Health and Quality of Life Outcomes

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Validation of the Chronic Illness Adjustment Scale in Turkish patients with chronic disease

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Abstract

Objective This study aimed to adapt the Chronic Illness Adjustment Scale into Turkish and to evaluate its validity and reliability in assessing how individuals with chronic illnesses adjust to their condition.

Methods This methodological study was conducted between July 2024 and July 2025, involving 518 chronic patients who visited the internal medicine outpatient clinic of a university hospital. Data were collected using the Personal Information Form and the Chronic Illness Adjustment Scale (CIAS).

Results According to confirmatory factor analysis, the factor loadings of the scale ranged from 0.300 to 0.850, and a five-dimensional structure was confirmed. The scale's fit indices were $x^2 = 495.17$, df = 140 ($p < 0.05$), $x^2/df = 3.53$, RMSEA = 0.070, CFI = 0.94, SRMR = 0.057, TLI = 0.92, RMR = 0.044, and AIC = 652.03". The overall Cronbach's α coefficient of the scale was 0.80, and for the sub-dimensions, it ranged between 0.67 and 0.80. The validity and reliability of CIAS were proven without any changes to its original form.

Conclusion This study determined that the adapted CIAS consists of five subscales and 19 items, is compatible with Turkish culture, and is a valid and reliable scale.

Keywords Health problem, Chronic disease, Adaptation, Chronic Illness Adjustment Scale, Reliability, Validity, Turkey

Introduction

Despite advances in medical technology and treatment methods in the 21st century, chronic diseases continue to be a global health problem. According to the World Health Organisation (WHO) 2023 report, 74% of deaths worldwide are caused by chronic disease [1]. In Turkey as well, chronic diseases such as cardiovascular diseases, diabetes, and chronic respiratory diseases are significant causes of mortality and morbidity [2]. Due to advancements in healthcare services and increasing life expectancy, many people will live with one or more chronic diseases [3]. The long-term course of chronic diseases deeply affects not only patients' physical health but also their psychosocial well-being, requiring a multidisciplinary management approach [1].

Individuals with chronic diseases face various challenges, such as disease symptoms, the treatment process, restrictions in daily life, deterioration in family relationships, changes in body image, weakened coping skills, negative changes in lifestyle, loss of self-confidence, concerns about death, and questioning the meaning of life. Such experiences can significantly affect an individual's ability to adapt to their illness [4]. Adaptation is a complex and dynamic process that requires cognitive, emotional, and behavioural efforts [5]. Adjustment is a key element in the management of chronic diseases and is

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the process of accepting changes from the internal and external environment [6]. Adjustment to chronic diseases is the process by which individuals take their illness, participate in treatment and care processes, and learn to live with the disease [7] Adaptation to chronic illness is essential because a lack of adaptation can lead to various psychological and social difficulties in patients [5].

Chronic illness enables individuals to adapt to their condition, understand their situation, and make informed decisions about how to proceed [6]. The adaptation process can often be frightening and challenging for individuals with chronic illnesses [5]. Therefore, nurses should identify patients' levels of adaptation, the adaptation difficulties they encounter, and the underlying causes of these difficulties, and then plan, implement, and evaluate solution-focused nursing interventions. Nursing interventions aimed at addressing compliance problems facilitate the individual's acceptance of their illness, support their active participation in the treatment process, contribute to the sustainability of their social relationships, and help them set new goals in their lives [6]. To plan nursing interventions aimed at reducing or eliminating adaptation problems observed in chronic patients, it is first necessary to identify these problems [6]. In Turkey, Atik and Karatepe (2016) developed the "Scale Development Study: Adaptation to Chronic Illness," and Vicdan and Birgili (2018) developed the " Adaptation to Chronic Diseases Scale(ACIS)" [6, 8]. Atik and Karatepe (2016) evaluated the adaptation to chronic illnesses by addressing the physiological, psychological, and social dimensions of individuals with chronic diseases, while ACIS also evaluated the spiritual (moral) dimension in addition to the physiological, psychological, and social dimensions of patients [6] "The Chronic Illness Adjustment Scale (CIAS)" was developed to address the need for a disease adjustment scale that is valid for individuals with various types of chronic diseases. The aim of developing this tool was to create an acceptable alternative to disease-specific and context-specific tools. CIAS can explain behavioural and emotional dimensions together. CIAS also includes positive adaptation indicators such as optimism, hope, reinterpretation, and coping mechanisms. It not only identifies problems but also highlights the individual's strengths [9]. Additionally, CIAS is concise and time-efficient, comprising approximately 19 items. This study aims to demonstrate that CIAS is a valid and reliable measurement tool for the chronic patient population in Turkey. The results of this study will help healthcare professionals assess the adaptation levels of individuals with chronic illnesses and develop evidence-based interventions to enhance adaptation. Additionally, it will provide an essential contribution to research on adherence in chronic diseases for researchers.

Research questions

✓ Is the Chronic Illness Adjustment Scale (CIAS) valid in Turkish patients with chronic disease?
✓ Is the Chronic Illness Adjustment Scale (CIAS) reliable in Turkish patients with chronic disease?"

Materıals and methods

Design

This study was methodologically designed to examine the validity and reliability of the Turkish version of the Chronic Disease Adjustment Scale.

Participants and sample

There were a total of 950 individuals who were included in the study population. These patients were seen at the outpatient clinic for internal medicine at a university hospital between the months of July 2024 and July 2025. The sample consisted of patients who met the study criteria (Inclusion criteria; aged 18 years or older, diagnosed with a chronic illness at least 6 months prior, and capable of communicating effectively. Exclusion criteria; patients with acute medical conditions, cognitive or psychiatric disorders, sensory or literacy limitations preventing questionnaire completion) and agreed to participate in the study during the specified dates. In studies with a methodological design, the sample size is determined based on the total number of items in the scale used. While the subject-item ratio is generally recommended to be 10:1 in the literature, it is reported that this ratio can be reduced, but should be maintained at least at a 2:1 level [10, 11]. In this context, a sample size of at least 95 and up to 190 participants is required for the 19-item Chronic Disease Compliance Scale. During the research process, 320 patients did not meet the criteria, and 112 patients declined to participate, resulting in a final sample of 518 patients.

Data collection tools

Data were collected using the "Personal Information Form" and the "Chronic Illness Adjustment Scale (CIAS)".

Personal information form The form includes questions about the patients' age, education level, gender, marital status, current chronic illnesses, employment status, the year of diagnosis and substance use status.

Chronic Illness Adjustment Scale (CIAS) CIAS was developed by Padhy et al. in 2023 to assess the adaptation of individuals with chronic illnesses to their condition [9]. The scale consists of 19 items. It is a 4-point Likert scale, with items ranging from "Never" (1) to "Always" (4). The scale has five subscales. The subscales are: Illness denial behaviour (items 1–4), Illness-compliant behaviour

(items 5–8), Strategic positive engagement (items 9–12), Emotional support for illness (items 13–15), and Emotional engagement (items 16–19). Items 1–4 and 16–19 are reversed. As the scale score increases, compliance with chronic illnesses increases. Total scores range from 19 to 95, with higher scores indicating better adjustment to chronic illness. Alternatively, the mean item score can also be calculated by averaging the responses across all items, yielding a score between 1 and 5, which reflects the participant's average response per item. In the original development of the CIAS, the authors did not propose a cut-off point; thus, in this Turkish version we do not define one either. The values of Cronbach's alpha range from 0.76 to 0.91 in the scale that was initially proposed.

Adaptation process

Language and Content Validity In this study, a systematic approach consisting of five stages ("forward translation, expert review, back translation, pre-testing, and final version") was used in accordance with WHO translation guidelines [12]. With regard to this particular scope, CIAS was translated into Turkish by two specialists in the language. It was then distributed to ten experienced nurses who specialize in internal medicine. In order to evaluate the content and scope validity of the scale, it was requested that experts provide their thoughts. "The Content Validity Index (CVI)" was utilized in order to evaluate the opinions of the specialists. An evaluation of the expert opinions was conducted using the Davis technique, as stated by Çapık et al. (2018) [13] Experts were requested to rank each item on a scale from one to four in order to identify the degree of consistency that exists between the original English items of the scale and their Turkish translations, as well as to evaluate the ease with which the statements were rendered. The scoring system was described in the following manner: "1 point: not suitable, 2 points: somewhat suitable (revision of the statement is necessary), 3 points: quite suitable (suitable but minor changes are necessary), 4 points: highly suitable." From the total number of experts, the CVI value was determined by dividing the number of experts who assigned three and four points to the items on the scale by the total number of experts. A number of adjustments were made to the items on the scale in response to the comments and suggestions that were received from the specialists. The scale was then translated back into English by a third party who was not involved in the initial translation process. This was done after the necessary modifications had been made. The final version of the scale was delivered to the researcher who was responsible for developing the scale, and the researcher received positive comments regarding the appropriateness of the scale. Following the completion of this step, the scale was tested on twenty people who were suffering from chronic illnesses in order to assess whether or not it was applicable to patients. The results of the interviews demonstrated that the scale form was easily comprehensible. The study did not take into account this particular data.

Construct Validity When it comes to analyzing scale structures, one of the fundamental goals of factor analysis is to ensure that construct validity is maintained. Confirmatory factor analysis (CFA) was utilized in this investigation to investigate construct validity. This was done after confirming that linguistic equivalence and content validity were first established. CFA is a method that is used to evaluate whether the items that make up the factors are sufficiently related to the relevant variables and to generate validity evidence, particularly in situations when scales that were produced in one culture are converted to be used in other cultures [14]. Prior to doing factor analysis, "the Kaiser-Meyer-Olkin (KMO)" sample adequacy test and "Bartlett's Sphericity Test" were utilized in order to ascertain whether or not the data were suitable for analysis. Although KMO and Bartlett's Test of Sphericity are traditionally associated with Exploratory Factor Analysis, they were reported in this study as preliminary diagnostics to confirm sampling adequacy and the factorability of the correlation matrix before performing CFA, rather than to justify conducting an EFA [20]. According to Secer (2020), a KMO value that is greater than 0.60 and a Bartlett test that is statistically significant both suggest that the sample is sufficient and that the data set is appropriate for perform factor analysis. In the process of CFA, fit indices were investigated in order to ascertain the structure that was best suitable for the scale. The following fit indices were utilized: "the Relative Chi Square Index (CMIN/DF), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Residual (RMR)" [15, 16]. Listed below are the acceptable levels of fit that can be achieved: "CMIN/DF is less than 5, RMSEA is less than 0.08, CFI and TLI are greater than 0.90, and SRMR and RMR are less than 0.08" [11, 17] A further requirement is that the factor loadings of the items must be more than 0.30. It is regarded to be moderate for factor loadings to fall between 0.30 and 0.59, whereas factor loadings that are at or above 0.60 are considered to be high [14].

Reliability analyses Internal consistency coefficients, item-total correlations, and test-retest correlations were investigated in order to conduct the reliability analysis of the Turkish version of the CIAS. The Cronbach's Alpha coefficient for the scale as a whole was ≥ 0.70, item-total correlations were > 0.30, and test-retest correlations, measured with a two-week interval, were > 0.70, all of which were determined to be acceptable levels [11, 18]. The coef-

ficient indicating internal consistency shows whether the items measure the same concepts and whether the items are actually related to what is being measured. The reliability coefficient of a measurement tool should be as close to 1 as possible to be considered an indicator of sufficient reliability. For the purpose of determining the reliability of the scale, the Cronbach's alpha coefficient and the McDonald's Omega reliability analysis methodology were utilized. A reliability coefficient above 0.70 is considered sufficient for the scale to be considered reliable [11, 19]. The item-total correlation coefficient is a commonly used indicator in item selection analyses to understand the degree to which scale items are related to the scale as a whole. A high correlation coefficient for an item indicates that the measured item has a high correlation with the theoretical structure of that item and is sufficiently effective in measuring the desired behaviour. It is recommended that the item-total correlation coefficient of measurements obtained from a scale be > 0.30 [20]. Test-retest measurements evaluate the consistency of an instrument over time and are one of the most commonly used reliability analyses. The closer the correlation coefficient approaches 1, the higher the reliability of a measurement tool is considered to be. To determine whether measurements obtained from a scale remain unchanged over time, the correlation coefficients between the obtained test-retest scores must show a positive, high-level relationship, and this score must be at least 0.70 for acceptability [11]. In addition, the intraclass correlation coefficient (ICC) was utilized in the process of administering test-retest assessments. "The Interpersonal Correlation coefficient (ICC)" value can range from 0 to 1, with the closer the value is to 1, the more consistent the measurements are [21].

Statistical analysis

Both SPSS 27 and LISREL were utilized in order to carry out the analysis of the data. In order to examine the data, descriptive statistical methods such as frequency, percentage, mean, and standard deviation were utilized. A thorough analysis was performed on the item-total correlation values as well as the total Cronbach's alpha coefficients of the scale items. In order to determine whether or not the scale possessed construct validity, the data were imported into the LISREL computer, and a number of different fit indices were investigated. McDonald's Omega and Cronbach's alpha coefficient reliability analysis were both computed in order to determine the degree to which the scale may be relied upon effectively. In addition, the test-retest approach was utilized in order to investigate the time-dependent consistency characteristic of the scale. The results that were deemed statistically significant were those with a p-value less than 0.05.

Research ethics

The Ethics Committee of a university (2024/03–16) gave their approval, and the hospital where the research was carried out gave their institutional authorization. Both of these approvals were received. Regarding the adaptation of CIAS to Turkish, official permission was received from the owner of the scale through the use of email. In compliance with the principles outlined in the Helsinki Declaration on Human Rights, the research was carried out according to the guidelines. After providing participants with an explanation of the goal of the study, written informed consent was obtained from each and every participant.

Results

Among the participants, ages ranged from 18 to 83 years, with a mean age of 55.14 ± 18.38 years. Of the total participants, 54.8% were female, 71.4% were married, 20.8% were illiterate, and 64.5% were unemployed. Additionally, 56% reported an income equal to their expenses, 25% had diabetes as a chronic condition, and 68% were independent in daily activities. The duration of diagnosis ranged from 1 to 40 years, with a mean of 7.71 ± 6.71 years (Table 1).

Findings related to validity

Content validity

According to the findings of the research, "the item-level content validity index (I-CVI)" varied from 0.90 to 1.00, whereas "the scale-level content validity index (S-CVI)" was determined to be 0.95.

Construct validity

Before beginning the structural validity study, the KMO and Bartlett's Sphericity Test was utilized to determine whether or not the sample size was appropriate and whether or not the data set was suitable for analysis. The KMO value was found to be 0.792 after being determined. The outcome of the Bartlett's Sphericity Test was found to be statistically significant (x2 = 3564.322; $p < 0.001$). Without using Exploratory Factor Analysis (EFA), a Confirmatory Factor Analysis (CFA) was carried out in order to successfully verify the validity of the existing five-subdimension structure that had 19 elements. Based on the findings of the CFA study, it was determined that the factor load values varied from 0.300 to 0.850, which is evidence that the structure consists of five subdimensions (Table 2).

Confirmatory factor analysis

According to the results of the analysis, the DFA fit index values were obtained as follows. $x^2 = 495.17$ df = 140 ($p<0.05$), $x^2/df = 3.53$, RMSEA = 0.070, CFI = 0.94, SRMR = 0.057, TLI = 0.92, RMR = 0.044, and AIC = 652.03

Table 1 Demographic characteristics of participants

Characteristics	Number ($n=518$)	%
Gender	284	54.8
Female	234	45.2
Male		
Marital status	370	71.4
Married	148	28.6
Single		
Educational status	108	20.8
Illiterate	94	18.1
Literate	106	20.5
Primary	66	12.7
Secondary education	95	18.3
High school	44	9.5
Bachelor's degree and above		
Employment status	132	25.5
Yes	386	64.5
No		
Income status	186	35.9
Less than income	290	56
Equal to income	42	8.1
Income exceeds expenses		
Name of existing chronic disease	55	10.6
Heart disease	130	25.1
DM	108	20.8
Hypertension	48	9.3
Cancer	32	6.2
Gastrointestinal diseases	59	11.4
Respiratory diseases	15	2.9
Kidney failure	27	5.2
Rheumatic diseases	44	8.5
Neurological diseases		
Dependency status	352	68.0
Independent	131	25.3
Partially dependent	35	6.8
Fully dependent		
No		
	Mean ± SD	Min-Max
Age (years)	55.14 ± 18.38	18–83
Diagnosis duration (years)	7.71 ± 6.71	1–4

DM = Diabetes mellitus; HT = Hypertension

(Table 3). Figure 1 depicts the PATH diagram that was developed throughout the process of doing the confirmatory factor analysis.

After examining Table 4, it was observed that most subscales of the CIAS were positively correlated. A small but significant negative correlation was found between Factor 4 (Emotional support for illness) and Factor 5 (Emotional engagement) ($r = -0.140$, $p < 0.01$). Overall, the correlations indicate no major issues with overlapping subscale linkages.

Findings related to reliability

A calculation was made to determine the Cronbach's alpha coefficient for the scale. The value of the Cronbach's alpha coefficient for the "F1" subscale of the scale was 0.806, while the value for the "F2" subscale was 0.796, the value for the "F3" subscale was 0.714, the value for the "F4" subscale was 0.766, the value for the "F4" subscale was 0.796, the value for the "F5" subscale was 0.768, and the total Cronbach's alpha value for the scale was 0.807. Moreover, the Omega reliability values of the scale were as follows: 0.806 for the "F1" subscale, 0.806 for the "F2" subscale, 0.676 for the "F3" subscale, 0.768 for the "F4" sub-dimension, 0.676 for the "F5" sub-dimension, and 0.774 for the total scale were the results (Table 4).

During the research process, test-retest measurements were administered to 30 participants at 15-day intervals to assess the scale's reliability over time. The correlation coefficients observed were $r = 0.979$ for the CIAS total, $r = 0.959$ for the "F1" subscale, and $r = 0.992$ for the "F2" subscale. These correlation values are statistically significant ($p < 0.01$). No statistically significant difference was found between the test-retest measurement results (Table 5) ($p > 0.05$). Additionally, the Intraclass Correlation Coefficients (ICC) values obtained for the purpose of assessing test-retest reliability ranged from 0.909 to 0.970.

Discussion

Chronic diseases are long-term and often lifelong health problems that significantly affect not only individuals' physiological conditions but also their psychological, social, and emotional adjustment processes. The adaptation process in individuals with chronic diseases directly affects their ability to cope with the disease, their quality of life, and their overall psychosocial functioning. Therefore, measuring individuals' levels of adaptation to chronic diseases has become an essential need in both clinical practice and scientific research. CIAS is a measurement tool that evaluates individuals' coping and adaptation processes with chronic disease in a multidimensional manner [9]. In this study, the validity and reliability of the Turkish version of CIAS were evaluated. The findings indicate that the scale is a valid and reliable tool for assessing psychosocial adaptation in individuals with chronic disease.

Content validity is an evaluation conducted in scale adaptation studies to establish the conceptual integrity of the translation and ensure consistency between the original scale and the adapted language [22, 23]. This evaluation assesses the extent to which each item in the scale fulfils its intended purpose [22, 23]. To ensure the content validity of the scale, the I-CVI and S-CVI values must be 0.80 or above [24, 25]. In line with this result, it was determined that the I-CVI values at the item level ranged between 0.90 and 1.00, while the S-CVI value was 0.95 in the current study. A review of the literature revealed that the obtained values are pretty high and that the Turkish content of the scale is sufficient in terms of scope [24, 26]. The results obtained, in line with expert opinions, indicate that the scale is suitable for assessing psychosocial

Table 2 Average and CFA factor loadings results

Scale Items	Mean ± SD	Factor Loadings				
		F1	F2	F3	F4	F5
1. * I miss my doctor's appointments.	3.24.± 0.85	0.790				
2*. I make excuses for not following treatment recommendations.	3.19± 0.87	0.820				
3. * I avoid making new attempts to be healthier.	3.06 ± 0.85	0.690				
4. * I leave my illness to fate.	2.69± 1.003	0.580				
5. I do physical exercise in line with treatment recommendations.	2.07± 0.748		0.520			
6. I strictly follow my doctor's advice.	2.82± 0.839		0.840			
7. I follow the recommended diet without resistance.	2.64± 0.874		0.780			
8. I do everything possible to cope when my health worsens.	2.31± 0.801		0.680			
9. I prefer to be with people to avoid thinking that my health is poor.	2.42± 0.946			0.850		
10. I engage in religious activities to get away from thoughts about my health condition.	1.97± 0.984			0.600		
11. I do good for others to get away from thoughts about my health condition.	2.31± 0.818			0.410		
12. I keep myself away from thoughts about my health by reading books.	1.97 ± 0.984			0.310		
13. I share my health-related concerns with my friends.	2.31± 0.858				0.740	
14. I discuss my illness-related concerns with my family members.	2.62± 0.925				0.710	
15. I seek support from other people when I feel discouraged about my illness.	2.47± 0.831				0.720	
16. * I feel hopeless every time I think about my illness.	2.77± 0.729					0.750
17. * I get upset if someone questions my illness.	2.77± 0.792					0.540
18. * I constantly think about my illness.	2.69± 0.796					0.660
19*. I get upset if my illness symptoms are disregarded by others.	2.49± 0.932					0.300

*Negative statements

Table 3 Confirmatory factor analysis results

Fit criteria	Found	Appropriate	Acceptable	Result
x^2/df (**CMIN/DF**)	3.5	<2	< 5	Acceptable fit
RMSEA	0.07	<0.05	< 0.08	Acceptable fit
CFI	0.94	> 0.95	> 0.90	Acceptable fit
SRMR	0.057	< 0.05	< 0.08	Acceptable fit
RMR	0.044	< 0.05	< 0.08	Excellent compliance
TLI	0.92	> 0.95	> 0.90	Acceptable fit
AIC	595.17			

CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; RMR: Root Mean Square Residual; SRMR: Standardised Root Mean Square Residual; TLI: Tucker Lewis Index; AIC: Akaike Information Criterion

adaptation in individuals with chronic illnesses and that there is strong consensus among experts [27].

To determine the validity of the structure and the adequacy of the data, KMO and Bartlett's Sphericity Test were performed before CFA. To indicate that the results are sufficient, Bartlett's sphericity test must be significant ($p < 0.05$) and the KMO value must be > 0.60 [20, 28]. In this study, the KMO value was found to be 0.792, and the Bartlett's sphericity test ($x^2 = 3564.322$; $p < 0.001$) was significant. In other words, the database and research sample used for factor analysis are sufficient. Factor analysis is performed to evaluate whether the items in the measurement tool represent a single group [29–31]. According to the analysis results, items with high correlations are grouped under a single factor [32]. CFA analysis was conducted without EFA to validate the measurement tool, which consists of 19 items and five sub-dimensions. Items with factor load values below 0.30 were removed from the scale. However, since the factor load values were between 0.300 and 0.850 in the CFA analysis of the current study, no items were removed [33]. The CFA conducted a test of construct validity, which revealed that the scale is consistent with the original structure. In the present study, the fit indices were considered in accordance with CFA to assess the suitability of the data. In the literature, a value of x2/df ≤ 3 indicates an excellent fit, while a value of RMSEA ≤ 0.07 is considered acceptable [11, 15–17]. The fit indices obtained are within the limits accepted in the literature. This finding supports that the Turkish version of CIAS has a valid factor structure consisting of five sub-dimensions, similar to the original scale.

Most subscales of the scale demonstrated positive correlations, suggesting coherent relationships among the dimensions. However, a small but statistically significant negative correlation was observed between the emotional support for illness and emotional engagement subscales ($r = -0.140$, $p < 0.01$). This finding may reflect conceptual distinctions between these two constructs. While emotional support captures the degree to which individuals perceive and receive support related to their illness, emotional engagement reflects active emotional involvement in coping strategies, which may not always align. Such minor negative correlations have been reported in previous adaptation studies and could be attributed to item wording, cultural nuances in the interpretation of items, or sample characteristics [9, 22]. Importantly, the small magnitude of the correlation does not undermine the

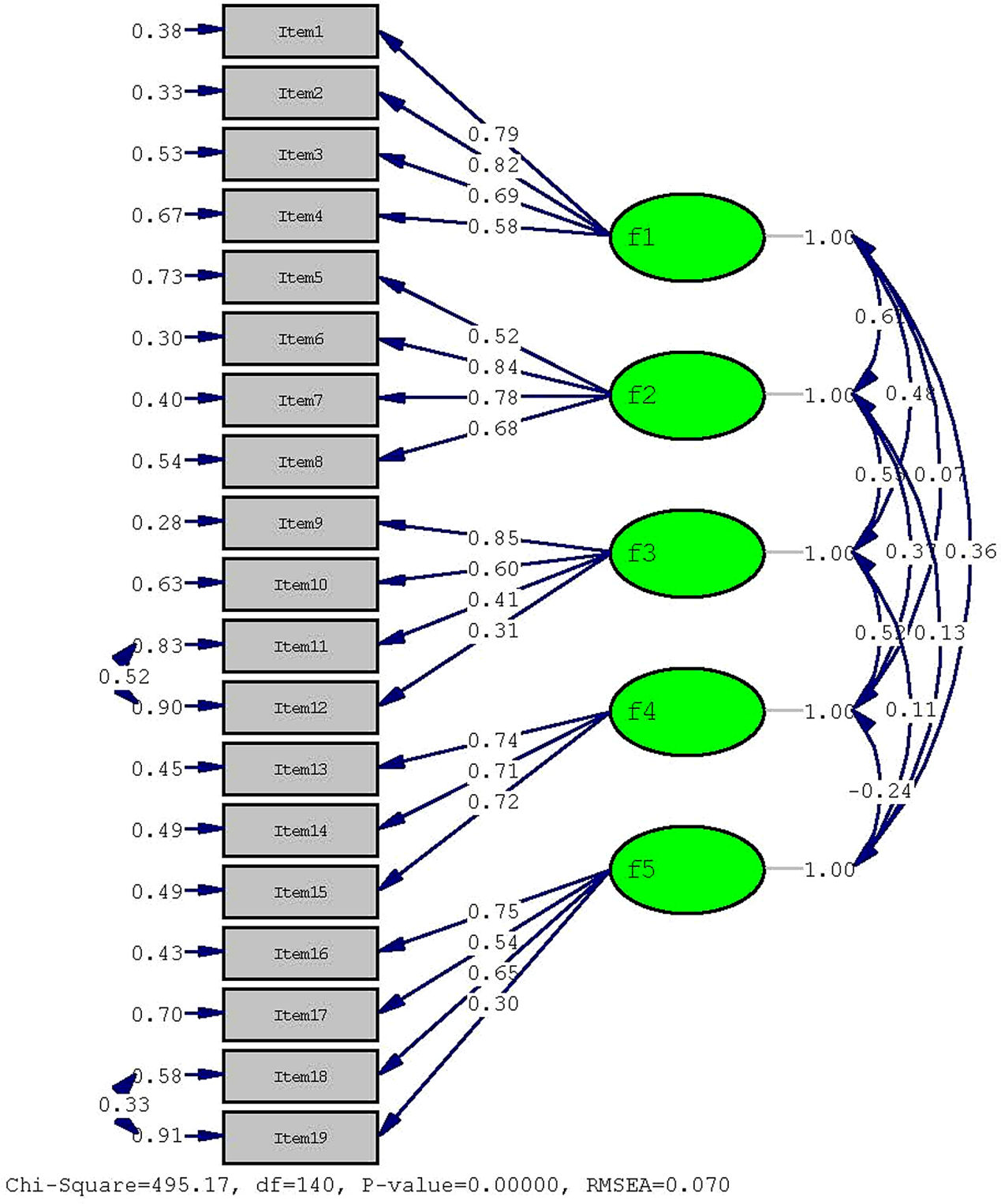

Fig. 1 Path diagram regarding the factor structure of the scale

Table 4 Inter-factor correlations and reliability coefficients (Cronbach's α and mcdonald's Ω) for the CIAS and its sub-dimensions

Scale and sub-dimensions	F1	F2	F3	F4	F5	CIAS Total	α	Ω
F1	1						0.806	0.806
F2	0.463**	1					0.796	0.806
F3	0.261**	0.377**	1				0.714	0.676
F4	0.027	0.275**	0.335	1			0.766	0.768
F5	0.292**	0.163**	0.014	-0.140**	1		0.675	0.676
CIAS Total	0.710**	0.765**	0.660	0.454**	0.428	1	0.807	0.774

Correlation is significant at the 0.01 level (2-tailed); F: Factor; CIAS = Chronic Illness Adjustment Scale; 1. Illness denial behaviour; Factor 2. Illness-compliant behaviour; Factor 3. Strategic positive engagement; Factor 4. Emotional support for illness; Factor 5. Emotional engagement. α = Cronbach's alpha reliability coefficient; Ω = McDonald's Omega reliability coefficient

Table 5 Test-retest results and mean scores ($n = 50$)

Scale and sub-dimensions	Scale Score Means		Analysis Results				ICC
	First Implementation X ± SD	Second Implementation X ± SD	*r*	*p*	t	*p*	
F1	3.41 ± 0.56	3.46 ± 0.57	0.949**	0.000	-1.941	0.058	. 0.974
F2	3.21 ± 0.72	3.16 ± 0.69	0.960**	0.000	1.75	0.086	0.979
F3	3.21 ± 0.51	3.16 ± 0.48	0.914**	0	1.852	0.070	0.955
F4	3.10 ± 0.86	3.03 ± 0.87	0.761**	0.000	0.788	0.435	0.864
F5	3.12 ± 0.71	3.10 ± 0.68	0.824**	0.000	0.340	0.735	0.903
CIAS Total	3.21 ± 0.34	3.19 ± 0.31	0.828**	0.000	0.956	0.344	0.904

**Correlation is significant at the 0.01 level (2-tailed); F: Factor; $p < 0.05$; r = Pearson Correlation Coefficient; t = Paired sample t test; ICC = Intraclass Correlation Coefficient; F: Factor; CIAS = Chronic Illness Adjustment Scale. Factor 1. Illness denial behaviour: Factor 2. Illness-compliant behaviour: Factor 3. Strategic positive engagement: Factor 4. Emotional support for illness: Factor 5. Emotional engagement

overall factor structure, and the scale retains its validity for assessing psychosocial adaptation in individuals with chronic illnesses.

In the current study, Cronbach's α internal consistency coefficient, item-total correlation, and test-retest analysis were used to evaluate the adaptation of CIAS into Turkish. The overall internal consistency coefficient of the CIAS ranged from 0.675 to 0.796 for the subscales and was determined as 0.807 for the total scale. According to the literature, the reliability of the scale increases as the Cronbach's α value approaches [11, 19]. The Cronbach's α internal consistency coefficient of the original scale was determined as 0.70 [9]. Within the scope of these results, it was determined that the current study's results are similar to those of the original research. CIAS was applied to 30 individuals at 15-day intervals for test-retest analysis. A positive, advanced, and statistically significant relationship was determined for CIAS (r = 0.828, p = 0.000). This result shows that CIAS can provide consistent measurements over time.

On the other hand, the ICC value was examined to determine test-retest reliability, yielding a result of 0.904. According to the literature, an ICC value of 0.90 or above indicates excellent reliability [21]. In light of this information, the scale demonstrates reliability in repeated applications.

Limitations of the study

The current study is limited by the time frame in which the data were collected and the sample size achieved during this period. The study findings are based on patients' self-reports. Since self-report data rely on individuals' subjective perceptions, they may affect the reliability of the responses.

Conclusion

The Turkish version of the CIAS, consisting of 19 items and five dimensions, adapted in this study, is a valid, reliable, and useful measurement tool for assessing the psychosocial adjustment levels of individuals with chronic diseases. It can be effectively used in clinical practice to plan individualised interventions and monitor patients' adjustment processes. Furthermore, this culturally adapted scale can make significant contributions to chronic disease management studies in Turkey in both research and application areas. For future studies, it is recommended to examine the scale in different patient populations and cultural contexts, to conduct longitudinal research on changes in chronic illness adjustment over time, and to investigate the relationships between CIAS scores and other health-related outcomes such as quality of life, coping strategies, and treatment adherence.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12955-025-02465-w.

Supplementary Material 1

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Author contributions
GB: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing. Supervision ZÖ: Conceptualization Investigation, Writing – original draft, Writing – BÇ: Conceptualization Investigation, Writing – original draft, Writing.

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Data availability
The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The Ethics Committee of a university (2024/03–16) gave their approval, and the hospital where the research was carried out gave their institutional authorization. Both of these approvals were received.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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