Original Research / Orijinal Araştırma

The Relationship betwen Cyberchondria and Health Anxiety and COVID-19 Knowledge, Attitudes, and Behaviours: A Community-Based Cross-Sectional Study

Siberkondria ve Sağlık Anksiyetesinin COVID-19 Bilgi, Tutum ve Davranışları ile İlişkisi: Toplum Tabanlı Kesitsel Bir Çalışma

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Abstract

Objective: This study aims to determine the relationship between cyberchondria and health anxiety in society and COVID-19 information, attitudes, and behaviors.

Method: A community-based cross-sectional study was conducted by face-to-face interviews with 600 subjects. The dependent variable of the study was the COVID-19 Knowledge, Attitude and Behaviour Scale (CKABS). For univariate analyses, the t-test, ANOVA, and linear regression analysis were used for further analyses.

Results: The mean CKABS score was 80.67±13.14, Cyberchondria Severity Scale score was 39.55±08.30, and Health Anxiety Scale score was 12.79±11.96. According to the linear regression analysis performed with the Backward method, the CKABS score of individuals in the lower class who had poor general health perception, did not take precautions against COVID-19, did not pay attention to hygiene during the COVID-19 process, had not received both types of COVID-19 vaccine, had COVID-19 vaccine hesitancy, and did not want to receive COVID-19 vaccine for religious reasons were significantly lower. In addition, as the number of children increases, health concerns increase, and the COVID-19 vaccination rate decreases, the COVID-19 knowledge, attitude, and behaviour score decreases ($p<0.05$).

Conclusion: In the study, health anxiety and cyberchondria levels were found to be low, and CKABS score was found to be high. Priority should be given to vulnerable groups within society to increase their knowledge, attitudes, and behavior regarding COVID-19, and to reduce vaccine hesitancy and health anxiety.

Keywords: Cyberchondria, health anxiety, COVID-19.

Öz

Amaç: Çalışmanın amacı toplumda siberkondria ve sağlık anksiyetesinin COVID-19 bilgi, tutum ve davranışları ile ilişkisini belirlemektir.

Yöntem: Toplum tabanlı kesitsel bir çalışma, 600 kişi ile yüz yüze görüşülerek gerçekleştirilmiştir. Çalışmanın bağımlı değişkeni COVID-19 Bilgi, Tutum ve Davranış Ölçeğidir (CKABS). Tek değişkenli analizler için t-testi, ANOVA ve ileri analizler için lineer regresyon analizi kullanılmıştır.

Bulgular: Katılımcıların CKABS puanı 80.67±13.14, Siberkondria Şiddet Ölçeği puanı 39.55±08.30 ve Sağlık Anksiyetesi Ölçeği puanı 12.79±11.96 idi. Backward yöntemi ile yapılan lineer regresyon analizine göre, alt sosyal sınıftaki kişiler, genel sağlık algısı kötü olanlar, COVID-19'a karşı önlem almayanlar, COVID-19 sürecinde hijyene dikkat etmeyenler, her iki tip COVID-19 aşısını da yaptırmamış olanlar, COVID-19 aşı tereddütü olanlar ve dini nedenlerle COVID-19 aşısı yaptırmak istemeyenlerin ~~alt sınıftaki bireylerin~~ CKABS puanı anlamlı düzeyde düşüktür. Ayrıca çocuk sayısı arttıkça, sağlık kaygısı arttıkça ve COVID-19 aşı olma dozu azaldıkça COVID-19 bilgi, tutum ve davranış puanı azalmaktadır ($p<0.05$).

Sonuç: Çalışmada sağlık kaygısı ve siberkondria düzeyleri düşük, CKABS düzeyi yüksek bulunmuştur. Bulaşıcı hastalıklar toplumun sağlık düzeyini etkileme potansiyeline sahip önemli halk sağlığı sorunlarıdır. Toplum içindeki kırılgan gruplar öncelenerek COVID-19 bilgi, tutum ve davranış düzeyi artırılmalı, aşı kararsızlığı ve sağlık anksiyetesinin azaltılmalıdır.

Anahtar Kelimeler: Siberkondria, sağlık kaygısı, COVID-19.

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Introduction

Infectious diseases are significant issues affecting public health, and with the emergence of new agents in recent years, various outbreaks and pandemics have begun to occur. Within the framework of the measures taken with the pandemic, restrictions such as quarantine have been applied, the rate of information shared on the internet has increased compared to previous similar health crises, news and articles about the pandemic have been published on social media/news platforms, thus the internet has become a more effective global information source.[1] The pandemic and quarantine measures have increased the need to satisfy curiosity and seek solutions, along with the level of anxiety in society. As a result, people have turned to information sources other than health professionals, leading to the widespread occurrence of cyberchondria.[2] Although the rapid dissemination of information during the pandemic facilitates the preparation of the health system and society for the epidemic, it is seen that information with different levels of evidence on the internet, especially information with a low evidence level or incorrect information, causes anxiety and health anxiety in individuals.[3]

Cyberchondria, which refers to individuals researching diseases they believe they have on the internet and attempting to diagnose or treat themselves, can lead to increased anxiety, unnecessary healthcare expenses, and a shift away from modern healthcare services.[4] Additionally, it has been observed that the interaction between health anxiety and online health information-seeking behavior can lead to anxiety in individuals. Furthermore, studies in the literature have found that cyberchondria is also associated with certain health-protective behaviours.[5]

The intense stress and anxiety experienced by individuals for various reasons during the pandemic have increased their health anxiety levels. The increasing level of health anxiety has pushed individuals to obtain information about their health on the internet. People's psychological wear and tear and the thought that their immunity will weaken lay the foundation for cyberchondria disease, and this is reflected in the knowledge, attitudes, and behaviors of individuals for COVID-19. Additionally, it was decided to conduct this study since there are limited studies in the literature that assess the relationship between health anxiety and cyberchondria and COVID-19 knowledge, attitudes, and behaviors.[6] In addition to these, the simultaneous examination of cyberchondria and health anxiety with COVID-19 information, attitude, and behaviour patterns is important in terms of optimising individuals' health communication strategies and developing effective intervention programmes during the pandemic. This holistic approach can contribute to improving both individual and societal health outcomes and to enhancing the health of the community during epidemics and pandemics.

This study aims to determine the relationship between cyberchondria, health anxiety, COVID-19 knowledge, attitudes, and behaviours among adults living in Ataturk Neighbourhood in the city centre of Balikesir and to contribute to improving health in future epidemics and pandemics based on the findings.

Methods

The type, location, and timeframe of study

The cross-sectional study was conducted between October 2021 and January 2022 in the Ataturk Neighbourhood of Balikesir city centre. The sample size was calculated by using Epiinfo 7.0 software with a population of 11,838, a prevalence of 50%, a confidence level of 95%, a design effect of 1.5, and a margin of error of 5%, resulting in 559 participants. A total of 600 adults were reached using a multistage sampling method.

Variables of the study

The dependent variable of the study is the level of COVID-19 knowledge, attitude, and behavior. The independent variables are individuals' sociodemographic characteristics, health status, and characteristics regarding COVID-19, cyberchondria, and health anxiety level.

Data collection tools

Socio-demographic and COVID-19 Characteristics Form: The form consists of a total of 34 questions based on the literature, comprising 16 questions asking participants for sociodemographic characteristics and health-related conditions, and 18 questions asking for COVID-19-related characteristics.

Cyberchondria Severity Scale Short Form (CSS-15): The CSS-15, developed by Barke et al. in 2016 and adapted into Turkish by Uzun et al., was designed to measure the level of cyberchondria, which is defined as a form of anxiety that is characterized by excessive health searching on the internet. High scores obtained from the scale which has no cut-off values also signify a high cyberchondria level.[7, 8]

Short Health Anxiety Scale (SHAS): The scale, developed by Salkovskis et al. in 2002 and adapted into Turkish by Aydemir et al. in 2013, consists of 18 items, with each item scored between 0 and 3. The total score of the scale is the arithmetic sum of the responses to the first 14 items, with a high score indicating a high level of health anxiety.[9, 10]

COVID-19 Knowledge, Attitude, and Behavior Scale (CKABS): The CKABS, developed by Deveci et al., consists of 35 items and 8 subdimensions. The Knowledge and Attitude dimensions of the scale are of a three-point Likert

type, whereas the Behaviour dimension is of a four-point Likert type. The scale score is calculated by scaling the responses to each item separately for each sub-dimension and main dimension out of 100.[11, 12]

Analysis of the data

Analyses were performed in SPSS 25.0 programme at $p<0.05$ significance level. Number, percentage, mean, and standard deviation were used in descriptive analyses. T-test, ANOVA (posthoc: Tukey HSD) were used for univariate analyses, and linear regression analysis was used for further analyses.

The ethical aspect of the study

The research was conducted per the Declaration of Helsinki and permission (date 28.09.2021, number 2021/1) was obtained from Balıkesir University Non-Interventional Research Ethics Committee.

Results

The mean age of the participants was 39.22±16.07, 60.2% were male, 53.5% were married, 31.5% were associate degree graduates, and 51.2% were employed. Sociodemographic characteristics are presented in Table 1.

The mean score of the cyberchondria severity scale of the research group was 39.55±08.30, and the mean score of the health anxiety scale was 12.79±11.96, The mean score of COVID-19 Knowledge, Attitude, and Behaviour Scale was 80.67±13.14.

The factors affecting the CKABS score are presented in Table 1.

Table 1. *CKABS by socio-demographic characteristics in the research group.*

Variables	n(%)	X±SD	p
Gender			
Female	239(39.8)	83.31±12.08	**0.000***
Male	361(60.2)	78.97±13.47	
Marital status			
Married	321(53.5)	83.21±10.24	**0.000***
Single	279(46.5)	77.81±15.27	
Having children			
Yes	330(55.0)	82.76±10.99	**0.000***
No	270(45.0)	78.19±14.92	
Educational status			
Primary school graduate	126(21.0)	82.61±10.37	0.094**
Senior high school graduate	107(17.8)	81.48±11.58	
University graduate and above	367(61.2)	79.82±14.25	
Employment status			
Yes	307(51.2)	80.33±14.21	0.478*
No	28347.2)	81.09±11.83	
Social class			
Upper class	40(6.7)	87.24±8.85	**0.001***
Lower class	560(93.3)	80.23±13.23	
Income perception			
Income less than expenses[a]	208(34.7)	82.41±11.27	**0.036** a>b=c**
Income equal to expenses[b]	254(42.3)	79.26±12.84	
Income more than expenses[c]	138(23.0)	80.78±15.67	
Family type			
Nuclear[a]	470(78.3)	81.74±11.92	**0.000** a=c>b**
Extended[b]	50(8.3)	72.93±15.84	
Other[c]	80(13.3)	79.43±15.95	
Chronic disease			
No	424(70.7)	80.37±13.02	0.332*
Yes	176(29.3)	81.51±13.27	
Smoking			
Yes	252(42.0)	81.30±13.38	0.527*
No	348(58.0)	80.99±12.90	

Table 1(continued). *CKABS by socio-demographic characteristics in the research group.*

Alcohol consumption	**n(%)**	**X±SD**	
Yes	139(23.2)	82.65±12.27	**0.046***
No	461(76.8)	80.11±13.29	
Doing exercises			
No	244(40.7)	81.37±12.46	0.303*
Yes	356(59.3)	80.24±13.52	
Perception of sleep quality			
Good[a]	325(54.2)	83.32±10.94	**0.000** a>b>c**
Average[b]	174(29.0)	79.18±13.60	
Bad[c]	101(16.8)	74.88±16.09	
Perception of general health			
Good[a]	442(73.7)	82.04±11.94	**0.000** a=b>c**
Average[b]	129(21.5)	79.28±14.03	
Bad[c]	29(4.8)	66.58±16.73	
The healthcare institution usually consulted for health issues			
Primary healthcare institutions a	187(31.2)	80.40±13.40	**0.000** a=b>c**
Secondary healthcare institutions[b]	374(62.3)	81.72±12.25	
Tertiary healthcare institutions[c]	39(6.5)	72.40±16.44	
Contracting of COVID-19			
Yes	303(50.5)	80.75±12.83	0.929*
No	297(49.5)	80.65±13.38	
Contacting with a COVID-19 case			
Yes	168(28.0)	78.09±14.79	**0.005***
No	432(72.0)	81.72±12.25	
Perception of having adequate knowledge about COVID-19			
Yes	482(80.3	81.81±12.41	**0.000***
No	118(19.7	76.17±14.80	
Taking adequate precautions against COVID-19			
Yes	480(80.0)	81.87±12.41	**0.000***
No	120(20.0)	76.03±14.69	
Paying more attention to hygiene during the pandemic			
Yes	530(88.3)	81.68±12.37	**0.000***
No	70(11.7)	73.28±15.89	
Concern about transmitting COVID-19			
Yes	455(75.8)	82.56±11.66	**0.000***
No	145(24.2)	74.87±15.49	
Experiencing death anxiety due to COVID-19			
Yes	235(39.2)	84.01±11.20	**0.000***
No	365(60.8)	78.10±14.59	
Spending time on social media during the pandemic			
More / almost the same	552(92.0)	81.13±12.99	**0.007***
Less	48(8.0)	75.81±13.42	
Getting vaccinated against COVID-19			
Yes	514(85.7)	81.28±12.70	**0.019***
No	86(14.3)	77.23±14.86	
Type of the vaccine received			
Sinovac®[a]	117(19.5)	80.25±11.54	**0.003** c>a=b**
Biontech®[b]	308(51.3)	80.47±13.04	
Sinovac®+Biontech®[c]	89(14.8)	85.45±12.27	
Experiencing hesitation about getting vaccinated			
Yes	222(37.0)	77.72±15.04	**0.000***
No	378(63.0)	82.45±11.47	
Due to side effects			
Yes	198(33.0)	79.34±13.70	0.074*
No	402(67.0)	81.37±12.75	

Table 1(continued). *CKABS by socio-demographic characteristics in the research group.*

	n(%)	X±SD	
Do not know the exact effectiveness of the vaccine			
Yes	186(31.0)	79.59±13.56	0.165*
No	414(69.0)	81.20±12.87	
Due to concerns about the excipients in the vaccines			
Yes	88(14.7)	79.07±14.17	0.205*
No	512(85.3)	80.98±12.90	
Recovering from the disease is more protective			
Yes	28(4.7)	81.42±12.04	0.765*
No	572(95.3)	80.67±13.15	
Religious reasons			
Yes	20(3.3)	74.05±15.60	**0.021***
No	580(96.7)	80.93±12.96	
Vaccines did not go through sufficient stages of testing			
Yes	74(12.3)	79.80±11.71	0.530*
No	526(87.7)	80.83±13.29	
Negative news on social media			
Yes	46(7.7)	79.57±15.64	0.606*
No	554(92.3)	80.80±12.88	
Believe that pharmaceutical companies are motivated by profit			
Yes	137(22.9)	79.50±14.64	0.263*
No	461(77.1)	81.05±12.63	

n:Number, **X**:Mean, **SD**:Standard Deviation, *:Student's t test, **:ANOVA (posthoc: Tukey HSD)

The CKABS score is associated with age (r=0.117, p=0.004), number of vaccine doses received (r=0.104, p=0.018), number of children (r=-0.138, p=0.012), alcohol consumption (r=-0.173, p=0.042), exercise (r=-0.206, p=0.000), and SHAS score (r=-0.242, p=0.000).

According to the linear regression analysis using the backward method, the CKABS score was significantly lower ($p<0.05$) in the lower social class, those with poor general health perception, those who did not take precautions against COVID-19, those who did not pay attention to hygiene during the COVID-19 process, those who did not receive both types of COVID-19 vaccine (both Biontech® and Sinovac®), those who were hesitant about COVID-19 vaccine, and those who did not want to receive COVID-19 vaccine for religious reasons. In addition, as the number of children increases, health concerns increase, and the COVID-19 vaccination rate decreases, the COVID-19 knowledge, attitude, and behaviour score decreases ($p<0.05$) (Table 2).

Table 2. *CKABS score and associated factors according to linear regression analysis.*

Variables	B	β	p
Social class	-8.983	-0.305	0.026
Perception of general health	14.798	0.558	0.002
Perception of taking precautions against COVID-19	36.333	-0.764	0.000
Paying more attention to hygiene during the COVID-19 process	21.147	0.367	0.020
Being concerned about transmitting COVID-19	-9.782	-0.369	0.075
Type of the COVID-19 vaccine	11.183	0.785	0.014
COVID-19 vaccine hesitancy	-16.354	-0.470	0.001
Unwilling to receive the vaccine due to religious reasons	34.100	0.423	0.021
Number of children	-7.015	-0.411	0.003
COVID-19 vaccination dose	22.817	1.212	0.001
CSS-15	0.421	0.361	0.068
SHAS	-0.317	0.386	0.006

R^2=0.628, **Adj. R^2**=0.504, **F**=5.063, **p**=0.000.
CSS: The Cyberchondria Severity Scale
SHAS: Short Health Anxiety Scale

Discussion

In this study, which is one of the limited studies addressing cyberchondria, health anxiety, and COVID-19 knowledge, attitude, and behavior together, it is observed that participants have a low level of cyberchondria (39.55±8.30) and health anxiety (12.79±11.96), but a high level of COVID-19 knowledge, attitude, and behavior (80.67±13.14). Participants' CKABS scores were also found to be at a good level, primarily in the knowledge dimension. In this context, it is observed that in the study group, the CKABS score is high, with the knowledge dimension score being the highest, as expected, followed by the attitude and behavior dimension scores in order. It can be stated that as the level of knowledge increases, the scores for attitude and behavior also increase. In the literature, it is often observed that tools consisting of literature-based questions, rather than valid and reliable scales, are used to evaluate COVID-19 knowledge, attitudes, and behaviors during the pandemic. Consequently, the CKABS scores also vary. In this regard, it is significant that our study found a high CKABS score with a scale that has been evaluated for its psychometric properties and deemed valid and reliable. Indeed, as the levels of knowledge, attitude, and behavior increase, the frequency of disease occurrences also decreases.

In this study, the independent variables that were found to be significant in the univariate analyses of the CKABS score were further evaluated using multivariate linear regression analysis. As a result of these advanced analyses: The CKABS score is significantly lower among individuals in the lower class, those with bad perception of general health, those not taking precautions against COVID-19, those not paying attention to hygiene during the COVID-19 process, those not concerned about transmitting COVID-19, those who have not received both types of COVID-19 vaccines (both Biontech® and Sinovac®), those who have COVID-19 vaccine hesitancy, and those unwilling to receive the COVID-19 vaccine due to religious reasons. This situation may be related to lower levels of income, education, and health literacy.

In this study, the lower CKABS score in the lower social class may be related to the use of Korkut Boratav's social class classification. In contrast, Ozsahin and Aribas found no significant relationship between occupation/social class and knowledge, attitudes, and behaviors in their study. This discrepancy may be due to the sociocultural differences among the participants.[13]

In this study, the CKABS score was lower among those with a poor general health perception. This may be related to the relatively poor healthy lifestyle behaviors and lower health literacy among those with a poorer general health perception. Similarly, Deveci et al. found that individuals with low health literacy had lower CKABS scores.[12] Other studies have also shown that COVID-19 knowledge, attitudes, and behaviors are positively correlated with health perception, consistent with our findings.[14]

In the study, the CKABS score was significantly lower among those who did not take precautions against COVID-19 and those who did not pay attention to hygiene during the COVID-19 process. Unlike our study, a study examining the psychosocial difficulties faced by university students during the COVID-19 pandemic and their knowledge, attitudes, and behaviors towards the disease found no significant relationship between the level of adherence to COVID-19 health measures, such as taking precautions and paying attention to hygiene, and the level of knowledge.[15] This difference may be due to the study's being conducted with students. The lower scale scores among those who did not receive both types of COVID-19 vaccine (both Biontech® and Sinovac®) in the study can be explained by the fact that only the Sinovac vaccine was initially available to the public at the time of the research.

In the study, the CKABS scores were significantly lower among those who had vaccine hesitancy and those who did not want to receive the COVID-19 vaccine due to religious reasons. Similarly, Biswas et al. found that the levels of knowledge, attitude, and behaviour were also low among those with a lack of vaccine and those who did not want to receive the COVID-19 vaccine for religious reasons.[16] In the study, as the health anxiety score and the number of children decreased and the COVID-19 vaccination dose increased, the CKABS score increased. This situation is thought to be related to the high coping abilities and awareness of individuals with high levels of COVID-19 knowledge, attitude, and behavior. In this study, no relationship was found between the CKABS score and variables such as having children, age, gender, marital status, income, family type, experiencing COVID-19 related death anxiety, alcohol consumption, doing exercise, sleep quality, the healthcare institution usually consulted for health issues, having contact with a COVID-19 case, perception of having adequate information about COVID-19, and time spent on social media during the COVID-19 process. This situation may be attributed to the fact that, despite differences in participants' lifestyles and sociodemographic characteristics, the pandemic environment made the population more receptive to stimuli, resulting in high levels of COVID-19 knowledge, attitudes, and behaviors. This phenomenon could be related to the importance of pandemics as major public health issues and the increase in health literacy during such emergencies.[17]

Conclusion

The study group exhibited low levels of cyberchondria and health anxiety and high CKABS scores. Based on the generally significant variables, it is recommended to increase the health protection behaviours and health literacy of

the participants. In this context, the availability of high-quality primary healthcare services and an increase in the number and quality of public health workers are important for improving the health of society in all respects.

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The ethical aspect of the study

The research was conducted per the Declaration of Helsinki and permission (date 28.09.2021, number 2021/1) was obtained from Balikesir University Non-Interventional Research Ethics Committee.

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