# Cyberchondria and Health Anxiety Among Caregivers of Home Healthcare Patients in Eastern Türkiye

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## ABSTRACT

**Objective:** This study investigates the relationship between cyberchondria and health anxiety among caregivers of home healthcare patients in Eastern Türkiye.

**Methods:** In a cross-sectional design conducted from May to July 2023, 240 family members of home healthcare patients were assessed using the Cyberchondria Severity Scale (CSS-12) and the Health Anxiety Inventory (HAI). Socio-demographic data, caregiving duration, and online health information-seeking behaviors were also examined.

**Results:** The participants reported average scores of 22.36 (±11.63) on the CSS-12 and 17.69 (±11.54) on the HAI. On average, caregivers spent 0.48 hours per day on online health searches. A strong positive correlation ($r = 0.404$, $p < 0.001$) was found between cyberchondria and health anxiety scores. While cyberchondria and health anxiety levels were not significantly influenced by marital status, education, or relationship to the patient, a higher level of cyberchondria was observed among female participants ($p < 0.001$).

**Conclusion:** The study demonstrates a significant positive correlation between cyberchondria and health anxiety among caregivers, with a noticeable impact on female caregivers. These results highlight the need for psychological support for caregivers in home healthcare settings and further research into the effects of online health information-seeking behaviors on caregiver mental health.

**Keywords:** Cyberchondria, health anxiety, anxiety disorders, home care service, online health information, caregiver stress

## INTRODUCTION

Home healthcare is a pivotal service that enables individuals to receive care within their living spaces, surrounded by family and friends (1). This model of care allows patients to distance themselves from the stressors of a hospital environment, potentially accelerating their recovery and enhancing their quality of life (2). However, caregivers of patients receiving home care might constantly experience concern and anxiety regarding the health status of their patients (3).

Recent studies indicate that caregivers engaging in excessive online searches for health-related information, a behavior known as cyberchondria, tend to experience heightened levels of health anxiety (4, 5). Cyberchondria, characterized by amplified anxiety due to excessive online health information seeking, is particularly prevalent among individuals who face uncertainty about health conditions, like caregivers of home healthcare patients (6, 7).

On the other hand, health anxiety is characterized by an individual's persistent belief that they have a serious illness, leading to associated distress (8). This condition can compromise an individual's daily quality of life and elevate psychological stress levels (9). Cyberchondria and health anxiety are closely linked, with cyberchondria often serving as a precursor to or exacerbating factor in health anxiety (10).

The evidence suggests that caregivers, in the absence of continuous professional health support that a hospital environment provides, may turn to online sources for information, potentially elevating levels of cyberchondria and inducing health anxiety (4). This exploration is crucial, as it can lead to better understanding and management of these psychological challenges faced by caregivers in the home healthcare setting.

The relationship between cyberchondria and health anxiety, especially concerning caregivers of home healthcare patients, presents a significant research avenue. To the best of our knowledge, no specific study in the literature addresses the relationship between levels of cyberchondria and health anxiety among relatives of patients receiving home healthcare. However, investigating these phenomena concurrently can augment the existing knowledge base and aid in developing strategies to preserve and support individuals' psychological health.

This study explores the relationship between cyberchondria levels and health anxiety among relatives of patients receiving home healthcare. By delving into the intricate relationship between these two phenomena, we aim to identify the factors influencing cyberchondria and health anxiety among caregivers. This will contribute to the literature and inform interventions to support the psychological well-being of home healthcare patients' relatives.

## METHODS

### Study Design

This research is characterised by a cross-sectional and descriptive design conducted between May and July 2023 at a tertiary hospital located in the eastern region of Türkiye.

### Study Population and Sample

The study population comprises relatives of patients visited by the hospital's home healthcare unit during the specified dates. In the related home healthcare unit, services were provided to approximately 300 patients per month, amounting to around 600 patients over a two-month period. The sample size was calculated based on parameters N=600, d=0.05, p=0.5, and q=0.5, resulting in a size of 235. However, 240 individuals who met the inclusion criteria were incorporated into the study. This number represented approximately 20% of the total registered patient population, which amounted to around 1200 individuals. In sample selection, stratified random sampling method was used to ensure demographic diversity and representativeness of the general population structure of the region.

Inclusion criteria are as follows:

- Age range between 18-65 years
- Possessing the cognitive ability to respond to the questions in the study
- Being an internet user
- Being primarily responsible for the care of a patient receiving home healthcare

Exclusion criteria include:

- Being a healthcare worker or retired from healthcare
- Unwillingness to participate in the study

### Data Collection Tools

A face-to-face interview technique was employed for data collection. The survey form consists of three sections: socio-demographic data, a Short Form of the Cyberchondria Severity Scale (CSS-12), and a Health Anxiety Inventory (Short Version). The researchers developed the first section, a 19-question survey form after a literature review, inquiring about participants' socio-demographic data, time spent online, and the care burden of the patient they are looking after. The second section utilised the 'Short Form of the Cyberchondria Severity Scale' to determine participants' levels of cyberchondria, and the third section employed the 'Health Anxiety Inventory (Short Version)' to gauge participants' levels of health anxiety. Since the CSS-12 and HAI used in our study are traditionally designed for self-assessment, these scales were completed by the participants.

The Short Form of the Cyberchondria Severity Scale (CSS-12) was initially developed by McElroy and Shevlin (2014) as a 33-item Likert-type scale (11). It was later condensed into a 12-item short form by the same authors in 2019. The Turkish validity and reliability of the short form were conducted by Söyler et al. in 2021(12). The CSS-12 is designed to assess the severity of individuals searching for disease symptoms online and comprises four sub-dimensions (Compulsiveness, Distress, Reassurance, and Compulsion). Items are scored using a five-point scale ranging from 1 (Never) to 5 (Always). The total score can range from 0 to 60, with higher scores indicating higher levels of cyberchondria. There are no reverse-scored items in the scale (13).

Health Anxiety Inventory (HAI) was developed by Salkovskis et al. in 2002 to measure individuals' health anxieties (14). The Turkish validity and reliability of the scale were conducted by Aydemir et al. in 2013(15). The inventory contains 18 items, each with four different options. Scoring for each item ranges from 0-3, with

higher scores indicating elevated levels of health anxiety. The maximum score attainable is 54, with scores above 27 indicating high anxiety (14).

**Ethical Considerations**

Ethical approval for this study was obtained from the local Clinical Research Ethics Committee on 30.03.2023, with the decision number 2023/07-5. Both verbal and written consent were acquired from participants before data collection, and all stages of the study adhered to the principles of the revised Helsinki Declaration.

**Data Analysis**

Data was analysed using IBM SPSS Statistics 23 (SPSS, Chicago, IL). The normality of data distribution was assessed using the Kolmogorov-Smirnov test. Descriptive statistics were presented as frequency and percentage for categorical data and mean and standard deviation or median and min-max values for numerical data. The Mann-Whitney U test was used for comparing two independent groups, the Kruskal-Wallis test for comparing more than two independent groups, and the Pearson correlation test for comparing two numerical variables. A statistical significance level was set at $p<0.05$.

**RESULTS**

Of the participants, 64.2% were female (n=154) and 35.8% were male (n=86), with an average age of 45.04±10.85. The average age of the patients receiving care was 78.40±14.94. While the average total score of the participants from CSS-12 was 22.36±11.63, the average score they received from HAI was 17.69±11.54. The socio-demographic data of the participants and the comparison of these data with the CSS-12 and HAI scores are presented in Table 1.

**Table 1.** Demographic data of the participants and comparison of the data with the scores they received from the CSS-12 and HAI scales.

| | | N | CSS-12* | P | HAI** | P |
|---|---|---|---|---|---|---|
| Gender | Female | 154 | 24.20±12.33 | **<0.001** | 18.14±11.54 | 0.351 |
| | Male | 86 | 19.06±9.67 | | 16.87± | |
| Marital status | Married | 187 | 21.58±11.32 | 0.018 | 18.06±11.74 | 0.061 |
| | Single | 40 | 26.90±12.17 | | 14.25±9.08 | |
| | Widowed | 13 | 19.62±11.75 | | 22.92±13.27 | |
| Marital status of the patient receiving care | Married | 86 | 16.10±11.48 | 0.284 | 23.22±11.36 | 0.577 |
| | Single | 12 | 18.33±9.75 | | 23.83±12.11 | |
| | Widowed | 142 | 18.55±11.54 | | 21.71±11.78 | |
| Educational Status | Illiterate | 4 | 20.75±17.50 | 0.130 | 14.00±8.83 | 0.273 |
| | Primary school | 95 | 20.56±10.09 | | 18.55±11.13 | |
| | High school | 73 | 22.32±12.32 | | 18.56±12.33 | |
| | University and above | 68 | 25.01±12.28 | | 15.76±11.31 | |
| Educational status of the cared patient | Illiterate | 112 | 18.35±11.27 | 0.852 | 20.82±10.96 | 0.055 |
| | Primary school | 113 | 17.21±12.26 | | 22.96±11.87 | |
| | High school | 10 | 16.70±7.64 | | 29.10±14.56 | |
| | University and above | 5 | 15.60±8.05 | | 29.60±8.01 | |
| Relationship with the cared-for patient | Daughter - son | 137 | 21.81±11.67 | 0.884 | 18.09±11.39 | 0.688 |
| | Mother - Father | 5 | 24.00±12.39 | | 17.00±7.71 | |
| | Brother-Sister | 6 | 23.00±14.00 | | 21.17±12.22 | |
| | Bride-groom | 41 | 23.90±12.35 | | 19.20±14.07 | |
| | Grandson-nephew | 37 | 22.14±10.54 | | 15.22±9.93 | |
| | Other | 14 | 22.93±12.25 | | 14.64±9.51 | |
| Presence of chronic disease | Yes | 89 | 21.00±11.52 | 0.112 | 19.84±11.69 | **0.016** |
| | No | 151 | 23.16±11.65 | | 16.42±11.29 | |
| Psychiatric medication | Yes | 19 | 21.79±11.50 | 0.860 | 26.95±12.04 | **<0.001** |
| | No | 214 | 22.31±11.55 | | 16.53±10.99 | |
| | I do not want to mention | 7 | 25.43±15.44 | | 27.86±11.78 | |

*CSS-12: Cyberchondria Severity Scale Short Form

**HAI: Health Anxiety Scale

Participants allocated 2.03±1.63 hours (min=0, max=9) for personal time during the day, with an average of 0.48±0.68 hours (min=0, max=5) dedicated to online health research. The durations for caregiving, personal time, and online browsing by the participants are detailed in Table 2. The responses given by participants to each item on the CSS-12 scale and the average scores are depicted in Figure 1. A significant positive correlation was identified between CSS-12 and HAI (r=0.404, p<0.001). The results of the Pearson correlation analysis between caregiving duration, caregiving difficulty, time allocated for oneself and online, time spent on online health research, and scores from the HAI and CSS-12 are provided in Figure 2.

**Table 2.** Participants' caregiving, self-time, and browsing time.

| | Mean | Ss | Min*. | Max. |
|---|---|---|---|---|
| How many days a week do you come to the patient receiving care? (days) | 6.01 | 1.59 | 2 | 7 |
| How many hours per day do you allocate to the patient receiving care? (hours) | 8.48 | 4.93 | 1 | 24 |
| How long have you been caring for the patient? (months) | 60.40 | 60.55 | 1 | 408 |
| If you rate your patient's care hardship on a low of 1 and a high of 10. how many points will you give? | 7.85 | 2.09 | 1 | 10 |
| How much time do you spend on yourself during the day? (hour) | 2.03 | 1.63 | 0 | 9 |
| How much time do you spend online daily? (hours) | 1.5 | 1.42 | 0 | 9 |
| How much time do you spend on health topics online daily? (hours) | 0.48 | 0.68 | 0 | 5 |

*. Under 30 minute is considered as "0".

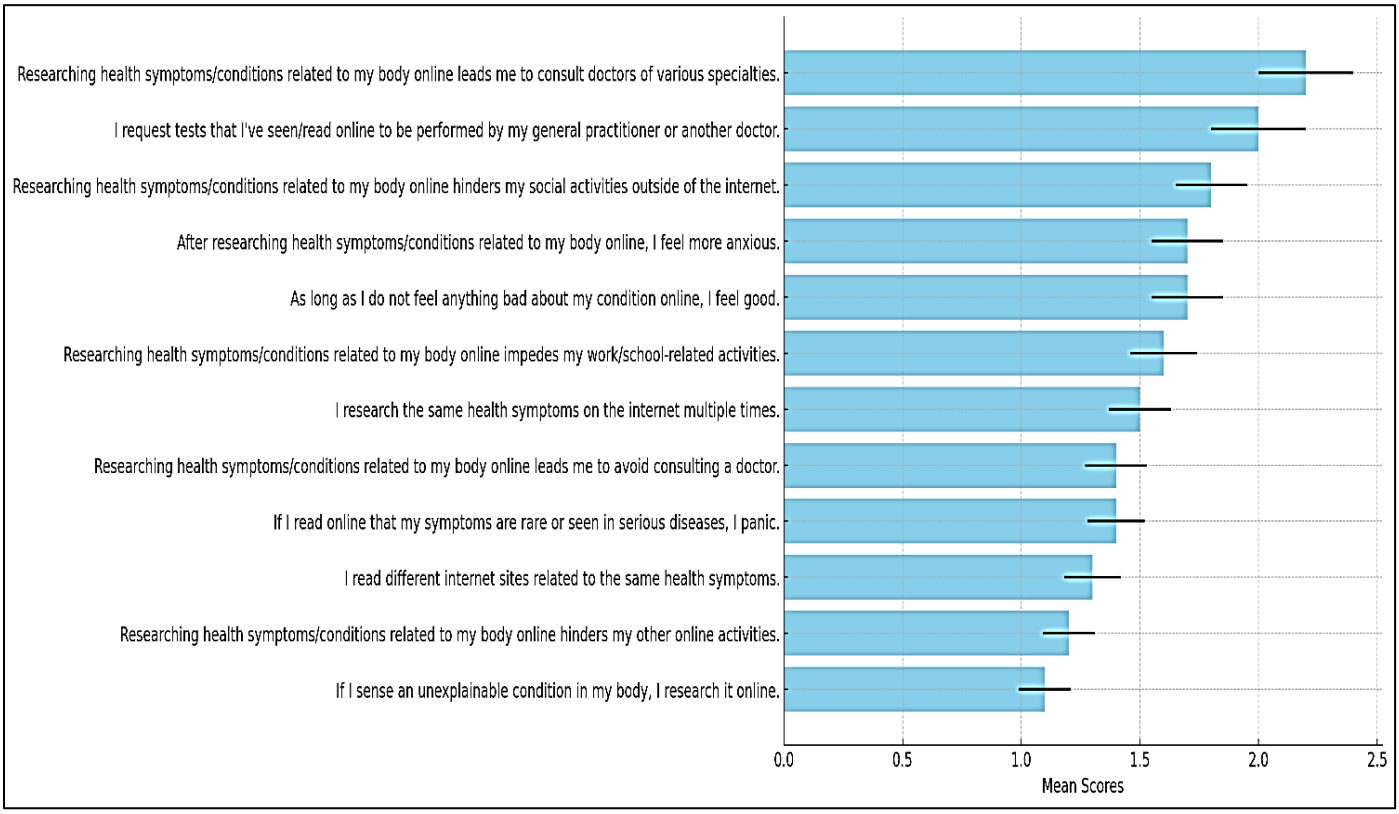


**Figure 1.** Participants' answers and mean scores according to Cyberchondria Severity Scale items

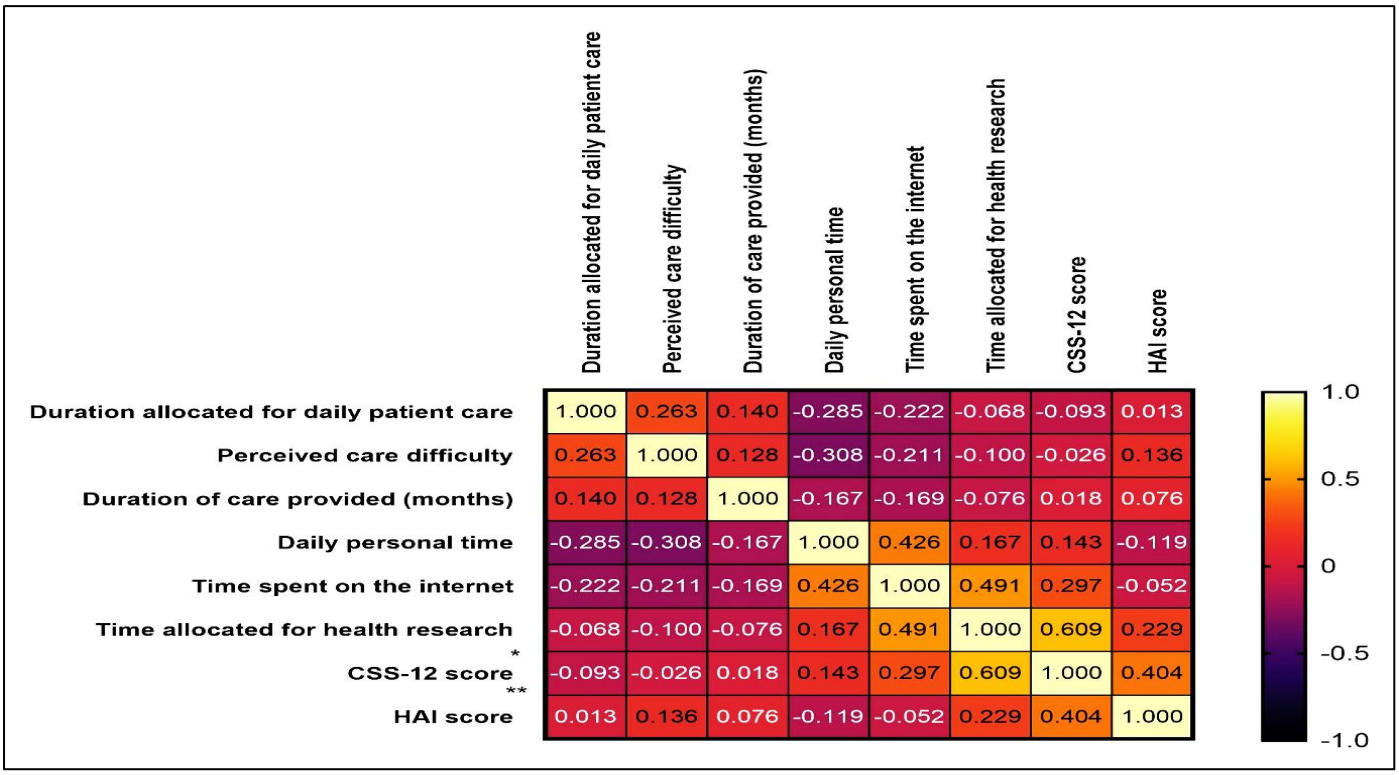


**Figure 2.** Care time, difficulty, time allocated to self and internet, HAI and CSS-12 scale scores Pearson correlation analysis results.

*CSS-12: Cyberchondria Severity Scale Short Form

**HAI: Health Anxiety Scale

## DISCUSSION

This study, focusing on the relationship between cyberchondria levels and health anxiety among relatives of patients receiving home healthcare, introduces a novel perspective to the literature. The findings reveal a significant positive correlation between the Health Anxiety Inventory scores and the Cyberchondria Severity Scale scores. This result illuminates the dynamics between cyberchondria and health anxiety, shedding light on their interaction and potential implications for individuals' psychological well-being. In this discussion section, the findings will be evaluated in light of existing literature, and potential implications for clinical practice and policy-making will be addressed.

Based on the observed data, the time participants allocate for themselves daily appears limited. Moreover, they spend much of this limited time online, dedicating about a third to health-related research. The findings indicate an increase in health anxiety and cyberchondria levels as the time spent on online health research increases. These results align with the existing literature. Starcevic (2017) defined cyberchondria as the repetitive use of the internet to search for health-related information, which can exacerbate health anxiety (6). This is consistent with our findings that as participants spend more time researching health online, their levels of health anxiety and cyberchondria increase. Jungmann et al. (2020) also highlighted that internet use for health-related purposes is a primary factor in perpetuating and escalating emotional distress (16). This parallels our findings, where participants spend a significant portion of their personal time online, with a substantial part dedicated to health research. Furthermore, Singh and Brown (2016) noted that searching for disease information online can intensify anxiety, especially in individuals already concerned about their health. This supports our findings regarding the potential exacerbation of health anxiety due to online health information searches (17).

The study's outcomes suggest that socio-demographic variables such as marital status, educational background, and the relationship with the patient receiving care do not have a pronounced effect on health anxiety and cyberchondria. However, a notable higher level of cyberchondria was observed among female participants. Regarding health anxiety, while females scored higher than males, the difference was not statistically significant. This observation aligns with most studies in the literature (18), though some reports suggest gender influences health anxiety (19). Further research is warranted to understand better the role of gender in health anxiety and cyberchondria.

Individuals with chronic diseases or those taking psychiatric medications exhibited significantly elevated levels of health anxiety. This could reflect the constant health concerns these individuals harbour. Such heightened anxiety could adversely impact their access and utilisation of healthcare services, necessitating the development of tailored intervention strategies for this group.

Regarding cyberchondria levels, no significant difference was observed among participants with chronic diseases or those on psychiatric medications. This contrasts with some literature where individuals with chronic diseases or those on psychiatric medications exhibited higher cyberchondria levels (20). The discrepancy might be attributed to the majority of our sample being familiar with internet use and being able to control their online health information-seeking behaviours. Additionally, individuals with chronic diseases or those on psychiatric medications might prefer home healthcare services, providing easy access to health information without using the internet.

When analysing scores from the Cyberchondria Severity Scale, the item "I feel good unless I see something bad about my condition online" received the highest score. This item reflects the emotional dimension of participants' online health information-seeking behaviours, suggesting that they might use this behaviour as a coping strategy. This aligns with the cyberchondria model in the literature where individuals search online for health information to alleviate health-related concerns (6). However, this behaviour can paradoxically amplify these concerns, pushing individuals to seek more information.

On the other hand, the lowest score was given to the statement, "Searching for symptoms/body conditions online hinders my work/school-related activities," suggesting that online health information-seeking does not significantly disrupt participants' daily lives. This could imply that individuals prioritise other daily activities over online health information-seeking. This observation is supported by a meta-analysis by Jian Wang et al. (2019), which found that online health information-seeking varies based on individuals' health beliefs and attitudes (21).

The findings that both health anxiety and cyberchondria levels significantly increase with more time spent on online health research align with existing literature (6,22). Online health research can serve as a resource individuals turn to for alleviating health concerns. However, this research can also amplify these concerns, creating a vicious cycle between health anxiety and cyberchondria.

The moderate statistically significant relationship between health anxiety and cyberchondria levels is consistent with literature suggesting that while cyberchondria overlaps with health anxiety, it is also distinguishable (23). This supports the notion that cyberchondria might be a manifestation of health anxiety or that these two phenomena interact.

The nature of the relationship between health anxiety and cyberchondria remains to be fully elucidated. However, in light of these findings, further research is needed to understand the nature, interaction, and potential overlaps between these two phenomena. Additionally, a deeper exploration of individuals' online health information-seeking behaviour and its impact on these phenomena is crucial.

**Limitations**

Our study has several limitations. Notably, the scales were administered to caregivers rather than the patients themselves, which could impact the applicability of results to patients' experiences. The cross-sectional design of the study limits our ability to draw causal inferences. The findings, derived from a specific regional context, may not be generalizable to other populations. Potential response bias due to the sensitive nature of the topics and the absence of qualitative data to enrich our understanding of the caregivers' experiences further limits the scope of our conclusions. Acknowledging these limitations is essential for interpreting our study's findings and for informing future research directions in this field. Hence, further studies conducted across a broader population, using various interview techniques in multi-centre settings, are needed.

## CONCLUSION

This study contributes to the literature by examining the relationship between cyberchondria levels and health anxiety among relatives of patients receiving home healthcare. The findings reveal a significant positive relationship between cyberchondria and health anxiety. Moreover, the relationship between these two phenomena strengthens with increased time spent on online health research.

The study's outcomes can aid in better understanding the dynamics between cyberchondria and health anxiety, illuminating their interaction and potential implications for individuals' psychological well-being. Additionally, these results provide valuable insights for healthcare professionals, especially when considering interventions for relatives of patients receiving home healthcare.

Lastly, this study emphasises the need for further research to understand the nature, interaction, and potential overlaps between cyberchondria and health anxiety. Such research can contribute to developing effective interventions to support individuals' psychological well-being and mitigate the interaction between these two phenomena.

## DECLARATIONS

**Ethical considerations:** This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Erzincan Binali Yıldırım University on 30.03.2023, with the decision number 2023/07-5. All participants were informed about the purpose of the research and provided their voluntary consent before participation.

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**Conflict of Interest Statement:** There are no potential conflicts of interest to declare.

**Data Availability Statement**: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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