Dicle Tıp Dergisi / Dicle Med J (2025) 52 (2) : 263-272

www.diclemedj.org

Original Article / Özgün Araştırma

# Cyberchondria Levels and Influencing Factors in Families of Asthma Patients

**Tuğçe Tatar Arık[1], Ahmet Kan[2], Masum Öztürk[3]**

*1 Dokuz Eylul University Faculty of Medicine, Department of Pediatric, İzmir, Türkiye*

*2 Dicle University Faculty of Medicine, Department of Pediatric Allergy and Immunology, Diyarbakır, Türkiye*

*3 Dicle University Faculty of Medicine, Department of Child and Adolescent Mental Health, Diyarbakır, Türkiye*

*Received: 04.03.2025; Revised: 13.05.2025; Accepted: 14.05.2025*

## Abstract

**Objective:** Asthma is one of the most common chronic diseases in childhood. The term cyberchondria emphasizes excessive online health searches associated with increased distress or anxiety. Parents, especially pediatric patients, are responsible for managing the disease process. In this study, we examined the level of cyberchondria in families of asthmatic children and the factors affecting this level.

**Methods:** Sixty asthma patients and their parents, aged 1-18 years, followed up with a diagnosis of asthma in the Pediatric Allergy and Immunology outpatient clinic between 14.04.2022 and 01.01.2023, were included. In addition, 60 parents of healthy children without chronic disease were also included as a control group. The parents' cyberchondria severity levels of both groups were compared.

**Results:** The median age of the asthma group was seven years. 45.6% of the patients were male. The mean cyberchondria severity score of the patient group was statistically significantly higher than that of the control group participants (p=0.02). A low-medium significant relationship was found between cyberchondria severity and the frequency of weekly internet access (p=0.009, r=0.35). In addition, there was a significant statistical correlation between cyberchondria severity and mother's education level (r=0.21, p=0.02) and father's education level (r=0.19, p=0.04). The cyberchondria severity score was higher in the group who wanted medical examinations other than the physician's recommendation (p=0.005).

**Conclusions:** Parents with high cyberchondria severity experience more distress during chronic disease. If the parents' cyberchondria severity can be evaluated and determined promptly, their anxiety levels may be reduced with the necessary psychosocial support. Thus, trust in the physician and compliance with the treatment process can be increased. For this reason, the cyberchondria severity levels of parents with asthmatic children should be determined in time, and necessary psychosocial support should be provided.

**Keywords:** Asthma, child, internet, cyberchondria, parents

**DOI: 10.5798/dicletip.1723000**

***Correspondence / Yazışma Adresi:*** *Ahmet Kan, Dicle University Faculty of Medicine, Department of Pediatric Allergy and Immunology, Diyarbakır, Türkiye e-mail: rodmerrod1980@gmail.com*

# Astım Hastalarının Ailelerinde Siberkondri Seviyeleri ve Etkileyen Faktörler

**Öz**

**Amaç:** Astım çocukluk çağında en sık görülen kronik hastalıklardan biridir. Siberkondri terimi, artan sıkıntı veya kaygı ile ilişkili aşırı çevrimiçi sağlık aramalarını vurgulamaktadır. Özellikle çocuk hastalarda ebeveynler hastalık sürecini yönetmekten sorumludur. Bu çalışmada, astımlı çocukların ailelerinde siberkondri düzeyini ve bu düzeyi etkileyen faktörleri inceledik.

**Yöntemler:** 14.04.2022 ile 01.01.2023 tarihleri arasında çocuk alerji ve immünoloji polikliniğinde astım tanısıyla takip edilen, yaşları 1-18 arasında değişen 60 astım hastası ve ebeveynleri çalışmaya dahil edildi. Ayrıca, kronik hastalığı olmayan sağlıklı çocukların 60 ebeveyni de kontrol grubu olarak dahil edildi. Her iki grubun ebeveynlerinin siberkondri şiddet düzeyleri karşılaştırıldı.

**Sonuçlar:** Astım grubunun medyan yaşı yedi yıl idi. Hastaların %45,6'sı erkekti. Hasta grubunun ortalama siberkondri şiddet puanı, kontrol grubu katılımcılarından istatistiksel olarak anlamlı derecede yüksekti (p=0,02). Siberkondri şiddeti ile haftalık internet erişim sıklığı arasında düşük-orta düzeyde anlamlı ilişki saptandı (p=0,009, r=0,35). Ayrıca, siberkondri şiddeti ile annenin eğitim düzeyi (r=0,21, p=0,02) ve babanın eğitim düzeyi (r=0,19, p=0,04) arasında anlamlı istatistiksel korelasyon saptandı. Siberkondri şiddeti skoru, hekim önerisi dışında tıbbi muayene isteyen grupta daha yüksekti (p=0,005).

**Tartışma:** Siberkondri şiddeti yüksek olan ebeveynler kronik hastalık sırasında daha fazla sıkıntı yaşamaktadır. Ebeveynlerin siberkondri şiddeti derhal değerlendirilip belirlenebilirse, gerekli psikososyal destekle kaygı düzeyleri azaltılabilir. Böylece hekime güven ve tedavi sürecine uyum artırılabilir. Bu nedenle astımlı çocuğu olan ebeveynlerin siberkondri şiddeti düzeyleri zamanında belirlenmeli ve gerekli psikososyal destek sağlanmalıdır.

**Anahtar kelimeler:** Astım, çocuk, internet, siberkondri, ebeveynler.

## INTRODUCTION

Asthma is the most common chronic disease in childhood. It is characterized by airway inflammation that develops over a long period due to hypersensitivity to various stimuli in the airways. Clinically, it is a heterogeneous disease presenting with cough, wheezing, and shortness of breath. The severity of these symptoms may vary, and bronchial inflammation may lead to airway obstruction and remodeling. Various inhaled allergens, exercise, stress, seasonal changes, or viral respiratory tract pathogens may cause airway obstruction and variable symptoms[1].

The management of chronic diseases such as asthma often requires parents and patients to seek health information constantly. In particular, the variability of asthma symptoms and the association with triggers may lead patients and family members to endeavor to obtain more information. As the Internet has become a widespread source for accessing health information, online information-seeking behaviors have increased in individuals with chronic diseases and their relatives. Asthma, as a long-term chronic disease in childhood, often leads parents to seek additional information and support, primarily through the Internet. This reliance on online resources can sometimes exacerbate anxiety, a phenomenon known as cyberchondria[2,3]. It is thought that online research may increase anxiety, especially in parents of asthma patients who are sensitive to uncertainties[2]. In this context, understanding the relationship between asthma and cyberchondria is essential to evaluate the health behaviors of individuals with chronic diseases and the psychosocial effects of these behaviors.

Cyberchondria is a term used to evaluate the anxiety-inducing effects that may be caused by health-related research on the Internet. Anxiety is associated with cyberchondria and intolerance of uncertainty[2]. Uncertainty-sensitive people search for more medical information online and may be more anxious. The reverse may also be the case because more anxious people may be more likely to search the Internet for answers to problems[3].

Thanks to easy access to the Internet, the number of people doing research on the Internet about the treatment of diseases has increased significantly in the last decade, according to data from the Turkish Statistical Institute. The fact that the information accessed from the Internet can not be verified most of the time may contain incorrect information and lead to wrong applications. It may delay the time for a person to consult specialists about their disease and may decrease their confidence in the prescribed treatment[4]. In the literature, there are few studies investigating the psychological effects of excessive internet use in parents of children with asthma. The level of anxiety caused by the Internet on families has not been sufficiently explored. If the severity of cyberchondria levels of these individuals can be evaluated and determined in time, necessary psychosocial support can be provided. Therefore, this study aimed to evaluate the level of cyberchondria experienced by parents of children with asthma and the factors that may affect cyberchondria severity.

## METHODS

This study was conducted between 14.04.2022 and 01.01.2023. Approval of the study was obtained from the Local Clinical Research Ethics Committee on 14.04.2022, number 138. Parents of children (father or mother) diagnosed with asthma by history, physical examination, and laboratory tests in the Pediatric Allergy and Immunology Outpatient Clinic and the parents of healthy children without any chronic disease who applied to the "General Child Health Outpatient Clinic" were invited to the study.

The age range for children diagnosed with asthma was 1-17 years (<18 years). This age range reflects the age group routinely covered for the diagnosis, treatment, and follow-up of asthma in pediatric patients. In addition, although the diagnosis of asthma can usually be made more clearly at older ages, this age range was preferred to ensure early diagnosis processes and the evaluation of a large patient group. The age range of 0-17 years (<18 years) was determined for the control group. These groups were selected to be demographically similar to each other, and it was aimed that the age difference would not be a confounding factor in intergroup analyses.

The diagnosis of asthma was based on a detailed assessment of the patient's clinical symptoms, physical examination findings, pulmonary function tests, and laboratory investigations. In this process, typical asthma symptoms such as recurrent cough, shortness of breath, and chest tightness were considered in the patient's history and analyzed for specific triggers (e.g., allergens or exercise). In addition, the diagnosis of asthma was confirmed by looking at the bronchodilator response. In children younger than five years, the diagnosis of asthma was based on clinical symptoms and anamnesis, as pulmonary function tests could not be performed[1].

Patients with congenital or chronic lung disease other than asthma were excluded. Participants who could not speak or read Turkish and had visual or cognitive impairment were excluded from the study. The questionnaire was completed by face-to-face interviews with the parents who met the inclusion criteria and agreed to participate in the survey after the outpatient clinic examinations of the patients. Families were informed about the study, and ethical approval was obtained. The patient group questionnaire consisted of 17 questions examining demographic information, five questions examining disease information, 15 questions examining parental internet use related to asthma, and 33 questions answering the "Cyberchondria Weight Scale" answered by the rating method. For the evaluation of anxiety, depression, and stress, the 'Cyberchondria Weight Scale', which has been previously proven to be effective in national and international studies, was used[5-7]. The

Cyberchondria Severity Scale is a five-point Likert-type measurement tool with 33 items in five dimensions (1 = Never, 5 = Always). The dimensions are compulsion, excessive worry (distress), excessiveness, reassurance, and distrust of the doctor. The control group questionnaire comprised a 17-item demographic questionnaire and a 33-item "Cyberchondria Weight Scale" questionnaire[5-7].

Since there were no studies on all parameters in the literature and no pilot study was conducted, reference intervals were selected for effect size. Statistical power analysis was performed using the G-Power program. This study determined the minimum number of patients required to be 120, with an effect size of 0.50 (using Cohen's criteria), alpha=0.05, and power of 0.84. Seventy-two patients with asthma and 70 control group patients were administered questionnaires. Twelve parents with asthmatic children and ten parents with healthy children were excluded from the study because they refused to give ethical approval. Our study was completed with 60 asthma patients and 60 control groups.

### Statistical Analyses

Descriptive statistics were represented numerically by median for non-normally distributed variables and mean for normally distributed variables. Proportions or percentages were used for categorical variables. The conformity of the variables to normal distribution was evaluated by visual (histogram and probability graphs) and analytical (Kolmogorov-Smirnov/Shapiro-Wilk tests) methods. The chi-square test ($\chi 2$) was used to compare categorical variables. Student t-test was used to compare numerical variables with normal distribution, and the Mann-Whitney U test was used to compare numerical variables without normal distribution. Spearman correlation analysis evaluated the relationship between non-normally distributed and ordinal variables. For relationships between variables that were normal or at least one of which was not normally distributed or ordinal, correlation coefficients and statistical significance were calculated using the Spearman test or Pearson correlation test, as appropriate.

## RESULTS

The mean age of the participants was 35±6.1 years in the control group and 35.8±6.05 years in the patient group. No statistically significant difference was found between the groups (p=0.88).

Sociodemographic data of the asthmatic patients are given in Table 1. The asthma group consisted of patients with a median age of eight years, less than half (45.6%) of whom were male. The median age at first diagnosis was two years.

**Table I:** Demographic and clinical characteristics of the patients with a diagnosis of asthma

| Variables | |
|---|---|
| Patient age (years), median (IQR $_{25-75}$) | 8 (4-11) |
| Gender, male n (%) | 34 (45.6) |
| Age at first diagnosis (years), median (IQR $_{25-75}$) | 2 (1-6) |
| Follow-up time (years), median (IQR $_{25-75}$) | 3 (1-6) |
| Number of emergency department visits due to asthma attacks in the last year, median (min.-max.) | 3 (0-4) |
| Number of emergency department visits due to asthma attacks in the last year, median (min.-max.) | 1 (0-4) |
| Number of siblings, median (min.-max.) | 3 (1-8) |

**IQR: interquartile range*

A comparison of the sociodemographic characteristics between groups is shown in Table 2. There was no difference in terms of participants who completed the questionnaire (p=0.12), family type (p=0.48), place of residence (p=0.42), the mother's education level (P=0.44), the father's education level (p=0.16), or total monthly earnings (p=0.09) between groups.

**Table II:** Sociodemographic comparison of the patient and control group

| Variables | Categories | Control group, n=60 | | Patient group, n=60 | | p |
|---|---|---|---|---|---|---|
| | | N | % | N | % | |
| Participants who completed the questionnaire | Mother | 28 | 46.7 | 35 | 58.3 | 0.12 |
| | Father | 32 | 53.3 | 25 | 41.7 | |
| Place of Residence | Village | 5 | 8.3 | 7 | 11.7 | 0.42 |
| | Town | 4 | 6.7 | 4 | 6.6 | |
| | Country | 11 | 18.3 | 15 | 25 | |
| | City | 40 | 66.7 | 34 | 56.7 | |
| Mother's Education Level | Primary School | 21 | 35 | 26 | 43.4 | 0.44 |
| | Middle School | 6 | 10 | 8 | 13.3 | |
| | High School | 14 | 23.3 | 11 | 18.3 | |
| | University | 19 | 31.7 | 15 | 25 | |
| Father's Education Level | Primary School | 6 | 10 | 11 | 18.3 | 0.16 |
| | Middle School | 8 | 13.4 | 7 | 11.7 | |
| | High School | 14 | 23.3 | 18 | 30 | |
| | University | 32 | 53.3 | 24 | 40 | |
| Total Monthly Earnings | Minimum Wage and Below | 26 | 43.3 | 33 | 55 | 0.09 |
| | Above Minimum Wage | 34 | 56.7 | 27 | 45 | |
| Family Type | Nuclear Family | 49 | 81.7 | 47 | 78.3 | 0.48 |
| | Extended Family | 11 | 18.3 | 13 | 21.7 | |

The median cyberchondria severity score of the patient group was statistically significantly higher than the control group (p=0.02) (Table 3).

**Table III:** Comparison of the 'Cyberchondria Severity Scale' scores between groups

| Variables | Control | | | Patient | | | p |
|---|---|---|---|---|---|---|---|
| | Median | Min-Max | $IQR_{25-75}$ | Median | Min-Max | $IQR_{25-75}$ | |
| Cyberchondria severity scale | 35 | 33-146 | 34-71.5 | 78 | 33-165 | 61.5-94.5 | 0.02 |

**IQR: interquartile range*

Table 4 shows a correlation analysis between the 'Cyberchondria Severity Scale' and sociodemographic factors and other factors. There was a significant correlation between cyberchondria severity score and frequency of weekly internet access (p=0.009, r=0.35), mother's education level (p=0.02, r=0.21), and father's education level (p=0.04, r=0.19).

**Table IV:** Correlation analysis between the 'Cyberchondria Severity Scale' and sociodemographic factors and other factors

| | r | p |
|---|---|---|
| Age of the participants | 0.12 | 0.18 |
| Frequency of weekly internet access | 0.35 | 0.009 |
| Number of siblings | -0.06 | 0.52 |
| Age at first diagnosis | -0.09 | 0.5 |
| Duration of follow-up with a diagnosis of asthma | 0.06 | 0.65 |
| Number of applications to the emergency department due to asthma attacks in the last year | 0.17 | 0.207 |
| Number of hospitalizations due to asthma attacks in the last year | 0.17 | 0.203 |
| Patient age | -0.04 | 0.69 |
| Mother's education level | 0.21 | 0.02 |
| Father's education level | 0.19 | 0.04 |

The evaluation of sociodemographic factors affecting parental cyberchondria severity in the patient group is shown in Table 5. It was found that the cyberchondria severity of fathers with chronic disease was lower than that of those without chronic disease (p=0.05).

**Table V:** Sociodemographic factors affecting parental cyberchondria severity in the patient group

| | | Cyberchondria severity scale, median ($IQR_{25-75}$) | P |
|---|---|---|---|
| Parents who completed the survey | Mother | 77 (62-97) | 0.54 |
| | Father | 78.5 (61-91) | |
| Patient's gender | Female | 80 (62-97) | 0.98 |
| | Male | 77.5 (62-89) | |
| Total monthly earnings | Minimum wage and below | 67 (40-87) | 0.24 |
| | Above minimum wage | 60 (62-96) | |
| Place of living | City | 77 (60-87) | 0.14 |
| | Out of the city | 95 (72-106) | |
| Chronic disease in the father | Yes | 59 (51-89) | 0.05 |
| | No | 77.5 (65-96) | |
| Chronic disease in the mother | Yes | 82 (61-118) | 0.37 |
| | No | 78 (62-89) | |
| Chronic disease in siblings | Yes | 81 (72-93) | 0.66 |
| | No | 77.5 (60-96) | |
| Family type | Nuclear Family | 79 (62-96) | 0.63 |
| | Extended Family | 73.5 (61-89) | |
| A family member with asthma | Yes | 58 (45-89) | 0.14 |
| | No | 69.5 (49-93) | |

**IQR: interquartile range*

When other factors that may affect the severity of parental cyberchondria in the patient group were evaluated, it was found that the severity of cyberchondria was higher in the group who underwent examinations other than the physician's recommendation (p=0.005) (Table 6).

**Table VI:** Additional factors affecting parental cyberchondria severity in the patient group

| | | Cyberchondria severity scale, median ($IQR_{25-75}$) | P |
|---|---|---|---|
| Investigations other than the physician's recommendation | Yes | 95 (65-115) | 0.005 |
| | No | 62.5 (47-80) | |
| Treatment other than the physician's recommendation | Yes | 67 (56-100) | 0.64 |
| | No | 62.5 (45-78) | |
| Using the Internet when choosing a physician/hospital | Yes | 68.5 (51-90) | 0.31 |
| | No | 61 (47-78) | |
| Making health-related decisions based on what they learned from the internet | Yes | 66 (55-98) | 0.74 |
| | No | 58 (47-80) | |

## DISCUSSİON

The severity level of parents' cyberchondria significantly affects the treatment management of chronic diseases such as asthma. There are not enough studies in the literature evaluating the severity of cyberchondria in parents of asthmatic children. Therefore, this study assessed cyberchondria levels and factors affecting asthmatic children's mothers.

Cyberchondria is defined as the excessive search for health-related information by individuals, which increases anxiety. Literature studies show that unconscious internet use may increase anxiety levels by causing parents to encounter false or misleading health information[8]. In an environment with so much information, it is a significant problem to control one's concerns about one's own or a relative's disease[9]. Whether the information is true or false, it may increase or decrease anxiety. It may cause increased anxiety in individuals. In addition to anxiety, adverse outcomes such as depression, self-diagnosis or treatment, and distrust in physicians may also be observed. Also, the cyclical nature of this behavior may lead to the deterioration of mental health, especially in individuals with chronic conditions such as asthma, where fear of exacerbation may trigger excessive information-seeking behavior. The fact that asthma is often associated with other psychological problems, such as anxiety and depression, creates a feedback loop that can worsen both physical and mental health outcomes. Especially for individuals with chronic conditions such as asthma, interventions aiming to reduce cyberchondria and related psychological effects are critical[10]. This creates additional clinical problems in the diagnosis and follow-up processes of patients.

In the survey conducted by Kan et al., in which parents of 120 children with food allergies were included, cyberchondria levels of parents with food allergies were higher than those of healthy

parents [5]. In another study conducted by Güleşen et al. in 2019 with 331 female patients in which the cyberchondria levels of adult patients with heart disease were evaluated, it was found that cyberchondria severity scores increased in those who obtained information about their symptoms via the Internet ($p<0.001$) and those who made decisions about their health with the information they received from the Internet[6]. The fact that cyberchondria severity was higher in parents with asthmatic children in our study is in parallel with the literature. Our research found that cyberchondria severity may increase in parents who are already concerned about their children's health because all asthma symptoms can be quickly investigated thanks to the developing technology and ease of obtaining information. This may lead to an increase in anxiety levels in families and difficulties during diagnosis and treatment.

Cyberchondria severity is more common in young and middle-aged people owing to more internet use[6]. Our study found no significant relationship between median cyberchondria severity scores and maternal age. Therefore, more comprehensive literature analyses are needed better to understand the relationship between parental age and cyberchondria severity.

A study conducted on adults found that the severity of cyberchondria was higher in patients who were followed up for less than one year[11]. Similarly, another study determined that cyberchondria scores were higher in participants diagnosed with their disease in less than one year[6]. This may be associated with increased uncertainty and anxiety about the disease, especially in newly diagnosed individuals. A study conducted by Starcevic and Aboujaoude stated that individuals' intolerance towards uncertainty about their health increased the severity of cyberchondria. It was thought that individuals diagnosed with a new disease and uncertainty about the future would increase their cyberchondria severity[4]. Another study found no significant difference between the follow-up period and cyberchondria severity in parents of children with food allergies[5]. Individuals whose children are newly diagnosed may experience more anxiety about the disease and the future of their children and may tend to do more research on the Internet. After a specific period, as parents experience living with these symptoms in their children and learn to control them, their level of anxiety may decrease. Our study found no significant relationship between the follow-up period and cyberchondria levels. This may be related to the late diagnosis of asthma patients and parents' adaptation to this situation.

The literature has reported that people with a high level of cyberchondria consult the doctor more frequently to relieve their worries and question the health information obtained from the Internet[12]. In our study, unlike the literature, no significant relationship was found between the number of hospitalizations due to asthma attacks in the last year and the number of emergency room visits and the severity of cyberchondria of the parents. The fact that asthmatic patients and their families consulted the emergency department or physician involuntarily primarily because of an asthma attack rather than to get information may explain the fact that the cyberchondria level of the families was not found to be high.

Studies conducted with adults showed that cyberchondria levels were higher in individuals who worked full-time[11]. In a study investigating cyberchondria levels in the parents of children with food allergies, similar results were found, and it was observed that the cyberchondria levels of parents with higher education and socioeconomic levels increased[5]. This may be explained by the fact that families with higher socioeconomic status have more access to the Internet and spend more time on the Internet.

In our study, no relationship was shown between the socioeconomic level of the family and the severity of cyberchondria. More comprehensive literature studies are needed to clarify this relationship.

In the literature, a limited number of studies show a positive correlation between education level and cyberchondria severity[13,14]. As the level of education increases, internet use and health literacy levels may increase the severity score of cyberchondria. In another study conducted in the literature, no significant difference was found between the mean cyberchondria scale score and the participants' education level, income level, and number of children[15]. Our study found a low significant correlation between maternal and paternal education levels and cyberchondria severity. Educated parents may obtain more information about asthma in their children from the Internet and experience more anxiety.

According to a study conducted by Karmpaul on university students in 2014, it was reported that there was a positive interaction between the time spent on the Internet and health anxiety[16]. Rice's study found that people who spent more time on the Internet conducted more research about health online[17]. In a 2011 study conducted in the Netherlands in individuals aged 18-30 years, it was reported that people with high levels of anxiety about their health were more likely to search for health information online, and their anxiety levels increased even more after the search[18]. Our study is compatible with the literature. Parents who spend more time on the Internet may experience more anxiety.

Three similar studies found that cyberchondria levels did not differ according to gender[19-21]. It has also been shown in the literature that the severity of cyberchondria in women is higher than in men[22,23]. In our study, mothers could be expected to have more anxiety. Many factors, such as the design of our research, the fact that parents included their children rather than themselves, the fact that most of the participants in the patient group were mothers, and the small study population, may have affected our results.

A study determined that individuals without chronic disease had higher cyberchondria scores than individuals with chronic disease[15]. This may be related to the adaptation of chronic patients to the disease process. In our study, the absence of chronic disease in the father increased the severity of cyberchondria, which supports the literature.

A study conducted on university employees found that the severity of cyberchondria was higher in those who searched the Internet before consulting a physician[19]. Beken et al. found that mothers of children with food allergies who self-eliminate without consulting a hospital made more web searches for food allergies than mothers who did not follow a diet without a doctor's advice[24]. In another study, it was found that cyberchondria severity scores were higher in those who searched on the Internet about the disease before consulting a doctor ($p<0.001$), in those who believed in the accuracy of the information obtained from the Internet and in those who made decisions about their health in line with the information obtained from the Internet[6]. Studies in the literature show that Internet research and information obtained from the Web before consulting a doctor may affect both treatment decisions and Internet-related concerns. Our study found no significant correlation between the severity of cyberchondria, treatment other than the physician's recommendation, using the Internet when choosing a physician, and making health-related decisions with information learned from the Internet. Families with asthmatic children are often unaware of their children's disease and are usually referred to the pediatric chest and pediatric allergy department with the referral of the pediatrician.

Not having numerous existing departments in our region may not have led families to search for a physician online.

In a study conducted in the literature, cyberchondria severity scales were lower in those who had examinations performed voluntarily without a physician's recommendation in the last year and those who took and used medication without a physician's recommendation[11]. In the study by Turkiewicz, a negative correlation was found between cyberchondria severity and patients' belief that their communication with the physician was adequate. It was thought that patients' asking their physicians to perform examinations to get answers to the uncertain questions in their minds decreased their cyberchondria levels[10]. In our study, the severity of cyberchondria was higher in the group who underwent examinations other than the physician's recommendation (p=0.005). In our research, it was thought that the families had difficulty accepting the diagnosis of asthma in their children and tended towards diagnostic tests other than the physician's recommendation. These reactions may be related to cyberchondria severity and internet perception.

Limitations of our study are that it is more appropriate to evaluate cyberchondria together with confounding factors such as parents‘ perception level and psychiatric diseases. Since our research is single-center, the number of cases may not reflect the general population. Multicenter studies with more participants are needed.

## CONCLUSION

We concluded that the cyberchondria levels in the parents of children with asthma were higher than in the parents of healthy children in this study. We also found that cyberchondria levels in the families of asthmatic patients were directly related to the time spent by the parents on the internet. Parents with high cyberchondria severity level experience more difficulties in the process of diagnosis and treatment of their children's diseases. Therefore, cyberchondria levels of parents with asthmatic children should be determined in time and necessary psychosocial support should be provided. In this way, the participation and compliance of parents about their child's health may increase.

**Ethics Committee Approval:** This study was conducted between 14.04.2022 and 01.01.2023. Approval of the study was obtained from the Local Clinical Research Ethics Committee on 14.04.2022, number 138.

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

**Financial Disclosure:** The authors declared that this study has no financial support.

## REFERENCES

1. https://ginasthma.org/2024-report/

2. Fergus TA. Cyberchondria and intolerance of uncertainty: examining when individuals experience health anxiety in response to Internet searches for medical information. Cyberpsychol Behav Soc Netw. 2013;16(10):735-9.

3. Blackburn J, Fischerauer SF, Talaei-Khoei M, et al. What are the Implications of Excessive Internet Searches for Medical Information by Orthopaedic Patients? Clin Orthop Relat Res. 2019;477(12):2665-2673.

4. Starcevic V. Cyberchondria: Challenges of Problematic Online Searches for Health-Related Information. Psychother Psychosom. 2017;86(3):129-33.

5. Kan A, Kartal G, Öztürk M. Factors Affecting Levels of Cyberchondria in Mothers of Children with Food Allergies. Eastern J Med. 2023; 28(1): 172-8.

6. Güleşen A, Beydağ KD. Cryberchondria Level in Women with Heart Disease and Affecting Factors. Arc Health Sci Res 2020; 7(1): 1-7.

7. Jokic-Begic N, Lauri Korajlija A, Mikac U. Cyberchondria in the age of COVID-19. PLoS One. 2020;15(12):e0243704.

8. Ottenhoff JSE, Kortlever JTP, Teunis T, Ring D. Factors Associated With Quality of Online Information on Trapeziometacarpal Arthritis. J Hand Surg Am. 2018;43(10):889-96.e5.

9. Hart J, Björgvinsson T. Health anxiety and hypochondriasis: Description and treatment issues highlighted through a case illustration. Bull Menninger Clin. 2010;74(2):122-40.

10. Turkiewicz KL. The impact of cyberchondria on doctor-patient communication (Doctoral Dissertation). Milwaukee: The University of Wisconsin, Wisconsin, USA; 2012.

11. Güzel S, Özer Z. Cyberchondria Levels and Affecting Factors in Heart Patients. Turk J Cardiovasc Nurs. 2021;12(27):36-46.

12. Tüter DM. Evaluation of the level of cyberchondria and related factors in patients admitted to the family medicine outpatient clinic) (Specialization Thesis in Medicine). İstanbul: University of Health Sciences; 2019. pp:18-41.

13. Khazaal Y, Chatton A, Rochat L, et al. Compulsive Health-Related Internet Use and Cyberchondria. Eur Addict Res. 2021;27(1):58-66.

14. Ishikawa H, Kiuchi T. Health literacy and health communication. Biopsychosoc Med. 2010;4:18

15. Doherty-Torstrick ER, Walton KE, Fallon BA. Cyberchondria: Parsing Health Anxiety From Online Behavior. Psychosomatics. 2016;57(4):390-400.

16. Singh K, Brown RJ. Health-related internet habits and health anxiety in university students. Anxiety Stress Coping. 2014;27(5):542-54.

17. Rice RE. Influences, usage, and outcomes of Internet health information searching: multivariate results from the Pew surveys. Int J Med Inform. 2006;75(1):8-28.

18. Baumgartner SE, Hartmann T. The role of health anxiety in online health information search. Cyberpsychol Behav Soc Netw. 2011;14(10):613-8.

19. Altındiş S, İnci MB, Aslan FG, Altındiş M. Üniversite Çalışanlarında Siberkondria Düzeyleri ve İlişkili Faktörlerin İncelenmesi. Sakarya Tıp Dergisi. 2018;8(2):359-70.

20. Erdoğan T, Aydemir Y, Aydın A, et al. İnternet ve Televizyonda Sağlık Bilgisi Arama Davranışı ve İlişkili Faktörler. Sakarya Tıp Dergisi. 2020;10(Özel Sayı):1-10.

21. Deniz S. Bireylerin E-Sağlık Okuryazarlığı ve Siberkondri Düzeylerinin İncelenmesi. İnsan ve İnsan Dergisi. 2020;7(24):84-96.

22. Uzun SU, Zencir M. Cyberchondria level and affecting factors in Pamukkale University employees. Eskişehir Türk Dünyası Uygulama ve Araştırma Merkezi Halk Sağlığı Dergisi. 2022; 7(2):257-68.

23. Barke A, Bleichhardt G, Rief W, Doering BK. The Cyberchondria Severity Scale (CSS): German Validation and Development of a Short Form. Int J Behav Med. 2016; 23(5):595-605.

24. Beken B, Celik V, Gokmirza Ozdemir P, et al. Maternal anxiety and internet-based food elimination in suspected food allergy. Pediatr Allergy Immunol. 2019;30(7):752-9.