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Prevalence of anxiety and depression among celiac disease patients

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***Abstract*---**Background and Aim: Celiac disease is an immune-mediated intestinal condition with a 1% worldwide incidence caused by gluten sensitivity in a genetically predisposed individual. It manifests as gastrointestinal symptoms, malabsorption-related symptoms, and/or extra intestinal manifestations such as neuropsychiatric problems. The present study aimed to determine the prevalence of anxiety and depression in celiac disease patients. Patients and Method: This questionnaire based cross-sectional study was carried out on 126 celiac disease patients investigated in the Internal Medicine and Gastroenterology Department of District Headquarter Hospital, Charsadda Pakistan. All the patients with age ≥18 years old diagnosed with celiac disease based on positive serological test and biopsy confirmation were enrolled. The questionnaire consisted of demographic details, Generalized Anxiety Disorder-7 (GAD-7) score, and nine questions that assessed depressive symptoms. SPSS version 27 was used for data analysis. Results: The overall mean age was 36.5± 12.16 years. Of the 126 total patients, there were 98 (77.8%) female and 28 (22.2%) male. The incidence of anxiety and depressive symptoms were 84.1% (n=106)

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and 81% (n=102) respectively. There was no causal relationship found between any of the factors and the occurrence of anxiety or depression symptoms. The mean depression and anxiety score was 11.79 ± 6.76, and 10.24 ± 5.69 respectively. About 44.4% (n=56) patients had comorbidities: the most prevalent were diabetes mellitus and thyroid disease. Approximately 70 (55.6%) patients had celiac disease diagnosed 1 to 5 years before the investigation. The incidence of symptomatic patients and those with no complaint of GFD were 58.7% (n=74) and 31.7% (n=40) respectively. Conclusion: Anxiety and depression symptoms are seen in a large proportion of celiac disease patients. Given the high frequency and potential impact on quality of life, clinicians should screen patients for mental comorbidities and send those who exhibit symptoms for further examination.

***Keywords*---**celiac disease, anxiety, depression.

Introduction

Celiac disease (CD) is a chronic autoimmune enteropathy characterized by abnormalities in the small intestine mucosa that result in malabsorption. Gluten ingestion causes it in those who are genetically prone [1]. Positive celiac antibody prevalence is 1.4% worldwide, whereas histologically proven celiac disease prevalence is 0.7%, with Northwest Europe having the greatest frequency and South America having the lowest [2]. In a recent Jordanian research, the incidence of celiac disease was found to be 1:2800 live births, with a prevalence of 7:100000 [3]. Adults may have gastrointestinal symptoms such as diarrhea and flatulence, as well as the implications of malabsorption such as weight loss, anemia or iron insufficiency, and osteopenia. Dermatitis herpetiformis, increased liver enzymes, infertility, and neuropsychiatric signs are examples of extraintestinal manifestations. Gluten-free diet (GFD) and nutritional supplementation are the primary treatment for celiac disease [4, 5].

Anxiety and depressive disorders are prevalent mental conditions. Previous research has found that depression and anxiety are risk factors for celiac disease [6]. Patients with celiac disease who have depression or anxiety frequently have severe somatic symptoms taking long to recover, and poor outcomes, and hence demand more medical resources [7, 8]. In contrast, numerous studies reported the higher incidence of anxiety and depression among celiac disease patients [9]. Previous research has found a link between celiac disease and mental illnesses [10]. Depressive symptoms are common in celiac disease patients, ranging from 6 to 69% [11]. Anxiety was observed to be present in 16-84% of celiac disease patients [12, 13]. There have been no investigations on the frequency of psychiatric comorbidities in celiac disease in Pakistan. As a result, the primary goal of our study was to investigate the incidence of anxiety and depressed symptoms in a group of celiac disease patients.

Methodology

This questionnaire based cross-sectional study was carried out on 126 celiac disease patients investigated in the Internal Medicine and Gastroenterology Department of District Headquarter Hospital, Charsadda Pakistan. All the patients with age ≥18 years old diagnosed of celiac disease based on positive serological test and biopsy confirmation were enrolled. The questionnaire consisted of demographic details, Generalized Anxiety Disorder-7 (GAD-7) score, and nine questions that assessed depressive symptoms. The questionnaire was divided into three sections: the first included demographic information such as age, gender, marital status, education level, weight, height, presence of comorbidities, and family history of CD, as well as disease-specific questions such as duration since diagnosis, compliance with GFD, and presence of symptoms. The second component included the Generalized Anxiety Disorder-7 (GAD-7) score and seven questions that assessed anxiety symptoms. The third segment included nine questions that used the Patient Health Questionnaire-9 (PHQ-9) to measure depression symptoms. The GAD-7 anxiety questionnaire consisted of seven items, each scored from zero to three, with a total score range of 0-21. When the overall score was five or above, anxiety symptoms were judged present. The degree of anxiety symptoms was classified light if the total score was five to nine, moderate if the total score was ten to fourteen, and severe if the total score was greater than fourteen. The PHQ-9 questionnaire was used to measure depressive symptoms. It consisted of nine items, each rated from zero to three, with a total score ranging from 0-27. If the overall score was five or above, depressive symptoms were judged present. The severity of depressive symptoms was classified as light if the score was five to nine, moderate if the score was ten to fourteen, fairly severe if the score was fifteen to nineteen, and severe if the score was twenty.

Descriptive statistics was done using SPSS version 27. The frequencies and percentages were used to characterize categorical variables. For the continuous variables, mean and standard deviation were computed. The link between anxiety symptoms, depressive symptoms, and category factors was examined using Spearman correlation. All the data analysis was done using 95% confidence interval and 5% level of significance.

Results

The overall mean age was 36.5± 12.16 years. Of the 126 total patients, there were 98 (77.8%) female and 28 (22.2%) male. The incidence of anxiety and depressive symptoms were 84.1% (n=106) and 81% (n=102) respectively. There was no causal relationship found between any of the factors and the occurrence of anxiety or depression symptoms. About 44.4% (n=56) patients had comorbidities: the most prevalent were diabetes mellitus and thyroid disease. Approximately 70 (55.6%) patients had celiac disease diagnosed 1 to 5 years before the investigation. The incidence of symptomatic patients and those with no compliant of GFD were 58.7% (n=74) and 31.7% (n=40) respectively. Patient's demographic details and baseline characteristics are shown in Table-I. The mean depression and anxiety score was 11.79 ± 6.76, and 10.24 ± 5.69 respectively. The incidence of no anxiety, mild, moderate, and severe anxiety was 14.3% (n=18), 41.3%

(n=52), 21.4% (n=27), and 23% (n=29) respectively as illustrated in Figure-1. Similarly, the incidence of no depression, mild, moderate, severely moderate, and severe depression was 16.7% (n=21), 26.2% (n=33), 23% (n=29), 13.5% (n=17), and 20.6% (n=26) respectively as shown in Figure-2.

Table-I characteristics of celiac disease patients (N=126)

Parameters	Value [mean ± SD] N (%)
Age (years)	36.5± 12.16
Gender N (%) Male Female	 28 (22.2) 98 (77.8)
BMI (Kg/m2)	24.98 ± 16.46
Anxiety score	10.24 ± 5.69
Depression score	11.79 ± 6.76
Body Mass Index Status Underweight Normal Weight Overweight Obese	 15 (11.9) 62 (49.2) 32 (25.4) 17 (13.5)
Family history of Celiac disease N (%) Yes No	 28 (22.2) 98 (77.8)
Diagnosis duration (years) N (%) < one year 1-5 6-10 11-15 >15	 8 (6.3) 70 (55.6) 20 (15.2) 10 (7.9) 18 (14.3)
Comorbidities N (%) Yes No	 56 (44.4) 70 (55.6)

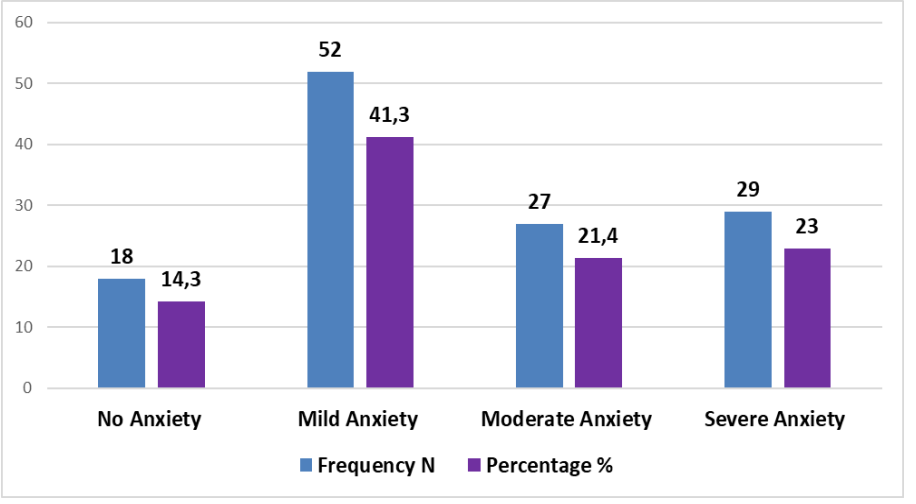

Figure-1 Anxiety levels among celiac disease patients (N=126)

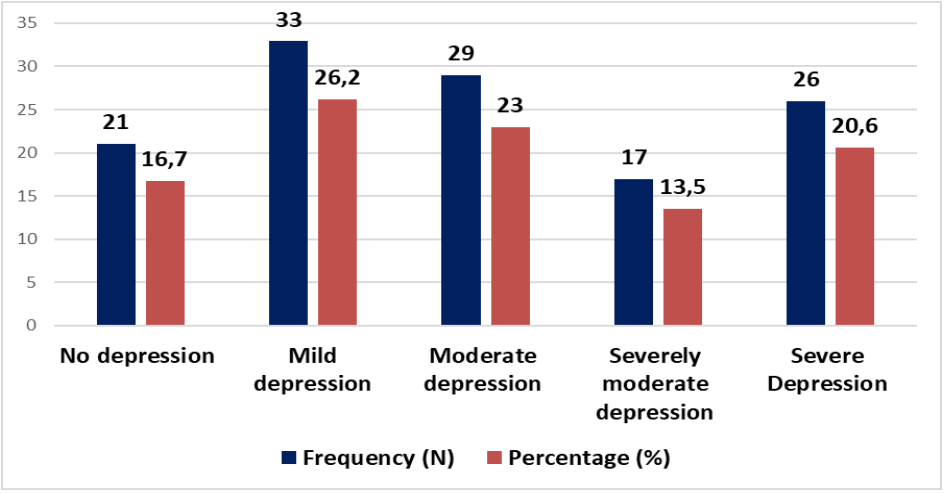

Figure-2 Depression levels among celiac disease patients [N=126]

Discussion

The current investigation mainly focused on the prevalence of anxiety and depression in celiac disease patients and reported that the incidence of anxiety and depressive symptoms were 84.1% (n=106) and 81% (n=102) respectively. There was no causal relationship found between any of the factors and the occurrence of anxiety or depression symptoms. With the exception of female gender, which the latter found to be related with greater rates of anxiety, this coincides with the findings of previous investigations [14, 15].

The overall incidence of anxiety and depressive symptoms was 84.1% and 81%, respectively, which is greater than previously published research (23.7% and 13.3%, respectively) [16, 17]. In our study, the incidence of anxiety symptoms in celiac patients was comparable to that observed by Esenyel et al.,that examined 441 CD patients in comparison with inflammatory bowel disease patients and healthy controls and concluded that 84.8% of celiac patients were considered anxious [18]. Our worry rate was greater than the sole Middle Eastern study we could locate, in which Rostami-Nejad et al. reported a 67.8% anxiety rate in 283 celiac patients [19].

We observed extremely high rates of depressed symptoms, significantly beyond the stated prevalence in the literature, which varied from 6 to 69% [20]. The high numbers we discovered may be explained by differences in methodologies used to diagnose depressed and anxiety symptoms, as well as a lack of public knowledge of celiac disease. Furthermore, the psychological effects of adhering to a GFD include limiting a patient's socialization with others.

The etiology of anxiety and depression in celiac disease is complicated, with several ideas proposed to explain the connection between the two conditions. These include the psychosocial impact of celiac disease and the restrictive nature of the GFD [21], the role of low levels of tryptophan- an essential amino acid important for the synthesis of serotonin [22], a possible autoimmune reaction

related to the release of immunogenic peptides that cross the blood-brain barrier and affect brain function [23, 24].

Anxiety levels in CD patients diminish after beginning a gluten-free diet, but depressive symptoms persist [25, 26]. Several studies have found no link between depressive symptoms in CD patients and age, gender, or socioeconomic factors [27]. There is no link between physical symptoms such stomach pain and diarrhea and depressive symptoms, according to the research [28, 29]. In terms of age and gender, the control group in this study was comparable to the study group.

Anxiety and despair in CD patients and their parents can have an impact on diet compliance. Our study's weakness is the small number of patients who participated. Furthermore, mild indications of depression, such as irritability, hostility, and enuresis complaints, should be explored.

Conclusion

Anxiety and depression symptoms are seen in a large proportion of celiac disease patients. Given the high frequency and potential impact on quality of life, clinicians should screen patients for mental comorbidities and send those who exhibit symptoms for further examination.

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