it is thought that the acceptance process may be beneficial for coping with this condition. If an effective acceptance of the illness occurs, treatment adherence can be improved, disease activity can be reduced, and quality of life can be enhanced. Health professionals should assess the levels of pain and illness acceptance in individuals with RA and undertake interventions to support their acceptance processes. One of these interventions involves educating patients about pain and illness acceptance. Targeting not only information but also the recognized determinants of behavior enhances the likelihood of patient education influencing disease management. Accordingly, it may be recommended that future research should focus on a more detailed understanding of this process and how patients' acceptance levels can be integrated into disease management strategies.

**Ethics Committee Approval:** This study was approved by the Ethics Committee of Bursa Uludağ University (Approval No: 2022/04; Date: 27.04.2022).

**Informed Consent:** Informed consent was obtained from the individuals participating in the study.

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## References

1. Eberhard A, Bergman S, Mandl T, et al. Predictors of unacceptable pain with and without low inflammation over 5 years in early rheumatoid arthritis—an inception cohort study. *Arthritis Res Ther.* 2021;23(1):169. [CrossRef]
2. McWilliams DF, Dawson O, Young A, Kiely PDW, Ferguson E, Walsh DA. Discrete trajectories of resolving and persistent pain in people with rheumatoid arthritis despite undergoing treatment for inflammation: results from three UK cohorts. *J Pain.* 2019;20(6):716-727. [CrossRef]
3. Olofsson T, Wallman JK, Jöud A, et al. Pain over two years after start of biologic versus conventional combination treatment in early rheumatoid arthritis: results from a Swedish randomized controlled trial. *Arthritis Care Res.* 2021;73(9):1312-1321. [CrossRef]
4. Svensson B, Forslind K, Andersson M. Unacceptable pain in the BARFOT inception cohort of patients with rheumatoid arthritis: a long-term study. *Scand J Rheumatol.* 2020;49(5):371-378. [CrossRef]
5. Ahlstrand I, Vaz S, Falkmer T, Thyberg I, Björk M. Self-efficacy and pain acceptance as mediators of the relationship between pain and performance of valued life activities in women and men with rheumatoid arthritis. *Clin Rehabil.* 2017;31(6):824-834. [CrossRef]
6. Martinez-Calderon J, Meeus M, Struyf F, Luque-Suarez A. The role of self-efficacy in pain intensity, function, psychological factors, health behaviors, and quality of life in people with rheumatoid arthritis: a systematic review. *Physiother Theor Pract.* 2020;36(1):21-37. [CrossRef]
7. Andersson MLE, Svensson B, Bergman S. Chronic widespread pain in patients with rheumatoid arthritis and the relation between pain and disease activity measures over the first 5 years. *J Rheumatol.* 2013;40(12):1977-1985. [CrossRef]
8. Bilberg A, Bremell T, Bjersing J, Mannerkorpi K. High prevalence of widespread pain in women with early rheumatoid arthritis. *Scand J Rheumatol.* 2018;47(6):447-454. [CrossRef]
9. Chancay MG, Guendeschadze SN, Blanco I. Types of pain and their psychosocial impact in women with rheumatoid arthritis. *Womens Midlife Health.* 2019;5(1):3. [CrossRef]
10. Lemmey AB, Wilkinson TJ, Clayton RJ, et al. Tight control of disease activity fails to improve body composition or physical function in rheumatoid arthritis patients. *Rheumatology (Oxford).* 2016;55(10):1736-1745. [CrossRef]
11. Hadley G, Novitch MB. CBT and CFT for chronic pain. *Curr Pain Headache Rep.* 2021;25(5):35. [CrossRef]

12. Costa J, Pinto-Gouveia J, Marôco J. Chronic pain experience on depression and physical disability: the importance of acceptance and mindfulness-based processes in a sample with rheumatoid arthritis. *J Health Psychol.* 2019;24(2):153-165. [\[CrossRef\]](#)
13. Pinto-Gouveia J, Costa J, Marôco J. The first 2 years of rheumatoid arthritis: the influence of acceptance on pain, physical limitation and depression. *J Health Psychol.* 2015;20(1):102-112. [\[CrossRef\]](#)
14. McCracken LM. Behavioral constituents of chronic pain acceptance: results from factor analysis of the Chronic Pain Acceptance Questionnaire. *J Back Musculoskelet Rehabil.* 1999;13(2-3):93-100. [\[CrossRef\]](#)
15. Besen D, Esen A. The adaptation of the Acceptance of Illness Scale to the diabetic patients in Turkish society. *TAF Prev Med Bull.* 2011;10(2):155-164. [\[CrossRef\]](#)
16. Sadeghiazar S, Mobasseri K, Gholizadeh L, Sarbakhsh P, Allahbakhshian A. Illness acceptance, medication adherence and the quality of life in patients with heart failure: a path analysis of a conceptual model. *Appl Nurs Res.* 2022;65:151583. [\[CrossRef\]](#)
17. Akça Doğan D, Ek H, Zengi S, Pehlivan S, Ersoy C. Association between effect of acceptance of illness and medication adherence, metabolic control, and risk of diabetic foot in individuals with diabetes. *Prim Care Diabetes.* 2023;17(4):334-340. [\[CrossRef\]](#)
18. Jankowska-Polarńska B, Chudiak A, Uchmanowicz I, Dudek K, Mazur G. Selected factors affecting adherence in the pharmacological treatment of arterial hypertension. *Patient Prefer Adherence.* 2017;11:363-371. [\[CrossRef\]](#)
19. Kołtuniuk A, Rosińczuk J. The levels of depression, anxiety, acceptance of illness, and medication adherence in patients with multiple sclerosis - descriptive and correlational study. *Int J Med Sci.* 2021;18(1):216-225. [\[CrossRef\]](#)
20. Costa J, Pinto-Gouveia J, Marôco J. Pain related catastrophizing on physical limitation in rheumatoid arthritis patients. Is acceptance important? *Span J Psychol.* 2014;17:E31. [\[CrossRef\]](#)
21. Pinel L, Perez-Nieto MA, Redondo M, Rodríguez-Rodríguez L, León L. Anxiety, reinforcement sensitivity and social context in accepting the experience of pain among rheumatoid arthritis patients. *Front Psychiatry.* 2020;11:554990. [\[CrossRef\]](#)
22. Aletaha D, Neogi T, Silman AJ, et al. 2010 Rheumatoid arthritis classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative. *Arthritis Rheum.* 2010;62(9):2569-2581. [\[CrossRef\]](#)
23. Kang H. Sample size determination and power analysis using the G\*Power software. *J Educ Eval Health Prof.* 2021;18:17. [\[CrossRef\]](#)
24. Price DD, McGrath PA, Rafii A, Buckingham B. The validation of visual analogue scales as ratio scale measures for chronic and experimental pain. *Pain.* 1983;17(1):45-56. [\[CrossRef\]](#)
25. Akmaz HE, Uyar M, Kuzeyli Yıldırım Y, Akin Korhan E. Validity and reliability of the Turkish chronic pain acceptance questionnaire. *Balk Med J.* 2018;35(3):238-244. [\[CrossRef\]](#)
26. Pincus T, Summey JA, Soraci SA Jr, Wallston KA, Hummon NP. Assessment of patient satisfaction in activities of daily living using a modified stanford health assessment questionnaire. *Arthritis Rheum Off J Am Coll Rheumatol.* 1983;26(1):1346-1353. [\[CrossRef\]](#)
27. Küçükdeveci AA, Sahin H, Ataman S, Griffiths B, Tennant A. Issues in cross-cultural validity: example from the adaptation, reliability, and validity testing of a Turkish version of the Stanford Health Assessment Questionnaire. *Arthritis Rheum.* 2004;51(1):14-19. [\[CrossRef\]](#)
28. Fransen J, van Riel PLCM. The disease activity score and the EULAR response criteria. *Rheum Dis Clin N Am.* 2009;35(4):745-757. [\[CrossRef\]](#)
29. Geiser DS. *A Comparison of Acceptance-Focused and Control-Focused Psychological Treatments in a Chronic Pain Treatment Center.* [Doctoral dissertation]. USA: University of Nevada; 1992.
30. McCracken LM, Vowles KE, Eccleston C. Acceptance of chronic pain: component analysis and a revised assessment method. *Pain.* 2004;107(1-2):159-166. [\[CrossRef\]](#)
31. Felton BJ, Revenson TA. Coping with chronic illness: a study of illness controllability and the influence of coping strategies on psychological adjustment. *J Consult Clin Psychol.* 1984;52(3):343-353. [\[CrossRef\]](#)
32. Cohen SP, Vase L, Hooten WM. Chronic pain: an update on burden, best practices, and new advances. *Lancet.* 2021;397(10289):2082-2097. [\[CrossRef\]](#)
33. Treede RD, Rief W, Barke A, et al. Chronic pain as a symptom or a disease: the IASP Classification of Chronic Pain for the International Classification of Diseases (ICD-11). *Pain.* 2019;160(1):19-27. [\[CrossRef\]](#)
34. Çınar HG, Yılmaz D, Akin E. Pain acceptance levels of patients with chronic pain. *Med (Baltim).* 2020;99(17):e19851. [\[CrossRef\]](#)
35. Li T, Liu Y, Sheng R, Yin J, Wu X, Xu H. Correlation between chronic pain acceptance and clinical variables in ankylosing spondylitis and its prediction role for biologics treatment. *Front Med (Lausanne).* 2020;7:17. [\[CrossRef\]](#)
36. Tangen SF, Helvik AS, Eide H, Fors EA. Pain acceptance and its impact on function and symptoms in fibromyalgia. *Scand J Pain.* 2020;20(4):727-736. [\[CrossRef\]](#)
37. Raghupathi V, Raghupathi W. The influence of education on health: an empirical assessment of OECD countries for the period 1995-2015. *Arch Public Health.* 2020;78(1):20. [\[CrossRef\]](#)
38. World Health Organization. Social determinants of health. Published 2021. Accessed August 31, 2023. Available at: [https://www.who.int/health-topics/social-determinants-of-health#tab=tab\\_1](https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1).
39. Zajacova A, Lawrence EM. The relationship between education and health: reducing disparities through a contextual approach. *Annu Rev Public Health.* 2018;39(1):273-289. [\[CrossRef\]](#)
40. Staszkievicz M, Kulesa-Mrowiecka M, Szklarczyk J, Jaworek J. Life satisfaction, generalized sense of self-efficacy and acceptance of illness in rheumatoid arthritis patients depending on age and severity of the disease. *Reumatologia.* 2023;61(3):175-185. [\[CrossRef\]](#)
41. Michou L, Julien AS, Witteman HO, et al. Measuring the impact of an educational intervention in rheumatoid arthritis: an open-label, randomized trial. *Arch Rheumatol.* 2022;37(2):169-179. [\[CrossRef\]](#)
42. Colquhoun M, Gulati M, Farah Z, Mouyis M. Clinical features of rheumatoid arthritis. *Medicine (Baltimore).* 2022;50(3):138-142. [\[CrossRef\]](#)
43. Santo RCDE, Baker JF, dos Santos LP, et al. Changes in physical function over time in rheumatoid arthritis patients: a cohort study. *PLoS One.* 2023;18(1):e0280846. [\[CrossRef\]](#)
44. Ibrahim F, Ma M, Scott DL, Scott IC. Defining the relationship between pain intensity and disease activity in patients with rheumatoid arthritis: a secondary analysis of six studies. *Arthritis Res Ther.* 2022;24(1):218. [\[CrossRef\]](#)
45. Chavare S, Natu DS. Life of Indian women with rheumatoid arthritis: a qualitative study. *IOSR J Humanit Soc Sci.* 2020;3(5):1-12.
46. Neycheva S, Naseva E, Batalov Z, Karalilova R, Batalov A. Adherence to biological therapies in patients with rheumatoid arthritis: a retrospective cohort study. *Rheumatol Int.* 2023;43(7):1287-1296. [\[CrossRef\]](#)