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Evaluation of Anxiety Levels and Associated Factors in Mothers Attending a Pediatric Gastroenterology Outpatient Clinic

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Abstract

Objective: This study aimed to evaluate the state and trait anxiety levels of mothers whose children were referred to a pediatric gastroenterology outpatient clinic, to identify associated sociodemographic and clinical factors, and to compare these findings with those of mothers of healthy children.

Methods: This prospective, comparative, observational study enrolled 98 mothers whose children were attending the pediatric gastroenterology clinic for the first time, and 101 mothers whose children were healthy and served as controls. Data were collected on demographic characteristics, clinical features, symptom duration and diagnoses. Maternal anxiety levels were assessed using the Spielberger State-Trait Anxiety Inventory (STAI). The diagnostic groups were categorised as organic gastrointestinal disorders, functional gastrointestinal disorders, and malnutrition.

Results: The patient and control groups were comparable in terms of maternal and child age. However, working status and educational level were significantly lower among mothers in the patient group ($p < 0.001$). Mothers in the patient group had significantly higher STAI-Trait scores (49.2 ± 6.8 vs. 46.3 ± 5.4; $p = 0.001$). STAI-State scores were higher, though not significantly so ($p = 0.114$). Among diagnostic subgroups, anxiety levels did not differ significantly. STAI-State scores showed a negative correlation with child age ($\rho = -0.349$, $p < 0.01$). Maternal employment was significantly associated with lower state anxiety ($B = -4.33$, $p = 0.037$), whereas education was not associated with either anxiety domain. The duration of symptoms did not correlate with any maternal anxiety parameter. Additionally, no significant associations were found between diagnostic category and either state or trait anxiety.

Conclusion: Mothers of children attending pediatric gastroenterology clinics exhibit significantly higher levels of chronic anxiety. Younger child age and an absence of maternal employment were associated with higher situational anxiety. These findings emphasize the importance of incorporating routine psychological screening and supportive interventions into pediatric gastroenterology settings.

Keywords: State-Trait Anxiety, Pediatric Gastroenterology, Malnutrition, Gastrointestinal Disorders

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Çocuk Gastroenteroloji Polikliniğine Başvuran Annelerde Anksiyete Düzeyleri ve İlişkili Faktörlerin Değerlendirilmesi

Öz

Amaç: Bu çalışmada, çocukları pediatrik gastroenteroloji polikliniğine sevk edilen annelerin durumluk ve sürekli kaygı düzeylerini değerlendirmek, ilişkili sosyodemografik ve klinik faktörleri belirlemek ve bu bulguları sağlıklı çocukların anneleriyle karşılaştırmak amaçlandı.

Yöntemler: Bu prospektif, karşılaştırmalı, gözlemsel çalışmaya, çocukları ilk kez pediatrik gastroenteroloji kliniğine başvuran 98 anne ve çocukları sağlıklı olan ve kontrol grubu olarak görev yapan 101 anne katıldı. Demografik özellikler, klinik özellikler, semptom süresi ve tanılar hakkında veriler toplandı. Annelerin kaygı düzeyleri Spielberger Durum-Sürekli Kaygı Envanteri (STAI) kullanılarak değerlendirildi. Tanı grupları organik gastrointestinal bozukluklar, fonksiyonel gastrointestinal bozukluklar ve malnütrisyon olarak sınıflandırıldı.

Bulgular: Hasta ve kontrol grupları, anne ve çocuk yaşı açısından benzerdi. Ancak hasta grubundaki annelerin çalışma durumu ve eğitim düzeyi anlamlı olarak daha düşüktü ($p < 0.001$). Hasta grubunda sürekli kaygı (STAI-T) puanları anlamlı derecede daha yüksekti (49.2 ± 6.8'e karşı 46.3 ± 5.4; $p = 0.001$). Durumluk kaygı (STAI-S) puanları hasta grubunda daha yüksek olmakla birlikte anlamlı değildi ($p = 0.114$). Tanısal alt gruplar arasında kaygı düzeyleri yönünden anlamlı fark bulunmadı. STAI-S puanları ile çocuk yaşı arasında negatif korelasyon vardı ($\rho = -0.349$, $p < 0.01$). Annenin çalışıyor olması daha düşük durumluk kaygı ile ilişkiliydi ($B = -4.33$, $p = 0.037$); eğitim düzeyinin ise kaygı üzerinde etkisi yoktu. Semptom süresi ile anne kaygısı arasında ilişki saptanmadı. Ayrıca tanı kategorisi ile durumluk veya sürekli kaygı arasında anlamlı ilişki bulunmadı.

Sonuç: Çocuk gastroenteroloji polikliniğine başvuran çocukların annelerinde kronik kaygı düzeyleri belirgin olarak daha yüksektir. Daha küçük çocuk yaşı ve annenin çalışmıyor olması, artmış durumluk kaygı ile ilişkilidir. Bu sonuçlar, çocuk gastroenterolojisi birimlerinde düzenli psikolojik tarama ve destek hizmetlerinin önemini vurgulamaktadır.

Anahtar kelimeler: Durumluk-Sürekli Kaygı, Çocuk Gastroenterolojisi, Malnütrisyon, Gastrointestinal Bozukluklar.

INTRODUCTION

Pediatric gastroenterology outpatient clinics provide care for patients presenting with a variety of symptoms relating to the gastrointestinal system, the liver, and nutritional disorders. These patients often have chronic conditions and may require multiple visits. Following necessary evaluations, patients may be diagnosed with either organic or functional gastrointestinal diseases. In some cases, the underlying pathology may remain undetected, resulting in treatment resistance and recurrence of symptoms. This can cause difficulties for families and increase anxiety in mothers. Anxiety is a psychological state characterised by feelings of apprehension and fear, which are often accompanied by physical symptoms[1]. It is a state of mind that develops based on preparing for negative future events. If anxiety reaches excessive levels, it can be classified as an anxiety disorder.

According to Bandura's self-efficacy theory, a parent's belief in their ability to perform caregiving tasks is important for coping with challenging situations[2-5]. The literature has discussed maternal emotional states, including anxiety, as factors that may influence caregiving experiences and parental perceptions [3-5]. However, these relationships are complex and shaped by multiple contextual factors, including caregiving demands and socioeconomic conditions. Previous studies have suggested that heightened maternal anxiety may be associated with an increased psychological burden and stress during the caregiving process, particularly in the context of chronic childhood conditions [3-5]. However, these relationships are complex and are influenced by various contextual factors, such as caregiving demands and socioeconomic conditions. While motherhood has been associated with positive psychological adaptations in some contexts,

previous research has also reported increased levels of stress, anxiety and depressive symptoms among mothers, particularly when caregiving demands are high[6]. Elevated maternal anxiety has been discussed in the literature as a factor that may affect parent–child interactions and family dynamics without implying causality[3,4]. Persistent maternal anxiety may persist even after a child has been clinically evaluated and has been associated with increased emotional strain and concerns regarding healthcare processes[4,5]. These observations underscore the importance of providing clear information, reassurance and supportive approaches to families within pediatric healthcare settings[7].

Research has demonstrated that parents of children with chronic health conditions, including respiratory problems, oncological diseases and rare genetic disorders, tend to experience elevated anxiety and a greater psychological burden [8-10]. Consistent with this, it was found that mothers of children with chronic kidney disease experienced significantly greater caregiver burden and poorer mental health outcomes than controls, suggesting that the demands of long-term caregiving are closely associated with maternal psychological distress[11]. In addition, it was reported that anxiety symptoms mediate the relationship between hopelessness and depressive symptoms in mothers of infants hospitalised in a neonatal intensive care unit, emphasising the interplay between anxiety and broader aspects of maternal mental health[12]. Despite the growing body of literature focusing on the burden of caregiving and anxiety in specific pediatric clinical settings, studies examining anxiety levels in mothers whose children present with a variety of gastrointestinal symptoms at a pediatric gastroenterology outpatient clinic are limited. Therefore, this study aimed to evaluate maternal anxiety levels and associated factors in this specific clinical context, comparing these findings with those of mothers of healthy children.

METHODS

Study Design and Population

The study was designed as a prospective, comparative, observational investigation, carried out at the Pediatric Gastroenterology Outpatient Clinic at Tepecik Training and Research Hospital in Izmir, Turkey.

Children under 18 years of age who were being referred to the clinic for the first time, along with their mothers, were invited to participate in the study on a consecutive basis. The inclusion criteria for the patient group were: (i) first presentation to the pediatric gastroenterology outpatient clinic; (ii) absence of a previously diagnosed chronic gastrointestinal or systemic disease; and (iii) the mother's availability to complete the study questionnaires. Exclusion criteria included the presence of a chronic disease in the child, previous follow-up at a pediatric gastroenterology clinic and a self-reported psychiatric disorder in the mother.

The control group consisted of mothers of healthy children with no known chronic or acute illnesses who had not been referred to the pediatric gastroenterology outpatient clinic. Control participants were recruited from routine pediatric outpatient visits and community-based settings during the same study period. Mothers in the control group had no history of psychiatric diagnosis.

All participants were enrolled consecutively within the same study period to ensure comparability between groups and minimise temporal bias.

Data collection

The demographic characteristics of patients, their symptoms, the duration of symptoms, anthropometric measurements, and diagnoses received during follow-up were recorded. The diagnoses were categorised as organic

gastrointestinal disorders (group 1), functional disorders (group 2), and malnutrition (group 3). Organic gastrointestinal disorders included conditions with identifiable structural, inflammatory, or biochemical pathology, such as gastroesophageal reflux disease, celiac disease, inflammatory bowel disease, food allergy, and hepatobiliary disorders. The functional gastrointestinal disorders were diagnosed using with the Rome IV criteria and included conditions such as functional abdominal pain, functional constipation, and functional dyspepsia[13]. The malnutrition group comprised children who were diagnosed with undernutrition based on anthropometric measurements, such as weight, height and body mass index. Malnutrition was defined according to the Waterlow criteria[14].

Personal sociodemographic information was collected using a self-administered cross-sectional questionnaire from mothers of patients and control group. The questionnaire investigated the following: marital status, age, employment and educational status was provided.

The Spielberger Trait-State Anxiety Inventory

The Spielberger State-Trait Anxiety Inventory was used to assess the anxiety levels of the mothers of patients and mothers in control group [15]. The STAI comprises two subscales, one evaluating state anxiety (STAI-S) and the other evaluating trait anxiety (STAI-T). Each subscale contains 20 items that are rated on a 4-point Likert scale ranging from 1 (not at all) to 4 (very much)[15]. Subscale scores range from 20 to 80; higher scores indicate greater anxiety. Öner and LeCompte established the Turkish validity and reliability of the inventory in 1983[16]. All mothers completed the Turkish version of the STAI via self-report to determine their current (state) and general (trait) anxiety levels. The State Anxiety Inventory (STAI-S) measures how an individual feels at a given time and in specific situations. In contrast, the Trait Anxiety Inventory (STAI-T) measures feelings independently of settings and conditions[2]. The study was conducted in compliance with the ethical standards outlined in the Declaration of Helsinki. Ethical approval was granted by the local ethics committee (No: 2021/06-14; 15 June 2021), and written informed consent was obtained from all participants prior to enrollment.

Statistical analysis

The data were analysed using SPSS version 27.0. Categorical variables (e.g. sex, maternal employment status and educational level) were summarised as frequencies and percentages, and these were then compared between groups using either the Pearson chi-square test or the Pearson exact chi-square test, depending on whether or not the expected cell counts were low. For comparisons involving more than two categorical groups, Fisher's exact test was applied as appropriate. Continuous variables were presented as the mean ± standard deviation (SD) for normally distributed data, or as the median with the interquartile range (IQR) for non-normal distributions. Normality was assessed using the Shapiro–Wilk and Kolmogorov–Smirnov tests. We used the independent samples t-test for normally distributed continuous variables and the Mann-Whitney U test for non-normally distributed continuous variables. The Kruskal-Wallis test was used to compare the three diagnostic subgroups, and post hoc pairwise analyses were performed as needed.

Linear regression analyses were performed to examine the independent associations between maternal sociodemographic variables and anxiety outcomes, with separate models for STAI-S and STAI-T scores. Maternal employment status and educational level were included as predictor variables. Model assumptions, including linearity, homoscedasticity, independence of errors and normality of residuals, were verified. Regression coefficients (B), standard errors, and p-values were reported. A two-tailed p-value of less than 0.05 was considered statistically significant. As several variables did not follow a normal distribution, correlations between continuous variables (maternal age, child age, symptom

duration, STAI-S and STAI-T) were assessed using the Spearman rank correlation coefficient. For these analyses, a two-tailed p-value of less than 0.01 was considered statistically significant.

RESULTS

A total of 199 mothers were included in the study. Of these, 98 (49.2%) constituted the patient group, consisting of mothers of children attending the pediatric gastroenterology outpatient clinic. Meanwhile, 101 (50.8%) formed the control group, comprising mothers of healthy children (Table I). Within the patient group, children were classified into three diagnostic subgroups following clinical evaluation. Thirty-five patients (35.7%) were identified as having organic gastrointestinal disorders, 39 patients (39.8%) were identified as having functional gastrointestinal disorders, and 24 patients (24.5%) were identified as being malnutrition (Table II). The sociodemographic and clinical characteristics of the patient and control groups, as well as the diagnostic subgroups within the patient population, are summarised in Tables I and II.

Comparison of sociodemographic characteristics and anxiety levels between mothers of patient and control groups

A total of 199 mothers participated in the study, comprising 98 mothers of patients presenting to the pediatric gastroenterology outpatient clinic (49.2%), and 101 mothers of control group (50.8%). No statistically significant differences were observed between the two groups regarding the age and sex of the children ($p = 0.853$ and $p = 0.67$, respectively). The age of the mothers was also comparable between the two groups ($p = 0.927$).

Mothers in the control group were more likely to be employed than those in the patient group ($p<0.001$). Control group mothers also demonstrated significantly higher educational attainment. Specifically, 75.2% of mothers in the control group had received more than eight years of education, while 36.7% of mothers in the patient group had received education ($p < 0.001$). The mean STAI-S score was slightly higher in the patient group than in the control group, but this difference was not statistically significant ($p = 0.114$). However, mothers in the patient group reported significantly higher STAI-T levels than those in the control group ($p = 0.001$) (Table I).

Comparison of characteristics and anxiety levels within patient subgroups

The subgroups also differed significantly in terms of symptom duration ($p = 0.022$). Children with functional gastrointestinal disorders reported the longest median symptom duration (52 months; IQR: 13–104), while the shortest median symptom duration was observed in Group 1 (12 months; IQR: 7.0–53.5). Maternal age also varied significantly across the groups. Mothers in the malnutrition group were the youngest, compared to those in Groups 1 and 2 ($p = 0.003$). No significant differences were observed in maternal employing status or educational attainment among the three patient subgroups ($p = 0.157$ and $p = 0.219$, respectively).

Although the STAI-S scores were higher in the malnourished group (47.7 ± 10.4) than in Groups 1 and 2, this difference was not statistically significant ($p = 0.061$). There was no significant difference in STAI-T scores between subgroups ($p = 0.415$).

Spearman's correlation analysis revealed a negative correlation between children's age and their STAI-S scores ($\rho = -0.349$, $p < 0.01$). This suggests that mothers of young children have higher levels of state anxiety. Additionally, there was a moderate positive correlation between STAI-S and trait anxiety scores ($\rho = 0.472$, $p < 0.01$). However, no significant correlations were observed between symptom duration and maternal age ($p = 0.070$), child age ($p = 0.188$), STAI-S scores ($p = 0.969$) or STAI-T scores ($p = 0.199$).

Linear regression analyses were performed to examine the association between maternal employing status and education attainment, STAI-S, and STAI-T scores. Regarding state anxiety, it

was found that maternal employment status was significantly associated with STAI-S scores (B = -4.33, p = 0.037). This suggests that employed mothers experienced lower levels of state anxiety than unemployed mothers. However, there was no significant relationship between education level and state anxiety (B = -2.18, p = 0.206). Regarding trait anxiety, neither maternal employment (B = 0.19, p = 0.915) nor educational attainment (B = -1.39, p = 0.346) exhibited significant associations. However, the model constants were significant for both STAI-S (B = 54.34, p < 0.001) and STAI-T scores (B = 50.78, p < 0.001).

Table I: The characteristics of the children and their mothers in the patient and control groups

	Total	Patient Group	Control Group	p
Children characteristics, n(%)	199 (100)	98 (49.2)	101 (50.8)	
Sex (Female)(%)	107 (53.8)	51 (52.0)	56 (55.4)	0.671[a]
Age, mean ± SD	9.2 ± 6.3	9.2 ± 6.3	9.1 ± 6.3	0.853[b]
Mothers characteristics, n(%)	199 (100)	98 (49.2)	101 (50.8)	
Age, mean ± SD	37.1 ± 7.1	37.1 ± 7.3	37.0 ± 6.7	0.927[b]
Working status, n (%)	84 (42.2)	18 (18.4)	66 (65.3)	**<0.001[a]**
Education, n (%) ≤8 years >8 years	87 (43.7) 112 (56.3)	62 (63.2) 36 (36.7)	25 (24.7) 76 (75.2)	**<0.001[a]**
State-trait anxiety inventory/state, mean ± SD (range)	42.5 ± 7.4 (21-64)	43.4 ± 8.2 (21-64)	41.7 ± 6.4 (32-58)	0.114[b]
State-trait anxiety inventory/trait, mean ± SD (range)	47.7 ± 6.3 (30-69)	49.2 ± 6.8 (30-68)	46.3 ± 5.4 (36-69)	**0.001[b]**

[a]*Pearson exact chi-square test.* [b]*Independent Samples T-Test.*

Table II: The characteristics of the children and their mothers in the patient group

	Total	Group 1	Group 2	Group 3	p
Children characteristics, n(%)	98 (100)	35 (35.7)	39 (39.8)	24 (24.5)	
Sex (Female)(%)	68 (69.4)	27 (77.1)	23 (59.0)	18 (75.0)	0.188[a]
Age, median (IQR)	10.6 (1.9-15.2)	15.1 (12.1-16,5)	7.4 (4.4-15.1)	0.94 (0.23-6.0)	**<0.001[b]**
Duration of symptoms, months median (IQR)	24 (8.0-55)	12 (7.0-53.5)	52 (13-104)	22 (10-40)	0.022[b]
Mothers characteristics, n(%)	98 (100)	35 (35.7)	39 (39.8)	24 (24.5)	
Age, mean ± SD	37.1 ± 7.5	40.4 ± 5.6	37.3 ± 7.5	32.0 ± 7.3	**0.003[b]**
Working status, n (%)	18 (18.4)	3 (8.6)	9 (23.1)	6(25)	0.157[c]
Education, n (%) ≤8 years >8 years	62 (63.3) 36 (36.7)	22 (62.9) 13 (37.1)	28 (71.8) 11 (28.2)	12 (50) 12 (50)	0.219[a]
State-trait anxiety inventory/state, mean ± SD (range)	43.4 ± 8.2 (21-64)	41.7 ± 6.2 (31-53)	42.3 ± 7.5 (21-61)	47.7 ± 10.4 (36-64)	0.061[d]
State-trait anxiety inventory/trait, mean ± SD (range)	49.2 ± 6.8 (30-68)	48.4 ± 7.8 (30-64)	50.3 ± 6.7 (36-68)	48.5 ± 5.3 (43-57)	0.415[d]

Group 1, organic gastrointestinal disorders; group 2, functional gastrointestinal disorders; group 3, malnutrition

[a] Pearson exact chi-square test. bMann–Whitney U test. cFisher's exact test.

[d] Kruskal–Wallis tes

DISCUSSION

Our findings suggest that mothers who bring their children to pediatric gastroenterology outpatient clinics experience significantly higher anxiety levels in the long term. This indicates persistent psychological stress associated with chronic digestive and nutritional problems. This reflects the ongoing burden of managing challenging pediatric healthcare issues rather than merely an emotional response during the clinic visit. The persistence of high anxiety levels despite differences in clinical presentation suggests that caregiving plays a central role in shaping maternal distress, as opposed to the effects of specific illnesses or symptom duration.

The significantly higher STAI-T scores reported by mothers in the patient group than by control mothers suggests that raising a child with an ongoing health problem leads to persistent psychological stress for mothers. Trait anxiety measures an individual's chronic predisposition to anxiety. This chronic psychological distress is consistent with extensive literature indicating that families of children with chronic illnesses experience higher levels of distress[3,4]. Dealing with a child's health issue often represents a chronic life crisis for the family.

The significantly higher STAI-T scores reported by mothers in the patient group than by control mothers suggests that mothers of children evaluated in the pediatric gastroenterology outpatient clinic experience higher anxiety levels — is consistent with previous national and international studies demonstrating an increased psychological burden among caregivers of children with chronic health conditions. Studies conducted in Turkey have shown that mothers of children with chronic diseases experience elevated levels of anxiety and depressive symptoms, as well as a high level of caregiving burden, emphasising the emotional strain associated with long-term caregiving responsibilities[3,4]. Similarly, international studies have reported that maternal anxiety is closely related to caregiver burden and reduced quality of life in parents of children with chronic medical conditions[6].

Recent evidence further suggests that caregiver-related psychological distress is not solely determined by disease-specific factors, but rather reflects the broader experience of managing an ongoing pediatric illness. In particular, caregiver burden and maternal anxiety have been shown to coexist as interrelated components of the caregiving process, independently of the underlying diagnosis. This highlights the cumulative psychological load associated with repeated healthcare encounters and uncertainty[11]. Furthermore, anxiety symptoms have been reported to interact with other psychological domains, such as depressive symptoms and hopelessness. This suggests that maternal emotional distress is a multidimensional response, rather than an isolated reaction to chronic symptoms alone[12]. In this context, our findings extend the existing literature by demonstrating that elevated maternal anxiety is also evident among mothers presenting their children at a pediatric gastroenterology outpatient clinic. This supports the notion that the psychological burden of caregiving plays a central role in shaping maternal emotional responses during medical evaluations.

In contrast, there were no statistically significant differences in STAI-S scores between the patient group and the control group. State anxiety reflects temporary, situational anxiety, and the assessment in the present study was conducted at a single time point during the outpatient visit[5]. The lack of a significant

difference in acute anxiety suggests that the primary psychological outcome in this specialised clinic setting is elevated general vulnerability (STAI-T), rather than immediate, situational distress (STAI-S), experienced during routine outpatient visits.

Our analysis revealed significant sociodemographic differences. Mothers in the patient group were less likely to be employed outside the home and had significantly lower levels of education than those in the control group. This finding is widely supported in the literature. Reduced socioeconomic resources, as indicated by lower levels of education and unemployment, have been linked to higher rates of chronic anxiety and depression[5]. Additionally, linear regression analysis revealed how socioeconomic factors influenced maternal anxiety levels within the patient population. The finding that maternal employment was significantly associated with lower anxiety scores suggests that employment acts as a protective buffer against acute, situational distress. This finding is consistent with previous studies on mothers of children with chronic illnesses, which revealed a significant negative correlation between employment status and STAI-S scores[5,17]. Employment likely helps to mitigate sudden situational stress (STAI-S) related to managing a child's health condition by providing psychological relief, financial stability or increased social integration. Conversely, the analysis revealed that maternal employment status was not significantly related to trait anxiety, a finding supported by parallel literature. No significant association was found between maternal employment and STAI-T scores in chronic patient groups. Persistent anxiety is defined as a relatively stable personality trait representing long-term vulnerability, and is therefore less sensitive to transient factors such as work status or the acute stress of a clinic visit. This distinction is important because, unlike the transient decline seen in state anxiety, chronic anxiety (trait) often remains unchanged even after definitive diagnoses are made[1].

Our analysis revealed significant sociodemographic differences. Mothers in the patient group were less likely to be in paid employment and had significantly lower levels of education than those in the control group. This finding is widely supported in the literature, as reduced socioeconomic resources — reflected by lower educational attainment and unemployment — have been associated with higher rates of chronic anxiety and depression[5]. Additionally, linear regression analysis demonstrated that certain socioeconomic factors were associated with maternal anxiety levels within the patient population. Maternal employment was significantly associated with lower state anxiety scores, suggesting that employment may function as a protective factor against acute, situational distress. This is consistent with previous studies involving mothers of children with chronic illnesses which reported a negative correlation between employment status and STAI-S scores[5,17]. Employment may reduce situational anxiety through psychological distraction, financial security or increased social integration. However, given that the regression models included a limited number of variables, these findings should be interpreted with caution.

In contrast, maternal employment status was not significantly associated with trait anxiety. This finding aligns with previous literature indicating no significant relationship between employment status and STAI-T scores in mothers of children with chronic conditions[5,17]. Persistent anxiety, as measured by trait anxiety, represents a relatively stable psychological characteristic and is therefore less responsive to transient factors such as employment status or the acute stress of a clinical encounter. This

distinction is clinically relevant, as trait anxiety may remain unchanged even after diagnostic clarification or resolution of situational stressors[1].

A mother's low level of education, limited access to information or poor problem-solving skills can impact her ability to cope with her child's health issues[5]. Since mothers usually take on the main caregiving role, the demands of long-term care can restrict their ability to work, resulting in financial difficulties that can increase family stress and emotional distress[7]. However, linear regression analysis found no significant relationship between educational level and STAI-S or STAI-T scores in the patient group. This finding is consistent with the results of a study involving parents referred for murmurs, which also found no significant relationship between parental education and STAI scores[18]. Generally, the literature suggests that a low level of education may exacerbate anxiety due to difficulties in problem solving relating to the child's illness or processing complex medical information[19]. However, the absence of a clear relationship in this specific cohort suggests that the severe and widespread nature of chronic pediatric gastrointestinal/nutritional problems may override the protective effect typically provided by higher education.

When the patient group was analyzed according to diagnostic subgroups (organic gastrointestinal disorders, functional disorders, and malnutrition), no statistically significant differences were observed in STAI-S or STAI-T. This uniformity suggests that the severity of maternal anxiety is more closely related to the overall experience of caring for a child with health concerns than to the specific gastrointestinal diagnosis or duration of symptoms. This finding is consistent with studies showing comparably high levels of anxiety and depression among mothers of children with various chronic conditions, including asthma and diabetes[3]. However, the moderate positive correlation between state and trait anxiety highlights the interaction between transient emotional responses and more persistent anxiety tendencies. This supports the idea that mothers with higher baseline anxiety levels may be particularly vulnerable to increased distress in clinical settings [20]. Additionally, the absence of significant correlations involving complaint duration indicates that the chronicity of the child's symptoms alone does not affect maternal anxiety levels. This patern highlights the predominance of developmental and psychological factors in shaping maternal emotional responses during medical evaluations, rather than symptom duration[21].

Significant differences in median child age were found across the subgroups, reflecting presentation patterns for malnutrition that are more prevalent in infancy in pediatric practice. However, the inverse association between child age and maternal state anxiety suggests that mothers of younger children may experience greater situational stress during pediatric gastroenterology consultations, which is consistent with evidence of increased maternal vigilance and anxiety during the early stages of development[22].

The consistently high levels of trait anxiety detected in mothers in the patient group emphasise the necessity of integrating psychological support into pediatric specialised care[5]. As maternal mental health significantly influences treatment adherence and a child's overall outcomes in chronic diseases, systematic screening for psychological distress, such as anxiety and depression, in pediatric clinics is essential. Previous studies have demonstrated that caregiver psychological distress adversely affects disease management, treatment adherence and health outcomes in children with chronic conditions[18,19]. Acceptable integrated mental healthcare models for patients and families in subspecialty

clinics (e.g. pediatric gastroenterology) are recommended[7]. Additionally, healthcare professionals should employ effective communication strategies and provide clear, sufficient information to alleviate parental anxiety.

This study has several limitations. First, the cross-sectional design limits the ability to determine cause and effect. Secondly, the study relies solely on maternal self-report scales. Excluding pediatric patients and fathers limits the generalizability of the findings to the entire family unit. Furthermore, it is difficult to determine how generalisable these findings are due to the relatively small sample size. Additionally, as the regression analyses were conducted using only a limited number of sociodemographic variables, the potential influence of unmeasured confounders cannot be fully excluded.

CONCLUSION

This study shows that mothers of children attending pediatric gastroenterology clinics experience significantly higher levels of chronic anxiety, regardless of diagnosis category or symptom duration. Younger child age and maternal unemployment were identified as key factors associated with higher levels of state anxiety. These findings emphasise the importance of integrating routine psychological screening, targeted counselling and supportive interventions into pediatric gastroenterology.

Ethical Approval: The study was conducted in compliance with the ethical standards outlined in the Declaration of Helsinki. Ethical approval was granted by the local ethics committee (No: 2021/06-14; 15 June 2021), and written informed consent was obtained from all participants prior to enrollment.

Conflict of Interest: The authors declared no conflicts of interest.

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