

Analysis of the Relationship Between Disease Self-Management and Psychosocial Adjustment of Celiac Patients

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Abstract

BACKGROUND/AIMS: In this study, it was aimed to analyze the relationship between disease self-management and psychosocial adjustment of celiac patients.

MATERIALS AND METHODS: This study was designed as descriptive and correlational. The data for the study were collected from 279 individuals with celiac disease between 25 July 2024 and 25 October 2024. In our study, the psychosocial adjustment levels of patients with celiac disease were evaluated with respect to various socio-demographic factors (such as gender, marital status, income level, and education level).

RESULTS: Analyses indicated that female patients had worse psychosocial adjustment than male patients. Single patients had higher scores on the sub-dimensions of domestic environment and psychological distress than married patients. Participants who had another family member diagnosed with celiac disease demonstrated better healthcare orientation. Increasing age was associated with greater acceptance of chronic disease and better treatment compliance. The results reveal that factors such as gender, marital status, and income level are significant determinants of self-management and psychosocial adjustment among patients with celiac disease.

CONCLUSION: To improve the psychological adaptation and self-management among patients with celiac disease, support programs should consider factors such as income, gender, marital status, and age. Financial support should be provided to cope with the economic burden of the diet, and educational programs should be organized not only for patients but also for their families so that they can be supportive in this process.

Keywords: Celiac disease, chronic disease, self-management, psychosocial adjustment

INTRODUCTION

Celiac disease is a chronic, immune-mediated disorder that develops in genetically predisposed individuals following exposure to gluten. Gluten, a group of storage proteins containing prolamins found in wheat, rye, barley, and oats, triggers an abnormal immune response that leads to characteristic serological and histopathological changes in the small intestine.^{1,2} Celiac disease affects approximately 1% of the global population and may present at any age. Notably, its incidence

has increased substantially over the past four decades, likely due to improved diagnostic awareness and environmental factors.³

Gluten exposure in individuals with celiac disease results in immune-mediated damage to the small intestinal mucosa, causing villous atrophy and a reduction in absorptive surface area. Consequently, malabsorption of essential micronutrients such as iron, folate, vitamin B12, and fat-soluble vitamins frequently occurs. Diagnosis is typically

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based on serological markers, including anti-gliadin antibodies, anti-tissue transglutaminase, and anti-endomysial antibodies, in conjunction with clinical findings. Histological confirmation of villous atrophy via small intestinal biopsy remains the diagnostic gold standard.⁴ Clinical manifestations vary widely and may include chronic diarrhea, abdominal distension, recurrent abdominal pain, constipation, anemia, osteoporosis, growth retardation, micronutrient deficiencies, and recurrent aphthous ulcers.²

Currently, the only effective treatment is strict adherence to a lifelong gluten-free diet, which alleviates symptoms, normalizes serological markers, and allows mucosal healing.¹ However, compliance with the diet requires continuous education and support. Dietitian-guided counseling helps patients learn how to interpret food labels, identify hidden sources of gluten, and prevent cross-contamination. Patient and family education is also critical to ensure safety in food preparation at home.²

The United States Centers for Disease Control and Prevention defines chronic disease as: “Chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both”.⁵

Self-management of chronic diseases refers to patients’ ability to cope with symptoms, adhere to treatment regimens, adopt lifestyle modifications, and address both physical and psychosocial consequences of their condition.⁶ Effective self-management not only improves health-related quality of life but also reduces the economic burden on healthcare systems.⁷ A prerequisite for self-management is patient empowerment, enabling individuals to actively participate in managing their condition.⁸

Psychosocial adjustment is defined as the ability to maintain a positive sense of self despite disease-related challenges. It is a dynamic process influenced by both individual and environmental factors.⁹ Successful adjustment implies that patients can adapt cognitively and emotionally to physical and functional changes. Conversely, maladjustment leads to adverse consequences such as depression, anxiety, psychosomatic symptoms, fatigue, social withdrawal, and impaired cognitive functioning.¹⁰

Given that celiac disease requires permanent lifestyle modifications, both self-management and psychosocial adjustment are of paramount importance. This study aimed to examine the relationship between chronic illness self-management and psychosocial adjustment among adults diagnosed with celiac disease.

Research Questions

Is there a significant relationship between chronic disease self-management skills and psychosocial adjustment in adults with celiac disease?

Do psychosocial adjustment and self-management levels differ according to socio-demographic and clinical characteristics (gender, marital status, income level, adherence to an additional diet, and presence of another family member with celiac disease)?

MATERIALS AND METHODS

Study Design

This study was a descriptive, correlational investigation examining the relationship between chronic disease self-management and psychosocial adjustment in adults diagnosed with celiac disease.

Population and Sample

The study population consisted of individuals registered with a celiac association in Türkiye. A priori sample size calculation indicated that a minimum of 234 participants was required to achieve a 95% confidence level. A total of 279 individuals who met the inclusion criteria and agreed to participate were included in the final analysis.

Inclusion and Exclusion Criteria

Inclusion criteria were as follows:

Having a confirmed diagnosis of celiac disease,

Being 18 years of age or older,

Volunteering to participate in the study,

Being able to communicate verbally.

Exclusion criteria included:

- Being under 18 years of age and
- Declining to participate in the study.

Data Collection Instruments

Data were collected using three instruments: a patient information form, the chronic illness self-management scale (CISM), and the psychosocial adjustment to illness scale-self-report (PAIS-SR).

The patient information form was developed by the researchers and included questions on participants’ socio-demographic and clinical characteristics.

Chronic illness self-management scale: The CISM was developed by Ngai et al.⁶ in 2020, and its Turkish validity and reliability were established by Öztürk et al.¹¹ in 2021. The scale consists of 21 items across four sub-dimensions: self-stigma, coping with stigma, healthcare efficiency, and compliance with treatment. Items are rated on a 5-point Likert scale. Scores are calculated using the arithmetic mean method, with higher scores indicating better self-management abilities.¹¹

The psychosocial adjustment to illness scale-self-report: Was originally developed by Derogatis and Lopez in 1983 to assess psychosocial adjustment to illness, and its Turkish validity and reliability were assessed by Adaylar in 1995.¹² The scale comprises 46 items grouped into seven sub-dimensions: healthcare orientation, vocational environment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress. Each item is rated on a 4-point scale (0-3), with higher scores indicating poorer psychosocial adjustment. Total scores below 35 indicate good adjustment; scores between 35 and 51 indicate fair adjustment; scores above 51 indicate poor adjustment.¹²

Data Collection Procedure

Data were collected between July 25 and October 25, 2024, through face-to-face interviews and online questionnaires administered via Google Forms. Completion of the questionnaires required approximately 8-10 minutes. Participation was voluntary, and informed consent was obtained from all participants prior to data collection.

Ethical Considerations

Ethical approval for the study was obtained from the Ankara Yıldırım Beyazıt University Medical Research Ethics Committee (approval number: 06/810, date: 01.07.2024). The relevant association also granted institutional permission. Written informed consent was obtained from all participants, and permission to use the scales was secured from the authors.

Statistical Analysis

The research data were analyzed using IBM SPSS Statistics, version 26.0 (IBM Corp., Armonk, NY, USA). The descriptive findings in the study were reported as numbers, percentages, minimum and maximum values, means, standard deviations, and medians. The reliability of the scales was assessed according to Cronbach's alpha coefficient.¹³ The normality of distribution of the variables was examined according to whether the values of skewness and kurtosis were in the range of ± 1.5 , or not.¹⁴ For comparisons between two independent groups, the t-test or Mann-Whitney U test was used, and for variables with three or more groups, analysis of variance (ANOVA) or the Kruskal-Wallis test was used. When significant differences were detected by ANOVA or the Kruskal-Wallis test, the groups that differed were identified using Bonferroni-corrected multiple comparison tests. The relationship between continuous variables was measured using Pearson and Spearman correlation tests. A value of $p < 0.05$ was considered statistically significant in the analyses.

RESULTS

A total of 279 adults with celiac disease were included in the analysis. The majority of participants were female (88.5%), and the mean age was 33.29 ± 10.14 years. More than half of the participants (52.3%) were married. Nearly half (44.8%) held a bachelor's degree, and 45.9% reported that their income equaled their expenses. Most participants (92.5%) did not follow any diet in addition to a gluten-free diet, and

22.9% reported having at least one other family member diagnosed with celiac disease (Table 1).

The statistical and reliability findings for the scales used in the research are presented in Table 2. Of the participants, 118 (42.3%) had good psychosocial adjustment (< 35), 80 (28.7%) had fair psychosocial adjustment (35-51), and 81 (29.0%) had poor psychosocial adjustment (> 51).

As shown in Table 3, female participants had significantly higher Self-Stigma scores than male participants ($p = 0.015$). Marital status was significantly associated with scores on the self-stigma, coping with stigma, and compliance with treatment scales. Income level was significantly associated with scores on coping with stigma and healthcare efficiency. Participants following an additional diet had significantly higher self-stigma scores. Having another family member

Table 1. Descriptive findings of the participants

Characteristic	Category	n	%
Gender	Female	247	88.5
	Male	32	11.5
Age, years	Mean $\pm$ SD	33.29 $\pm$ 10.14	
Marital status	Married	146	52.3
	Single	133	47.7
Education level	Primary school	11	3.9
	High school	57	20.4
	Associate's degree	42	15.1
	Bachelor's degree	125	44.8
	Master's degree	44	15.8
Income level	Income less than expense	99	35.5
	Income equal to expense	128	45.9
	Income more than expense	52	18.6
Additional diet	No	258	92.5
	Yes	21	7.5
Family member with celiac disease	No	215	77.1
	Yes	64	22.9

SD: Standard deviation.

Table 2. Statistical and reliability findings of the scales

Scale/subscale	N	Min-max	Mean $\pm$ SD	Median	Cronbach's α
CISM self-stigma	279	1.00-4.71	2.35 $\pm$ 0.88	2.14	0.871
CISM coping with stigma	279	1.60-5.00	3.27 $\pm$ 0.72	3.20	0.760
CISM healthcare efficiency	279	1.75-5.00	4.16 $\pm$ 0.65	4.25	0.721
CISM compliance with treatment	279	1.00-5.00	4.39 $\pm$ 0.64	4.60	0.807
PAIS-SR healthcare orientation	279	0.00-22.00	10.21 $\pm$ 4.33	11.00	0.694
PAIS-SR vocational environment	279	0.00-18.00	4.66 $\pm$ 3.16	4.00	0.696
PAIS-SR domestic environment	279	0.00-20.00	6.40 $\pm$ 4.41	6.00	0.804
PAIS-SR sexual relationships	248	0.00-17.00	2.58 $\pm$ 3.38	1.00	0.875
PAIS-SR extended family relationships	279	0.00-12.00	3.88 $\pm$ 3.12	4.00	0.674
PAIS-SR social environment	279	0.00-17.00	5.27 $\pm$ 4.85	5.00	0.898
PAIS-SR psychological distress	279	0.00-21.00	8.37 $\pm$ 5.06	8.00	0.896
PAIS-SR total	279	4.00-111.00	41.11 $\pm$ 21.14	39.00	0.942

CISM: Chronic illness self-management scale, PAIS-SR: Psychosocial adjustment to illness scale-self report, SD: Standard deviation, Min-max: Minimum-maximum.

with celiac disease was associated with lower self-stigma scores and higher healthcare efficiency scores. Adherence to a gluten-free diet was significantly associated with scores for healthcare efficiency and compliance with treatment.

As shown in Table 4, PAIS-SR scores differed significantly according to several participant characteristics. Female participants scored higher than male participants on the healthcare orientation, domestic environment, social environment, and psychological distress subdimensions and on the total PAIS-SR score, indicating poorer psychosocial adjustment. Single participants had higher domestic environment and psychological distress scores and higher total PAIS-SR scores than married participants. Income level was significantly

associated with most PAIS-SR domains and the total score, with participants whose income was less than their expenses showing poorer adjustment. Participants following an additional diet had significantly higher scores on all PAIS-SR sub-dimensions and on the total score. In addition, participants without another family member with celiac disease had higher healthcare orientation scores; however, total PAIS-SR scores did not differ significantly according to family history.

As presented in Table 5, age was negatively correlated with self-stigma and positively correlated with coping with stigma, healthcare efficiency, and compliance with treatment, suggesting a tendency toward lower stigma and better self-management with increasing age. Age was also negatively associated with the PAIS-SR domestic environment

Table 3. Comparison of CISM subscale scores according to participant characteristics

Participant characteristics	SS mean $\pm$ SD	CS mean $\pm$ SD	HCE mean $\pm$ SD	CT mean $\pm$ SD
Gender				
Female	2.40 $\pm$ 0.88	3.25 $\pm$ 0.70	4.17 $\pm$ 0.65	4.38 $\pm$ 0.65
Male	2.00 $\pm$ 0.87	3.48 $\pm$ 0.84	4.15 $\pm$ 0.63	4.49 $\pm$ 0.58
Test statistic	2.446	-1.755	0.136	-0.968
p-value	0.015	0.080	0.892	0.333
Marital status				
Married	2.20 $\pm$ 0.86	3.37 $\pm$ 0.77	4.22 $\pm$ 0.64	4.49 $\pm$ 0.56
Single	2.53 $\pm$ 0.88	3.16 $\pm$ 0.64	4.10 $\pm$ 0.65	4.30 $\pm$ 0.72
Test statistic	-3.108	2.510	-1.319	-2.103
p-value	0.002	0.013	0.187	0.035
Income level				
Income less than expense ¹	2.46 $\pm$ 0.94	3.13 $\pm$ 0.73	3.96 $\pm$ 0.71	4.27 $\pm$ 0.71
Income equal to expense ²	2.33 $\pm$ 0.89	3.40 $\pm$ 0.70	4.26 $\pm$ 0.61	4.42 $\pm$ 0.65
Income more than expense ³	2.22 $\pm$ 0.73	3.25 $\pm$ 0.68	4.31 $\pm$ 0.51	4.58 $\pm$ 0.44
Test statistic	1.345	4.206	13.250	5.343
p-value	0.262	0.016	<0.001	0.069
Difference	-	1<2	1<2, 1<3	-
Additional diet				
No	2.29 $\pm$ 0.85	3.28 $\pm$ 0.73	4.17 $\pm$ 0.64	4.38 $\pm$ 0.65
Yes	3.16 $\pm$ 0.89	3.17 $\pm$ 0.60	4.07 $\pm$ 0.68	4.58 $\pm$ 0.48
Test statistic	-4.469	0.676	0.675	-1.202
p-value	<0.001	0.499	0.500	0.230
Family member with celiac disease				
No	2.43 $\pm$ 0.89	3.23 $\pm$ 0.69	4.12 $\pm$ 0.63	4.39 $\pm$ 0.65
Yes	2.11 $\pm$ 0.81	3.41 $\pm$ 0.79	4.32 $\pm$ 0.67	4.43 $\pm$ 0.63
Test statistic	2.571	-1.741	-2.339	-0.611
p-value	0.011	0.083	0.019	0.541
Adherence to a gluten-free diet				
Yes ¹	2.34 $\pm$ 0.87	3.30 $\pm$ 0.69	4.23 $\pm$ 0.58	4.45 $\pm$ 0.57
No ²	1.36 $\pm$ 0.10	2.90 $\pm$ 1.84	2.88 $\pm$ 1.24	3.80 $\pm$ 1.70
Sometimes ³	2.71 $\pm$ 1.01	2.91 $\pm$ 0.83	3.36 $\pm$ 0.80	3.67 $\pm$ 0.97
Test statistic	5.988	5.315	25.016	13.927
p-value	0.050	0.070	<0.001	0.001
Difference	-	-	3<1	3<1

Data are presented as mean $\pm$ standard deviation. Significant p-values are shown in bold. Superscript numbers indicate group codes used for post-hoc comparisons. For income level: 1= income less than expense, 2= income equal to expense, 3= income more than expense. For adherence to a gluten-free diet: 1= yes, 2= no, 3= sometimes.

CISM: Chronic illness self-management scale, SS: Self-stigma, CS: Coping with stigma, HCE: Healthcare efficiency, CT: Compliance with treatment, SD: Standard deviation.

Table 4. Comparison of PAIS-SR scores according to participant characteristics

Participant characteristic	Significant PAIS-SR domains	Direction of difference	PAIS-SR total mean $\pm$ SD	p-value
Gender	HCO, DE, SE, PD, total	Female participants had higher scores than males	Female: 42.43 $\pm$ 20.63; Male: 31.00 $\pm$ 22.58	0.004
Marital status	DE, PD, total	Single participants had higher scores than married participants	Married: 38.62 $\pm$ 21.46; Single: 43.86 $\pm$ 20.51	0.038
Income level	HCO, VE, DE, EFR, SE, PD, total	Participants whose income was less than expenses had poorer adjustment	Less: 48.89 $\pm$ 21.65; Equal: 38.48 $\pm$ 20.34; More: 32.81 $\pm$ 17.34	<0.001
Additional diet	HCO, VE, DE, SR, EFR, SE, PD, total	Participants following an additional diet had higher scores	No: 39.38 $\pm$ 19.79; Yes: 62.48 $\pm$ 25.69	<0.001
Family member with celiac disease	HCO	Participants without another affected family member had higher HCO scores	No: 41.96 $\pm$ 20.48; Yes: 38.28 $\pm$ 23.16	0.222

Only statistically significant PAIS-SR domains are presented in this table. Significant p-values are shown in bold. Higher scores indicate poorer psychosocial adjustment.

HCO: Healthcare orientation, VE: Vocational environment, DE: Domestic environment, SR: Sexual relationships, EFR: Extended family relationships, SE: Social environment, PD: Psychological distress, PAIS-SR: Psychosocial adjustment to illness scale-self report, SD: Standard deviation.

Table 5. Findings of correlation analysis between age, number of people living at home and duration of celiac disease and the scales

Scale/subscale	Age r (p)	Number of people living at home ¹ r (p)	Number of years lived with celiac disease ¹ r (p)
CISM self-stigma	-0.204 (0.001)	0.049 (0.414)	-0.087 (0.147)
CISM coping with stigma	0.139 (0.020)	-0.073 (0.221)	0.017 (0.781)
CISM healthcare efficiency	0.125 (0.037)	-0.096 (0.109)	0.195 (0.001)
CISM compliance with treatment	0.120 (0.045)	-0.040 (0.501)	0.020 (0.742)
PAIS-SR healthcare orientation	-0.056 (0.348)	0.056 (0.351)	-0.198 (0.001)
PAIS-SR domestic environment	-0.150 (0.012)	0.070 (0.241)	-0.107 (0.074)
PAIS-SR sexual relationships	0.187 (0.003)	0.015 (0.817)	-0.028 (0.659)
PAIS-SR extended family relationships	-0.112 (0.061)	0.142 (0.018)	0.007 (0.909)
PAIS-SR psychological distress	-0.270 (<0.001)	0.009 (0.884)	-0.118 (0.049)
PAIS-SR total	-0.110 (0.066)	0.070 (0.243)	-0.128 (0.033)

¹The Spearman correlation test. Significant p-values are shown in bold.

PAIS-SR: Psychosocial adjustment to illness scale-self report, CISM: Chronic illness self-management scale.

and psychological distress subscales, but positively associated with the sexual relationships subscale. The number of people living at home was positively correlated with only the PAIS-SR extended family relationships subscale. Longer disease duration was positively correlated with healthcare efficiency and negatively correlated with healthcare orientation, psychological distress, and total PAIS-SR scores, suggesting that participants with longer celiac disease duration reported better healthcare-related self-management and overall psychosocial adjustment.

Results of Correlation Analysis Between the Scales

Significant negative correlations were found between the self-stigma sub-dimension of the CISM and the coping with stigma, healthcare efficiency, and compliance with treatment sub-dimensions ($p < 0.05$). In contrast, coping with stigma, healthcare efficiency, and compliance with treatment were positively correlated with one another ($p < 0.05$). Significant positive correlations were also observed between the PAIS-SR subscales and the PAIS-SR total score ($p < 0.05$). In addition, the PAIS-SR total score was positively correlated with the CISM self-stigma sub-dimension ($r = 0.683$; $p < 0.001$) and negatively correlated with coping with stigma ($r = -0.487$; $p < 0.001$), healthcare efficiency ($r = -0.462$; $p < 0.001$), and compliance with treatment ($r = -0.241$; $p < 0.001$).

DISCUSSION

This study examined the relationship between chronic disease self-management and psychosocial adjustment in adults with celiac disease. The findings indicate that self-management capacity is closely associated with psychosocial outcomes. The mean PAIS-SR score suggested a moderate level of psychosocial adjustment, while nearly one-third of the participants demonstrated poor adjustment. This finding indicates that celiac disease should not be considered solely a gastrointestinal condition but also a chronic illness with substantial psychological, social, and behavioral consequences. This interpretation is supported by Rose et al.,¹⁵ who reported that adults living with celiac disease experience significant psychosocial challenges, including a changed identity, social restrictions, and the burden of maintaining a strict gluten-free diet.¹⁶ Similar psychosocial challenges have been reported in patients receiving chemotherapy, individuals with Behçet's disease, young adults with type 1 diabetes, and patients with heart failure.¹⁵⁻¹⁹ These similarities suggest that continuous disease management, uncertainty about disease progression, treatment-related restrictions, and lifestyle regulation may be common mechanisms affecting psychosocial adjustment across chronic illnesses.

Female patients scored higher than male patients on the healthcare orientation, domestic environment, social environment, and psychological distress subdimensions, as well as on the total PAIS-SR score, indicating poorer psychosocial adjustment. The poorer psychosocial adjustment observed among female participants may be related to gender-related social and domestic responsibilities. Women may experience a greater burden in managing dietary restrictions because they are often more involved in food preparation, caregiving, and family nutrition. However, given the predominance of female participants in the sample, this finding should be interpreted cautiously and not be generalized without further studies with a more balanced gender representation. Consistent with our findings, Türksen Ülkü and Ünsar²⁰ also reported that female patients with heart failure scored higher than males in the domestic environment, social environment, and psychological distress sub-dimensions and in the PAIS-SR total score.

Marital status also appeared to play an important role in psychosocial adjustment. Single participants showed poorer adjustment than married participants, particularly in the domestic environment and psychological distress, and in total PAIS-SR scores. Marriage may provide emotional support, shared responsibility, and practical assistance in maintaining dietary restrictions. Spousal support may also reduce the sense of isolation that can accompany chronic illness management. In contrast, single individuals may have fewer sources of daily support and need to manage the practical and emotional demands of celiac disease independently. However, in the study conducted by Türksen Ülkü and Ünsar²⁰ on patients with heart failure, single patients obtained higher scores than married ones from the domestic environment and social environment sub-scales, and married patients had higher scores than single ones in the sexual relationships sub-scale. In the study conducted by Senmar et al.²¹ on cancer patients, no statistically significant differences were found between single and married patients.

Income level was one of the most important factors associated with psychosocial adjustment. Participants whose expenses exceeded their income reported poorer adjustment across several domains. This may be explained by the economic burden of gluten-free products, which are often more expensive and less accessible than gluten-containing alternatives. Financial strain may limit access to safe foods, increase anxiety about dietary adherence, and restrict participation in social activities involving food. Therefore, the relationship between low income and poorer adjustment may reflect not only general socio-economic disadvantage but also the specific financial demands of celiac disease management. This finding highlights the need for economic and social policy interventions, such as financial support for gluten-free products and improved access to safe foods. In their study on elderly patients with heart failure, Vural Doğru and Karadakovan²² concluded that patients with poor income status obtained higher scores than patients with good income status from the healthcare orientation, domestic environment and extended family relationships sub-scales. In the study conducted by Çam and Nehir²³ on patients who experienced myocardial infarction, it was detected that the PAIS-SR total score obtained by individuals with low-income level was higher when compared to individuals with a balanced income-expense level.

Adhering to a diet in addition to a gluten-free diet was associated with poorer psychosocial adjustment across all PAIS-SR domains. This finding suggests that the burden of dietary management increases considerably when individuals must follow multiple dietary restrictions.

In individuals with celiac disease, food choices are already limited, and the addition of further dietary rules may intensify feelings of restriction, social exclusion, and loss of autonomy. These individuals may experience greater difficulty in eating outside the home, in participating in social events, and in maintaining dietary flexibility. From a clinical perspective, this finding indicates that patients with multiple dietary requirements should be considered a particularly vulnerable group and may benefit from individualized dietetic counseling and psychosocial support.

The presence of another family member with celiac disease was associated with better healthcare orientation. This may indicate that shared illness experiences within the family facilitate access to practical knowledge, emotional support, and problem-solving strategies. Families with more than one affected member may develop greater awareness of gluten-free food preparation, cross-contamination prevention, and healthcare follow-up. Such shared experience may reduce uncertainty and promote more rapid adaptation to the disease. However, this finding should also be interpreted with caution, as family history may be associated with earlier diagnosis, greater disease awareness, or stronger engagement with patient associations.

Self-management findings also provide important insights into psychosocial adjustment. Higher self-stigma was associated with poorer psychosocial adjustment, whereas better coping with stigma, greater healthcare efficiency, and greater compliance with treatment were associated with better psychosocial adjustment. This pattern suggests that psychosocial adjustment is closely linked to how individuals perceive and manage the social meaning of their illness. Self-stigma may lead patients to conceal their condition, to avoid social eating situations, or to withdraw from social interactions, which may worsen psychological distress and impair adaptation. Conversely, effective coping skills, confidence in healthcare management, and adherence to treatment may strengthen resilience and support more positive adjustment to living with celiac disease. In line with this interpretation, Bektaş and Uysal²⁴ reported similar patterns among individuals with chronic illness, with relatively higher scores in healthcare efficiency and compliance with treatment than in self-stigma and coping with stigma. These findings suggest that strengthening disease-related self-management skills may be an important strategy for reducing stigma-related difficulties and improving psychosocial adjustment in individuals with chronic illnesses.

Gender-based differences in self-stigma may also be understood within the same social context. Greater visibility of dietary restrictions in family and social settings may increase female patients' feelings of difference or inadequacy, particularly when food preparation and caregiving responsibilities are culturally associated with women. However, this finding should be interpreted cautiously because the sample was predominantly female.

Marital status was also associated with self-management. Married patients had higher scores in the coping with stigma and compliance with treatment sub-dimensions than those of single patients. This result is consistent with the study by Bakır and Zengin,²⁵ which reported higher treatment compliance among married individuals with diabetes. This may suggest that spousal support not only improves emotional adjustment but also supports daily disease management behaviors, such as maintaining a gluten-free diet, seeking health information, and following treatment recommendations.

In terms of self-management, income level may influence patients' access to gluten-free foods, professional counseling, and reliable disease-related information. Therefore, better coping with stigma and greater healthcare efficiency observed among participants with more balanced incomes may reflect greater access to resources that support daily disease management. This interpretation is consistent with previous studies reporting better self-management outcomes among individuals with higher income levels.^{24,25}

No significant differences were found across education levels in the CISM sub-dimensions. This suggests that education level alone may not be sufficient to explain self-management in celiac disease. Disease-specific knowledge, access to professional counseling, social support, health literacy, and previous disease experience may be more influential than formal education level. In contrast, Uğuz and Doğan²⁶ reported that hemodialysis patients with a university education or higher had higher treatment compliance scores. This difference may be related to the distinct treatment requirements for hemodialysis and celiac disease, as celiac disease management depends heavily on daily food choices, environmental control, and long-term behavioral adaptations.

From a self-stigma perspective, adopting an additional diet may make the illness more visible in social contexts and increase the perception of being different from others. This finding may explain why participants with multiple dietary restrictions reported higher self-stigma scores.

Age was negatively correlated with self-stigma. This may indicate that as patients grow older, they become more familiar with their chronic illness and develop greater acceptance of disease-related limitations. Increased life experience may also help individuals manage social reactions more effectively and reduce the internalization of stigma. Similarly, longer disease duration was positively correlated with healthcare efficiency. This finding may reflect the gradual development of disease-specific knowledge, confidence in communicating with health professionals, and practical skills related to gluten-free diet management over time. Nevertheless, these associations should be interpreted as correlational and may also be influenced by unmeasured factors such as health literacy, family support, or access to follow-up care.

The relationship between the PAIS-SR total score and CISM sub-dimensions further supports the association between self-management and psychosocial adjustment. Higher self-stigma was associated with poorer psychosocial adjustment, suggesting that internalized stigma may negatively affect emotional well-being, social participation, and treatment adaptation. Patients who feel ashamed or different because of their illness may avoid social eating situations, conceal their diagnosis, or withdraw from social interactions. In contrast, coping with stigma, greater healthcare efficiency, and higher compliance with treatment were associated with better psychosocial adjustment. In support of the importance of treatment adherence in disease management, Enaud et al.²⁷ reported that adherence to a gluten-free diet and the duration of the diet were important factors associated with quality of life in patients with celiac disease. Their findings highlight the importance of improving dietary adherence and effective disease management to enhance the quality of life of individuals with celiac disease.²⁷ Taken together, these findings suggest that effective self-management, including treatment adherence and the ability to cope with disease-related challenges, may contribute to better psychosocial adjustment and overall well-being in individuals with celiac disease.

Overall, these findings suggest that self-management and psychosocial adjustment in celiac disease are shaped by interrelated social, economic, and psychological factors. Nursing interventions should therefore go beyond dietary education and include psychosocial counseling, stigma reduction strategies, family involvement, and support for patients with financial or dietary difficulties. Identifying vulnerable groups, such as women, single individuals, low-income patients, and those following additional diets, may help health professionals provide more individualized and patient-centered care. These findings are further supported by Zingone et al.,²⁸ who emphasized that psychological distress, anxiety, and reduced quality of life are common among individuals with celiac disease and may negatively affect disease management and long-term adaptation. Therefore, addressing psychosocial needs should be considered an essential component of comprehensive celiac disease care.²⁸

Study Limitations

This study has several limitations. First, participants were recruited from a single celiac association, which may have introduced selection bias. Individuals who are members of such associations may be more informed, motivated, and engaged in disease management than patients who are not affiliated with such organizations. Therefore, the findings may not fully represent all individuals with celiac disease. Second, the sample consisted predominantly of female participants (88.5%). This gender imbalance may have influenced the findings, particularly in gender-based comparisons, and may limit the generalizability of the results to male patients with celiac disease. Third, the study included participants from a limited geographical area; therefore, the findings may not be generalizable to all individuals with celiac disease in Türkiye. Because of the descriptive and correlational design of the study, causal relationships between self-management and psychosocial adjustment cannot be inferred.

CONCLUSION

This study concluded that the psychosocial adjustment and chronic illness self-management skills of individuals with celiac disease are affected by demographic and socioeconomic factors.

Recommendations

- **Psychosocial support and education:** Patients should be provided with special psychosocial support; interviews should be organized to prevent social isolation; and adjustment processes at home should be facilitated through patient education. In addition, age-appropriate educational programs should be organized.
- **Economic support and social awareness:** Food and financial aid programs should be developed to address the economic burden of a gluten-free diet; the sense of stigma should be reduced by increasing social awareness of celiac disease; and patients should be included in regular follow-up programs from the time of diagnosis.

MAIN POINTS

- Psychosocial adjustment was found to be poor in approximately one-third of the participants, indicating that celiac disease imposes not only a physical burden but also a significant psychosocial one.
- Factors such as female gender, low income, and adherence to additional dietary restrictions were associated with poorer

psychosocial adjustment. These findings highlight the need for targeted support programs for at-risk groups.

- Family and social support (particularly being married or having another family member with celiac disease) positively influence both treatment adherence and coping skills.
- Self-stigma is one of the key factors negatively affecting psychosocial adjustment. As stigma increases, adjustment decreases; conversely, as coping skills and treatment adherence improve, psychosocial adjustment strengthens.
- Self-management skills are strongly associated with psychosocial adjustment in adults with celiac disease.

ETHICS

Ethics Committee Approval: Ethical approval for the study was obtained from the Ankara Yıldırım Beyazıt University Medical Research Ethics Committee (approval number: 06/810, date: 01.07.2024).

Informed Consent: Written informed consent was obtained from all participants, and permission to use the scales was secured from the authors.

Footnotes

Authorship Contributions

Concept: İ.B., H.T., Design: İ.B., H.T., Data Collection and/or Processing: İ.B., Analysis and/or Interpretation: İ.B., H.T., Literature Search: İ.B., Writing: İ.B.

DISCLOSURES

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Declaration on the Use of Artificial Intelligence (AI): Artificial intelligence has been used to assist with “text editing”.

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