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Original Article

Investigation of the Relationship between Intolerance of Uncertainty and Cyberchondria in Parents of Children with Epilepsy

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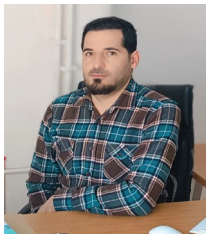

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Abstract

Objective: The aim of this study is to examine the relationship between the level of intolerance to uncertainty in parents of children with epilepsy and cyberchondria.

Methods: The study design was descriptive and cross-sectional. Data were collected between March and August of 2025. A total of 402 parents of children with epilepsy participated in the study. Data were collected using the sociodemographic data form, the Intolerance of Uncertainty Scale, and the Cyberchondria Severity Scale-Short Form.

Results: The findings show a moderate, positive, and significant relationship between intolerance of uncertainty and cyberchondria ($r=0.397$, $p<0.001$). Regression analysis indicates that intolerance of uncertainty significantly predicts cyberchondria severity ($\beta=0.380$, $p<0.001$), and the model explains 15.8% of the total variance.

Conclusion: As the intolerance of uncertainty among parents of children diagnosed with epilepsy increase, their levels of cyberchondria also increase, highlighting the importance of psychoeducation and digital health literacy programs for parents.

Keywords: Cyberchondria, epilepsy, intolerance of uncertainty, parents

INTRODUCTION

Epilepsy is a spectrum of neurological disorders that commonly affect individuals of all ages worldwide. Epilepsy, one of the most common chronic neurological disorders in childhood, accounts for approximately 1% of the global disease burden.[1,2] In Türkiye, the prevalence of epilepsy in children is reported to range between 0.6% and 0.8%.[3,4] Beyond the prevalence of the disease, its most challenging impact on families and healthcare systems stems from the profound uncertainty inherent in its nature. Many aspects of epilepsy, such as its underlying cause, the unpredictable timing and form of seizures, the variability in response to treatment, and long-term prognosis, are often uncertain.[5] Despite significant advances in epilepsy research, substantial uncertainties remain regarding various aspects of the disease, including its pathophysiology and optimal treatment strategies, which constitute a significant source of stress, particularly for parents directly involved in the patient's care.[6-8]

From a parental perspective, raising a child with epilepsy can be associated with a profound sense of uncertainty, anxiety, and stress due to unpredictable seizures, complex treatment regimens, and the need for constant supervision.[9,10] In this context, uncertainty about the disease process can be defined as an individual's inability to understand the situations they encounter or to predict events, resulting in a loss of control over their life.[11] However, more critical than this situational uncertainty is the individual's attitude toward it. Intolerance of uncertainty is a cognitive personality trait that involves interpreting uncertain situations as threatening and experiencing negative reactions.[12] Those with high intolerance of uncertainty find it more difficult to cope with uncertainty and exert intense effort to control or eliminate it. This can sometimes lead to the adoption of coping mechanisms with negative consequences.[13] Uljarević et al.[14] point out that as family members' intolerance of uncertainty increases, so do their anxiety levels, highlighting the importance of this relationship within the family.

Cyberchondria is a potential manifestation of negative coping mechanisms and an intolerance of uncertainty. This phenomenon occurs when a person's health concerns intensify as a result of repeated, excessive use of the internet to obtain medical information.[15,16] Initially, searching for health information online may serve to provide reassurance and reduce anxiety. However, in individuals with a high intolerance of uncertainty, unsuccessful or confusing results can paradoxically trigger a compulsive search cycle, thereby further increasing anxiety.[17,18] Parents often turn to the internet not only to address their own health concerns but also to evaluate their children's symptoms and determine whether they need medical help.[19,20] Studies show that parents worldwide use the internet extensively for their children's health.[21] Therefore, for chronic diseases such as epilepsy, which inherently involve a high degree of uncertainty, parents with a high intolerance of uncertainty are at increased risk of exhibiting cyberchondriac behaviours to alleviate their concerns about their child's condition. Indeed, intolerance of uncertainty is considered a key factor in the persistence of cyberchondria and reassurance-seeking behaviour.[15]

The severity of epilepsy, uncertainties in treatment, the rapid spread of digital technologies, and the growing demand for online health information have made parents' intolerance of uncertainty and cyberchondria important public health issues. However, a review of the literature reveals no studies directly addressing this relationship among parents of children with epilepsy. Against this backdrop, this study examines the relationship between intolerance of uncertainty and levels of cyberchondria among parents of children with epilepsy.

METHODS

Study Type

This cross-sectional descriptive study was conducted between March and August 2025.

Participants

The study participants were parents of children diagnosed with epilepsy who visited the pediatric neurology department of an educational and research hospital in eastern Türkiye. Convenience sampling was used to conduct the study. Using the sample formula ($n=t^2pq/d^2$) with t=1.96, p=q=0.5, and d=0.05, a sample size of 384 participants was determined to be sufficient. During data collection, the participants' responses were incorporated into the study, which was completed with 402 participants. We calculated the statistical power of our study using results from 402 participants. Based on the findings obtained from these individuals, a post-hoc power test was performed using the G*Power 3.1.9.7 statistical software program. This analysis determined that the study's power was 99% at a 95% confidence level and that the effect size was moderate.[22] The study included parents (one parent per child) who brought their child to the outpatient clinic, were literate, had internet access, were 18 years of age or older, had no mental health problems, had a child aged 1-18 years with epilepsy, and voluntarily agreed to participate in the study. Parents who were illiterate, who had mental health issues, who did not visit the outpatient clinic during the study period, or who did not wish to participate were excluded. The reporting of this research article is based on the STROBE guidelines.[23]

MAIN POINTS

- This study has revealed a significant and positive relationship between intolerance to uncertainty and cyberchondria among parents of children with epilepsy.
- The findings indicate that as the level of intolerance to uncertainty increases, parents' tendency to search for health information online and experience related anxiety also increases.
- It was determined that anxiety about the future has a particularly strong effect on cyberchondria.
- This highlights the importance of psychoeducation and digital health literacy programs for parents.

Data Collection

The research data were gathered using the sociodemographic data form, the Intolerance of Uncertainty Scale (IUS), and the Cyberchondria Severity Scale-Short Form (CSS-SF). The researchers collected the data through face-to-face interviews.

Sociodemographic Data Form

In line with relevant literature, the researchers prepared a questionnaire comprising ten questions on the the individual characteristics of parents and children and on the duration of illness.

Intolerance of Uncertainty Scale

IUS is a 12-item, 5-point Likert-type scale developed to measure individuals' tolerance levels for uncertainty. It was created by Nicholas Carleton et al.[24] and was adapted into Turkish by Sarıçam et al.[25] The scale consists of two subscales: prospective anxiety (the need for predictability of future events and anxious expectation) (Items 1-7) and inhibitory anxiety (the tendency to inhibit behavior and become paralyzed in the face of uncertainty) (Items 8-12). There are no reverse-coded items on the scale. Scores on the scale range from 12 to 60, with higher scores indicating greater intolerance. Cronbach's alpha was 0.88 for the entire scale.[25] In this study, it was 0.86.

Cyberchondria Severity Scale-Short Form

The CSS-SF scale was developed by McElroy and Shevlin[26] and adapted into Turkish by Söyler et al.[27] The scale consists of 12 items and 4 dimensions (excessiveness, anxiety, reassurance-seeking, and compulsion). Responses are recorded on a 5-point Likert-type scale. There are no reverse items on the scale. Scale scores range from 12-60; as scores increase, the level of cyberchondria also increases. The Cronbach's alpha coefficient for the internal consistency of the scale has generally been reported as 0.86.[27] In this study, it was 0.83.

Statistical Analysis

Statistical analyses were performed using IBM SPSS 27. A post-hoc power analysis was conducted using G*Power 3.1.9.7 statistical software. Descriptive statistics were used to summarize the participants' demographic and clinical characteristics and scale scores. The normality of the distributions was assessed by examining Skewness and Kurtosis and by inspecting histograms.

Since these coefficients were within the range of -1.5 to +1.5, the data were considered normally distributed.[28] Comparisons between sociodemographic variables and scale scores were analyzed using independent samples t-tests and one-way analysis of variance. Pearson correlation analysis was first conducted to examine the bivariate relationships between intolerance of uncertainty and cyberchondria, as well as their associations with relevant sociodemographic and clinical variables. Following the identification of statistically significant relationships in these univariate analyses, simple linear regression was performed to further evaluate the predictive relationship between the main study variables. In the regression model, cyberchondria severity was the dependent variable, and intolerance of uncertainty was the sole independent variable to assess its unique contribution to cyberchondria. Prior to conducting the regression analysis, the model assumptions were examined and found to be met, including normality of residuals (assessed via histograms and normal probability plots), absence of multicollinearity (variance inflation factor <10), homoscedasticity, and independence of errors (Durbin-Watson statistic approximating 2).[29] All analyses were accepted at a p-value of <0.05.

Ethical Consideration

The research received approval from the Muş Alparslan University Scientific Research and Publication Ethics Committee (document date and number: 11.12.2023-120930) and institutional permission from the institution where the study will be conducted (number and date: E-36866945-508.01-270448016, 06/03/2025). Participants were provided with detailed information about the study and informed that it was voluntary. Written consent was obtained from the participants. The study adhered to the Declaration of Helsinki throughout its duration.

RESULTS

Among parents, 62.2% were female, 89.3% were married, 33.3% were university graduates, 48.8% had incomes lower than their expenses, and 38.1% often searched the internet for health-related information. The average age of parents was 36.98±8.47 (20-65) and the average daily internet usage time was 3.01±1.80 (1-9) hours (Table 1).

Of the children with epilepsy, 57% were male, with an average age of 8.93±4.87 (1-18) and an average diagnosis duration of 4.54±3.61 (1-18) (Table 2).

As shown in Table 3, the participants' overall mean score for IUS was 38.34±8.78, the mean score for the prospective anxiety subscale was 23.22±5.77, and the mean score for the inhibitory anxiety subscale was 15.12±4.42. The overall mean score for CSS-SF was found to be 35.24±8.40. When the subscales were analyzed, they were found to be excessiveness (9.46±3.03), anxiety (8.69±2.87), reassurance seeking (9.09±3.13), and compulsion (7.93±2.64) (Table 2). The Skewness and Kurtosis values for all scales and subscales were within acceptable limits (−1 to +1), indicating that the data were approximately normally distributed and suitable for parametric analyses (Table 3).

A statistically significant difference in parents' mean total IUS scores was found according to gender, educational status, and frequency of conducting disease-related research. Female parents

Table 1. Demographic characteristics of parents (n=402)

Variables		n (%)
Gender	Male	152 (37.8)
	Female	250 (62.2)
Marital status	Married	359 (89.3)
	Single	43 (10.7)
Education status	Just literate	34 (8.5)
	Primary school graduate	97 (24.1)
	High school graduate	137 (34.1)
	University graduate	134 (33.3)
Monthly income	Income less than expenditure	196 (48.8)
	Income equal to expenditure	163 (40.5)
	Income more than expenditure	43 (10.7)
Frequency of research on the disease	Never	20 (5.0)
	Rarely	51 (12.7)
	Sometimes	88 (21.9)
	Often	153 (38.1)
	Always	90 (22.4)
Age of the parent	**M ± SD (min-max)**	
	36.98±8.47 (20-65)	
Parent's average daily internet use (hours)	**M ± SD (min-max)**	
	3.01±1.80 (1-9)	

M: Mean, SD: Standard deviation, min: Minimum, max: Maximum

Table 2. Demographic characteristics of children with epilepsy (n=402)

Variables		n (%)
Gender of the child	Girl	173 (43.0)
	Boy	229 (57.0)
Age of the child	M ± SD (min-max)	
	8.93±4.87 (1-18)	
Duration of child's diagnosis (years)	**M ± SD (min-max)**	
	4.54±3.61 (1-18)	

M: Mean, SD: Standard deviation, min: Minimum, max: Maximum

had higher mean total IUS scores than male parents (t=4.262; p=0.001). Tukey honestly significant difference (HSD) post-hoc analysis was used to determine which groups differed in mean total IUS scores according to parents' educational level. Parents with a university education had higher mean IUS scores than the literate group (F=5.297; p=0.001; a<d). Tukey HSD analysis was used to determine which group accounted for the differences between parents' frequencies of disease-related research and their IUS total mean scores. The scores of parents who never researched were significantly lower than those of parents who researched sometimes, often, or always (F=9.746; p=0.001, a<c,d,e). In contrast, no statistically significant association was found between either marital status or monthly income status and the IUS total score (p>0.05) (Table 4).

A statistically significant difference was found between parents' mean total CSS-SF scores and their educational status (F=6.704; p=0.001). Tukey HSD post-hoc analysis was used to determine between which groups differences occurred. The CSS-SF scores of literate parents were significantly lower than those of elementary school graduates, high school graduates, and university graduates (a<b,c,d). A statistically significant difference was found between parents' frequency of conducting online research about illnesses and their mean total CSS-SF scores (F=11.895; p=0.001). A Tukey HSD post-hoc analysis was used to determine which groups differed. The CSS-SF mean scores of parents who often researched were significantly higher than those of parents who never, rarely, or sometimes researched (a,b,c<d). No statistically significant

Table 3. Distribution of parents' scores on IUS and CSS-SF: subscales and overall scores (n=402)

Scale and subscales	M ± SD (min-max)	Skewness	Kurtosis
IUS	38.34±8.78 (14-58.0)	0.015	-0.559
Prospective anxiety	23.22±5.77 (9-35.0)	-0.161	-0.582
Inhibitory anxiety	15.12±4.42 (5-25.0)	0.027	-0.710
CSS-SF	35.24±8.40 (12-56.0)	-0.141	-0.361
Excessiveness	9.46±3.03 (3-15.0)	-0.244	0.673
Anxiety	8.69±2.87 (3-15)	-0.098	-0.715
Seeking reassurance	9.09±3.13 (3-15.0)	0.116	-0.632
Compulsion	7.93±2.64 (3.0-14.0)	-0.123	-0.673

M: Mean, SD: Standard deviation, min: Minimum, max: Maximum, IUS: Intolerance of uncertainty, CSS-SF: Cyberchondria Severity Scale-Short Form

Table 4. Comparison of parents' demographic characteristics with scale total score averages (n=402)

Variables		IUS M ± SD	(Test, p)	CSS-SF M ± SD	(Test, p)
Gender	Male	36.00±8.33	t=4.262, **p=0.001***	34.35±7.82	t=1.661, p=0.097
	Female	39.77±8.76		35.78±8.70	
Marital status	Married	38.45±8.68	t=0.732, p=0.465	35.52±8.26	t=1.899, p=0.058
	Single	37.41±9.66		32.95±9.27	
Education status	Literate^{a}	34.05±8.77	F=5.297, **p=0.001**$^{*(a<d)}$	29.82±7.70	F=6.704, **p=0.001**$^{*(a<b,c,d)}$
	Primary school graduate^{b}	37.82±8.93		34.58±8.27	
	High school graduate^{c}	37.87±8.38		35.58±8.81	
	University graduate^{d}	40.29±8.67		36.75±7.68	
Monthly income	Income less than expenditure^{a}	38.08±8.89	F=0.191, p=0.826	36.00±8.34	F=1.776, p=0.171
	Income equal to expenditure^{b}	38.52±8.45		34.32±8.55	
	Income more than expenditure^{c}	38.86±9.67		35.30±7.92	
Frequency of research on the disease	Never^{a}	31.70±9.33	F=9.746, **p=0.001**$^{*(a<c,d,e)}$	26.90±8.03	F=11.895, **p=0.001**$^{*(a,c,b<d)}$
	Rarely^{b}	33.98±7.91		32.01±6.49	
	Sometimes^{c}	37.72±6.90		33.76±7.00	
	Often^{d}	39.35±9.08		37.43±7.86	
	Always^{e}	41.17±8.68		36.66±9.64	

^{a}t: Independent sample t-test, ^{b}F: One-way analysis of variance, M: Mean, SD: Standard deviation, HSD: Honestly significant difference test, *: p<0.05, post-hoc analysis: Tukey HSD, different superscript letters (^{a,b,c,d,e}) indicate statistically significant differences between groups according to the Tukey HSD post-hoc test

differences in CSS-SF total mean scores were found for gender, marital status, or monthly income (p>0.05) (Table 4).

A moderate, positive, and statistically significant correlation was observed between the average IUS total score and the average CSS-SF total score (r=0.397; p<0.001). When the subscales of the IUS were examined, the prospective anxiety subscale was found to be moderately positively correlated with the CSS-SF (r=0.417; p<0.001), while the inhibitory anxiety subscale showed a weaker but still significant correlation (r=0.245; p<0.001). Furthermore, a weak negative relationship was observed between parental age and the mean total IUS score (r=-0.113; p=0.024), whereas a weak positive relationship was observed between parents' average daily internet usage time and the mean total IUS score (r=0.182; p<0.001). A weak and negative correlation was determined between the child's age and diagnosis duration and the parent's IUS total score average (r=-0.121; p=0.015 and r=-0.136; p=0.006) (Table 5).

Moderate, positive, and statistically significant associations were observed between the IUS total score and the anxiety (r=0.351, p<0.001) and compulsion (r=0.343, p<0.001) subscales of the CSS-SF. In contrast, weak but significant positive relationships were observed between IUS and the subscales excessiveness (r=0.297, p<0.001) and reassurance-seeking (r=0.180, p<0.001). Furthermore, a weak negative correlation was found between the CSS-SF total scores and parents' age (r=-0.196, p<0.001), whereas parents' daily internet usage time demonstrated a weak positive correlation with CSS-SF total scores (r=0.238, p<0.001). Additionally, both the child's age and the duration of diagnosis were weakly but significantly negatively correlated with parents' CSS-SF total scores (r=-0.230, p<0.001, and r=-0.110, p=0.027, respectively) (Table 5).

Regression analysis (Table 4) indicates that IUS scores are significantly positively associated with CSS-SF scores. According to the analysis, each unit increase in IUS leads to a 0.380-unit increase in CSS-SF (Beta=0.380, p<0.001). The overall explanatory power of the model is limited because the R^2 value is 15.8%, indicating that IUS explains 15.8% of the variance in CSS-SF. Furthermore, the model's overall significance was confirmed by the F test (F=75.057, p<0.001); the high F-value indicates that the model is significant and that the IUS plays an important role in predicting CSS-SF (Table 6).

DISCUSSION

The findings of this study reveal that, among parents of children diagnosed with epilepsy, CSS-SF increases as IUS increases. When demographic factors were examined, female parents, parents with university degrees, and parents who researched the disease more frequently were found to have higher levels of intolerance to uncertainty. On the other hand, cyberchondria levels increased, particularly among parents with higher levels of education and those who frequently researched the illness. As both subscales of intolerance to uncertainty (prospective and

Table 5. Correlations between IUS and CSS-SF total and subscale scores and continuous variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12
IUS	1											
Prospective anxiety	r=0.896 **p=0.001****	1										
Inhibitory anxiety	r=0.816 **p=0.001****	r=0.476 **p=0.001****	1									
CSS-SF	r=0.397 **p=0.001****	r=0.417 **p=0.001****	r=0.245 **p=0.001****	1								
Excessiveness	r=0.297 **p=0.001****	r=0.299 **p=0.001****	r=0.200 **p=0.001****	r=0.700 **p=0.001****	1							
Anxiety	r=0.351 **p=0.001****	r=0.354 **p=0.001****	r=0.235 **p=0.001****	r=0.793 **p=0.001****	r=0.416 **p=0.001****	1						
Reassurance seeking	r=0.180 **p=0.001****	r=0.244 **p=0.001****	r=0.039 **p=0**.431	r=0.616 **p=0.001****	r=0.230 **p=0.001****	r=0.263 **p=0.001****	1					
Compulsion	r=0.343 **p=0.001****	r=0.333 **p=0.001****	r=0.246 **p=0.001****	r=0.747 **p=0.001****	r=0.353 **p=0.001****	r=0.640 **p=0.001****	r=0.231 **p=0.001****	1				
Age of the parent	r=-0.113 **p=0.024**	r=-0.107 **p=0.031**	r=-0.084 p=0.094	r=-0.196 **p=0.001****	r=-0.274 **p=0.001****	r=-0.075 p=0.131	r=-0.087 p=0.083	r=-0.110 p=0.028	1			
Parent's average daily ınternet use (hours)	r=0.182 **p=0.001****	r=0.219 **p=0.001****	r=0.076 p=0.128	r=0.238 **p=0.001****	r=0.212 **p=0.001****	r=0.153 **p=0.002**	r=0.147 **p=0.003**	r=0.180 **p=0.001****	r=-0.139 **p=0.005**	1		
Age of the child	r=-0.121 **p=0.015**	r=-0.138 **p=0.006**	r=-0.061 p=0.224	r=-0.230 **p=0.001****	r=-0.244 **p=0.001****	r=-0.113 **p=0.023**	r=-0.177 **p=0.001****	r=-0.100 **p=0.045**	r=.605 **p=0.001****	r=0.045 p=0.367	1	
Duration of child's diagnosis (years)	r=-0.136 **p=0.006**	r=-0.125 **p=0.012**	r=-0.107 p=0**.032**	r=-0.110 **p=0.027**	r=-0.082 p=0.099	r=-0.049 p=0.331	r=-0.099 **p=0.048**	r=-0.070 p=0.160	r=.323 **p=0.001****	r=-0.118 **p=0.018**	r=0.457 **p=0.001****	1

r: Pearson's correlation, p<0.05, **: p<0.001, IUS: Intolerance of uncertainty, CSS-SF: Cyberchondria Severity Scale-Short Form

Table 6. Regression analysis results regarding the prediction level of IUS on CSS-SF (n=402)

	Beta	Standard defect	Standard beta	t	p	%95 confidence interval	
Constant coefficient	20.669	1.726	-	11.974	0.001	17.275	24.062
IUS	0.380	0.044	0.397	8.664	0.001	0.294	0.466
R	0.397						
R^2/adjusted R^2	0.158/0.156						
R^2 change	0.158						
F	75.057						
VIF	1.000						
Durbin-Watson	1.304						

Simple linear regression, p<0.001, dependent variable: CSS-SF total score**,** independent variable: IUS total score, IUS: Intolerance of uncertainty, CSS-SF: Cyberchondria Severity Scale-Short Form, VIF: Variance inflation factor

inhibitory anxiety) increased, CSS-SF scores also increased. As all subscales of cyberchondria (anxiety, compulsion, excessiveness, and reassurance seeking) increased, IUS increased. As parents' ages, children's ages, and duration of diagnosis increased, levels of both intolerance of uncertainty and cyberchondria tended to decrease. As parents' average daily internet use increased, both IUS and CSS-SF rose. Intolerance of uncertainty significantly predicted parents' cyberchondria and explained part of the variance in parents' cyberchondria levels.

This study found that as parents' level of education increased, both intolerance of uncertainty and cyberchondria levels rose. This finding suggests that, despite individuals with higher educational levels having greater access to health-related information and a greater capacity to process that information, their perception of uncertainty may increase rather than decrease, particularly for chronic and unpredictable illnesses. The literature reports that individuals with higher educational levels have greater health literacy; however, this higher literacy is also associated with increased information-seeking behavior, greater exposure to conflicting online health information, and a tendency to evaluate risks in greater detail.[30,31] In cases such as childhood epilepsy, where the disease course is variable and perceived control is limited, increased information-seeking may make parents more aware of uncertainty rather than help them cope with it. This process may cause online health searches that are initiated to reduce uncertainty to turn into a cycle that reinforces cyberchondria over time.[32] Therefore, the emergence of a high educational level as a risk indicator for intolerance to uncertainty and cyberchondria in this study may be related to how information is structured and interpreted in a clinical context, rather than to its quantity.

This study has revealed that as parents increasingly search for information about their children's illnesses online, both their intolerance for uncertainty and the severity of their cyberchondria increase. The literature indicates that individuals seek information to regain a sense of control in situations of health-related uncertainty, but this process can increase rather than reduce uncertainty, particularly when it results in extensive exposure to unverified or conflicting online health information.[15,18] In this context, it has been suggested that frequent and repetitive internet searches lead to a mental expansion of possible disease-related scenarios in parents, thereby reinforcing intolerance to uncertainty, while increased perceived uncertainty may trigger anxiety, excessiveness, and reassurance-seeking behaviors specific to cyberchondria.[17,31] Particularly in chronic and unpredictable illnesses, it has been reported that parents' excessive reliance on online health information becomes a cyclical process that perpetuates anxiety, rather than serving as a strategy to regulate it.[33] Therefore, the study's findings suggest that internet-based health information search behaviors may play a reinforcing role, both directly and indirectly, in the relationship between intolerance of uncertainty and cyberchondria.

This study examined the structural relationship between intolerance of uncertainty and cyberchondria in parents of children diagnosed with epilepsy. Correlation analysis revealed a moderately positive and significant association between intolerance of uncertainty and cyberchondria severity. Regression analysis showed that intolerance of uncertainty was a significant predictor of cyberchondria severity, explaining 15.6% of its total variance. Intolerance of uncertainty is an important determinant of health anxiety resulting from online health information searches. It refers to individuals' beliefs in the necessity of certainty. It also refers to their capacity to cope with unpredictable changes. It is considered a risk factor for cyberchondria.[34-36] Intolerance of uncertainty has been suggested to be indirectly related to cyberchondria, particularly through its links to health anxiety.[17] Uncertainties about individuals' health status may cause them to search more frequently for medical information online, which increases the level of cyberchondria by inducing anxiety resulting from information overload.[17,37] Furthermore, research has revealed a notable link between cyberchondria and a tendency to feel uncertain. This association is characterized by a moderate to strong correlation.[18,38,39] When it comes to unpredictable illnesses such as epilepsy, parents' intolerance of uncertainty may lead to cyberchondria and a cycle of anxiety as they seek additional information online.

This study found that as the level of anxiety experienced by parents of children with epilepsy when faced with uncertainty increased, their tendency to turn to health-related internet research also increased. This finding is consistent with other studies. For example, it has been reported that factors such as intolerance of uncertainty and inhibitory anxiety prompt individuals to search the internet for medical information, which can result in negative emotional states by increasing catastrophizing thoughts.[17,18] Furthermore, Fergus[38] found that inhibitory intolerance of uncertainty and physical anxiety sensitivity were significantly associated with various dimensions of cyberchondria in a normative adult sample. In the literature, when examining the subdimensions of intolerance of uncertainty, the relationship between inhibitory anxiety and cyberchondria is stronger, whereas the relationship between prospective anxiety and

cyberchondria is weaker.[17,18,38-41] The significance and direction of the relationships between the factors in this study are consistent with those reported in the literature. However, the relationship between prospective anxiety and cyberchondria is stronger than that between inhibitory anxiety and cyberchondria. This suggests that anxiety about the future plays a more prominent role for parents of children with epilepsy than does their tendency to inhibit behavior in the face of uncertainty. These findings suggest that intolerance of uncertainty and anxiety lead to similar behavioral outcomes across groups, but anxiety about the future is particularly prominent among parents of children with epilepsy.

The study found that as parents' levels of extremism, worry, confidence-seeking, and compulsion increased, their ability to cope with uncertainty weakened and their tolerance for uncertainty decreased. These findings are consistent with other studies. Studies in adults, for instance, have shown that intolerance of uncertainty is associated with behaviors such as excessive health anxiety and information-seeking.[42-44] Parents of children with epilepsy experience similar anxieties when faced with uncertainty about their child's health status, which can lead to behaviors such as excessive information seeking, constant reassurance-seeking, or over-preparation. While these behaviors are not inherently dysfunctional, they can exacerbate intolerance of uncertainty when applied rigidly.[45,46] The findings of this study indicate that intolerance of uncertainty is associated with similar psychological and behavioral outcomes in both adults with health anxiety and parents of children with chronic illnesses, demonstrating that this trait consistently contributes to cyberchondriac behaviors across contexts. This relationship among parents of children with epilepsy may be explained by the persistent uncertainty and chronic stress related to their child's condition.

Study Limitations

This study has several limitations. First, due to its cross-sectional design, the study cannot establish causal relationships. Secondly, the data were collected from only one hospital in one region, and the sample size and diversity are limited. This may affect the generalizability of the findings. Thirdly, collecting data using self-report scales may lead to methodological limitations, such as social desirability bias. In addition, the low internal consistency coefficients for some sub-dimensions of the scales used in the study warrant caution when interpreting the results. In future studies, more comprehensive results could be obtained by using larger samples from different regions and employing longitudinal designs.

CONCLUSION

This study revealed a significant and moderate relationship between IUS and CSS-SF among parents of children with epilepsy. The findings show that both levels of intolerance of uncertainty and the severity of cyberchondria increase with parents' frequency of internet research related to the disease and with their educational level. The observation that future-focused anxiety, one of the subscales of intolerance of uncertainty, is more strongly associated with cyberchondria suggests that parents' perception of future uncertainty plays a decisive role in chronic diseases with unpredictable courses, such as epilepsy. Furthermore, the decrease in intolerance of uncertainty and in levels of cyberchondria as parental and child ages increase suggests that experience and adaptation to the disease process may mitigate these psychological responses. A simple linear regression analysis showed that intolerance of uncertainty was a significant predictor of cyberchondria severity, explaining 15.8% of the variance in cyberchondria. These findings emphasize the importance of strengthening skills for coping with uncertainty and health literacy when planning psychosocial support for parents of children with epilepsy.

Ethics

Ethics Committee Approval: The research received approval from the Muş Alparslan University Scientific Research and Publication Ethics Committee (document date and number: 11.12.2023-120930).

Informed Consent: Written consent was obtained from the participants.

Footnotes

Author Contributions: Concept: Y.S., M.Y., Design: Y.S., M.Y., Data Collection or Processing: Y.S., S.M., Analysis or Interpretation: M.Y., N.Ç., Literature Search: Y.S., M.Y., S.M., N.Ç., Writing: Y.S., M.Y., S.M., N.Ç.

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