



BANDIRMA ONYEDİ EYLÜL ÜNİVERSİTESİ SAĞLIK BİLİMLERİ VE ARAŞTIRMALARI DERGİSİ BANU Journal of Health Science and Research

DOI: 10.46413/boneyusbad.1628422

Özgün Araştırma / Original Research

Being Pregnant in the Digital Age: Cyberchondria and Pregnancy Anxiety

Dijital Çağda Gebe Olmak: Siberkondri ve Gebelik Anksiyetesi

Zehra ACAR¹  Asibe ÖZKAN²  Fatma Gamze MALÇOK³ 

¹ Asst. Prof. University of Health Sciences Hamidiye Faculty of Nursing, Istanbul/ Türkiye

² Assoc Prof. University of Health Sciences Hamidiye Faculty of Nursing, Istanbul/ Türkiye

³ Midwife, Başakşehir Çam ve Sakura City Hospital Education Department, Istanbul, Türkiye

Sorumlu yazar /
Corresponding author

Zehra ACAR
zehra.acar@sbu.edu.tr

Geliş tarihi / Date of receipt:
28.01.2025

Kabul tarihi / Date of
acceptance: 11.06.2025

Atf / Citation: Acar, Z., Özkan, A., Malçok, F. G. (2025). Being pregnant in the digital age: cyberchondria and pregnancy anxiety. BANÜ Sağlık Bilimleri ve Araştırmaları Dergisi, 7(3), 799-808. doi: 10.46413/boneyusbad. 1628422

ABSTRACT

Aim: This study aimed to determine the levels of cyberchondria and anxiety among pregnant women and the associated factors.

Material and Method: This descriptive study was conducted with 376 pregnant women. Data were collected using the "Personal and Pregnancy-Related Characteristics Data Form", the "Pregnancy-Related Anxiety Scale (PrAS)," and the "Cyberchondria Severity Scale-Short Form (CSS-12)".

Results: 77.1% of the participants reported searching the internet for answers to their pregnancy-related questions. The mean total scores for the CSS-12 and PrAS scales were 28.14 ± 9.28 and 67.3 ± 13.97 , respectively. There was a correlation between the CSS-12, its "distress" and "compulsion" subscale, and the PrAS. Additionally, correlations were observed between the PrAS, its "childbirth concerns" and "baby concerns" subscale, and the CSS-12. Pregnancy-related anxiety scores were higher in multiparous pregnant women compared to primiparous women. A correlation was also found between pregnancy-related anxiety scores and the provision of satisfactory answers to participants' questions by midwives and nurses. Furthermore, age acted as a moderator, weakening the impact of cyberchondria on pregnancy anxiety.

Conclusion: The cyclical consequences of pregnancy anxiety and internet use should be examined, and interventions or recommendations should be developed to reduce the negative impact of cyberchondria on mental health.

Keywords: Anxiety, Cyberchondria, Digital, Internet, Pregnancy

ÖZET

Amaç: Bu çalışmada gebelerde siberkondri ve anksiyete düzeylerinin ve ilişkili faktörlerin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı tipteki bu çalışma 376 gebe ile yürütülmüştür. Veriler "Kişisel ve Gebelik İlgili Özellikler Veri Formu", "Gebelik İlgili Anksiyete Ölçeği (PrAS)" ve "Siberkondria Şiddet Ölçeği-Kısa Formu (CSS-12)" kullanılarak toplanmıştır.

Bulgular: Katılımcıların %77.1'i gebelik ile ilgili sorularına yanıt bulmak için internette arama yaptığını bildirmiştir. CSS-12 ve PrAS ölçekleri için ortalama toplam puanlar sırasıyla 28.14 ± 9.28 ve 67.3 ± 13.97 idi. CSS-12'nin "sıkıntı" ($r=0.185$) ve "kompulsiyon" ($r=0.183$) alt ölçekleri ile PrAS arasında korelasyon bulunmuştur. Ayrıca, PrAS'ın "doğum endişeleri" ($r=0.321$) ve "bebek endişeleri" ($r=0.151$) alt ölçekleri ile CSS-12 arasında korelasyon bulunmuştur. Gebelik ile ilgili kaygı puanları multipar gebelerde primipar gebelere kıyasla daha yüksektir. Gebelik ile ilgili kaygı puanları ile ebe ve hemşirelerin katılımcıların sorularına tatmin edici yanıtlar vermesi arasında da bir korelasyon bulunmuştur. Ayrıca yaş, siberkondrinin gebelik anksiyetesi üzerindeki etkisini zayıflatan bir moderatör görevi görmüştür.

Sonuç: Gebelik anksiyetesi ve internet kullanımının döngüsel sonuçları incelenmeli ve siberkondrinin ruh sağlığı üzerindeki olumsuz etkisini azaltmak için müdahaleler veya öneriler geliştirilmelidir.

Anahtar kelimeler: Anksiyete, Dijital, Gebelik, İnternet, Siberkondri



This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.

INTRODUCTION

Pregnancy is a critical phase marked by significant physiological changes, necessitating adaptations by women (Šoštarić, Mikac, & Jokić-Begić, 2023). These changes, coupled with the uncertainties they bring, frequently lead pregnant women to experience common feelings of worry, anxiety, and distress (Bayrampour et al., 2016; Šoštarić et al., 2023). To cope with these negative emotions, many women turn to the internet for information related to pregnancy (Prescott, Mackie, & Rathbone, 2018; Šoštarić et al., 2023). The internet has become a quick and easily accessible source for health-related information and is widely used because it is inexpensive, convenient, and offers anonymity or the ability to connect with individuals who share similar experiences. Excessive, compulsive, and repetitive online health searches driven by heightened anxiety and distress are defined as cyberchondria (Šoštarić et al., 2023; Gülec Satir & Bakir, 2024). Studies indicate that women are more frequent seekers of online health information, with this behavior increasing during reproductive years, particularly throughout pregnancy (Prescott and Mackie, 2017; Prescott et al., 2018; Conrad, 2022). Studies indicate that 80–90% of pregnant women rely on the internet for health-related information (Jacobs, Van Steijn, & Van Pampus, 2019; Gülec et al., 2024). Research emphasizes that pregnant women turn to the internet to gather information on pregnancy, symptoms, and experiences, as well as to share their emotions (Ellis and Roberts, 2020; Gülec et al., 2024) and verify the reliability of the information they receive (Huberty, Dinkel, Beets, & Coleman, 2013; Giacometti et al., 2024). They commonly access the internet immediately before and after consulting healthcare professionals (Gao et al., 2014; Giacometti et al., 2024). Women expecting their first child are the most common group to use the internet as a “second opinion” source (Prescott et al., 2018). Internet use during pregnancy has been shown to positively influence decision-making processes and serve as a complement to information provided by healthcare professionals (Gülec et al., 2024). As a result, women can take a more active role in their healthcare, enhance their health literacy, and gain a greater sense of security. However, not all online health information is verifiable (Prescott and Mackie, 2017).

A study with midwives revealed that pregnant

women usually have concerns about the accuracy of the information they find online and tend to validate this information offline, a process that provides them with a sense of control and security (Huberty et al., 2013; Prescott et al., 2018). This is crucial as the vast amount of easily accessible online information and personal stories about pregnancy and childbirth, especially regarding potential risks, can confuse women about which information to trust and how to respond to the negative personal experiences of other mothers (Prescott and Mackie, 2017; Prescott et al., 2018; Gülec et al., 2024). This uncertainty may prompt women to consult multiple sources for answers to their health-related questions, frequently encountering contradictory information. Deciding which sources are reliable may result in cognitive dissonance and drive excessive searching behavior, which can, in turn, trigger the onset of anxiety and distress (Prescott and Mackie, 2017; Prescott et al., 2018). Studies suggest that individuals with high health anxiety are more likely to search online frequently, spend more time searching, and experience greater distress from their searches compared to those with little or no health anxiety (Muse, McManus, Leung, Meghreblian, & Williams, 2012). Moreover, frequent online health searchers are more likely to schedule additional medical appointments (Prescott et al., 2018). The anxiety and distress experienced by expectant mothers during pregnancy are linked to adverse pregnancy outcomes (Citak Bilgin, Coskun, Coskuner Potur, Ibar Aydin & Uca, 2021). Therefore, it is critical to identify the precise causes of anxiety during pregnancy and examine the relationship between online searching behaviors and anxiety levels. These findings can serve as a guide for managing pregnancy anxiety, addressing cyberchondria-related behaviors, and providing effective counseling (Gao, Larsson & Luo 2013). However, the existing literature includes only a limited number of studies exploring the relationship between cyberchondria levels and anxiety during pregnancy (Gülec et al., 2024; Šoštarića et al., 2023). The study by Gülec et al. (2024) found a positive correlation between cyberchondria and health anxiety in pregnant women, while the study by Šoštarić et al. (2023) identified health anxiety and pregnancy-specific anxiety as significant predictors of cyberchondria.

This study aimed to determine the prevalence of cyberchondria among pregnant women, identify the factors contributing to its development, and

examine the relationship between cyberchondria and pregnancy-related anxiety levels.

Research Questions

1. What is the level of cyberchondria and pregnancy-related anxiety among pregnant women?
2. What descriptive characteristics are associated with the level of cyberchondria and pregnancy-related anxiety?
3. Is there a significant relationship between the level of cyberchondria and the pregnancy-related anxiety?
4. What are the factors associated with the level of pregnancy-related anxiety?

MATERIALS AND METHODS

Study Aim and Type

The research is described as a descriptive study.

Study Population and Sample

The study was conducted between March-September 2024 at a hospital. The study population consisted of 19,140 pregnant women who applied to the antenatal care outpatient clinics of the city hospital within one year. Using the sample size calculation technique for continuous data, with a 95% confidence level, ± 0.278 margin of error, and an effect size of 0.3, the required sample size was calculated as 324 using the G*Power 3.1.9.6 software. To account for possible non-response or data loss, increase the statistical power of the study, and ensure that the number of valid questionnaires did not fall below the required sample size, 400 surveys were distributed to pregnant women, and a total of 376 were included in the study. Inclusion criteria: willingness to participate in the study, being pregnant, 18 years or older and literacy, no diagnosis of anxiety disorder and/or other psychiatric illnesses, and access to and ability to use the internet.

Data Collection Tools

Data were collected using the “Personal and Pregnancy-Related Characteristics Data Form”, the “Pregnancy-Related Anxiety Scale”, and the “Cyberchondria Severity Scale-Short Form”.

Personal and Pregnancy-Related Characteristics

Data Form: This form, created by the researchers, included 30 questions designed to assess personal characteristics, obstetric and gynecological factors, and internet usage habits (Gülec et al., 2024; Šoštarića et al., 2024).

Cyberchondria Severity Scale-Short Form (CSS-12): McElroy et al. (2019) developed the CSS-12

to assess individuals' concerns and behaviors regarding online health information searches. Söyler et al. conducted the Turkish validity and reliability study of the scale in 2021. This 12-item scale follows a 5-point Likert format and comprises four subscales: Excessiveness, Distress, Reassurance, and Compulsion. The total score determines the overall assessment. The Cronbach's alpha coefficient for the total scale was reported as 0.90 in the original study and 0.86 in the Turkish adaptation study. (McElroy et al. 2019; Söyler et al., 2021). In this study, Cronbach's Alpha coefficient was calculated as 0.87.

Pregnancy-Related Anxiety Scale (PrAS): The PrAS was developed by Brunton et al. (2019) and adapted into Turkish by Solt Kırca and Kanza Gül (2020), who validated its reliability. The scale consists of 33 items rated on a 4-point Likert scale. It has nine subscales and includes 11 reverse-coded items. The total score ranges from 33 to 132, with higher scores indicating greater anxiety levels. The Cronbach's alpha coefficient was reported ranged from 0.77 to 0.95 in original study and 0.85 in the Turkish adaptation study (Brunton et al., 2019; Solt Kırca & Kanza Gül, 2020). For this study, the Cronbach's Alpha coefficient was 0.85.

Data Collection

Data were collected through face-to-face interviews conducted by the researcher in a private room within the antenatal outpatient clinic. Each interview lasted approximately 25–30 minutes. The participants were informed about the study before data collection.

Ethical Consideration

The study was conducted in compliance with the Helsinki Declaration after obtaining ethical approval Başakşehir Çam and Sakura City Hospital Ethical Commite (Date: 16.02.2024 and Approval number 2024/120). The researchers verbally informed all participants about the study's purpose and procedures and obtained their informed consent before inclusion in the study.

Data Analysis

The statistical analysis of the data was performed using Statistical Package for Social Sciences (SPSS) for Windows 27. The assumptions of the regression model equation were tested using the Durbin-Watson (DW) statistic (DW=1.414; values between 1 and 3 are considered acceptable), and normality was assessed using the Shapiro-Wilk test ($p>0.05$). Descriptive

characteristics were analyzed using frequencies, percentages, means, and standard deviations. Comparisons of scale score means were performed using One-Way ANOVA and Student's t-test, while correlations between score means were evaluated using the correlation coefficient. Scale reliability was assessed using Cronbach's Alpha coefficient. Effect size was analyzed through regression and moderation analyses. A significance level of $p < 0.05$ was considered statistically significant.

RESULTS

The study included 376 pregnant women with a

mean age of 28.38 ± 4.95 years. It was found that 35.9% of the participants had an education level of literacy/primary/middle school and that 80.9% had social security coverage. 50.8% were primiparous and 83.5% of the first antenatal visits were conducted by physicians, and 83.8% of the participants reported receiving comprehensive answers to all their questions during medical consultations. Additionally, 77.1% searched the internet for answers to pregnancy-related questions, and 19.1% were members of pregnancy-related forums. Only 24.2% of the participants attended prenatal education classes (Table 1).

Table 1. Demographic and Pregnancy Characteristics of Pregnant Women (n=376)

Variables	Mean \pm SD	Min-Max
Age	28.38 \pm 4.95 (Median=28)	18 – 44
	n	%
Educational level		
Literate/Primary and Middle School	135	35.9
High School	118	31.4
University and Higher	123	32.7
Presence of social security		
Yes	304	80.9
No	72	19.1
Gravida		
Primiparous	191	50.8
Multiparous	185	49.2
Abortion		
Yes	132	35.1
No	244	64.9
First antenatal visit by		
Physician	314	83.5
Non-Physician	62	16.5
Participation in pregnancy-related education		
Yes	91	24.2
No	285	75.8
Treatment for conception		
Yes	23	6.1
No	353	93.9
History of risk in previous pregnancies		
Yes	57	15.2
No	319	84.8
Current pregnancy risk		
Yes	69	18.4
No	307	91.6
Did your doctor have enough time to answer all your questions during the consultation?		
Yes	315	83.8
No	61	16.2
Did midwives/nurses have enough time to answer all your questions during the consultation?		
Yes	318	84.6
No	58	15.6
Do you search the internet for answers to health-related questions?		
Yes	290	77.1
No	86	22.9
Are you a member of pregnancy-related forums?		
Yes	72	19.1
No	304	80.9

n: Number of Participants, %: Percentage, SD: Standard Deviation, Min: Minumum, Max: Maximum.

The mean total score on the PrAS was 67.30 ± 13.97 (median=68), indicating a moderate level of anxiety. The PrAS score was 66.77 ± 14.27 for those who received sufficient answers from their physicians and 70.03 ± 12.01 for those who did not, with no statistically significant difference ($p=0.063$). However, a significant difference was found in PrAS scores between those who received sufficient answers from midwives/nurses (66.45 ± 14.16) and those who did not (71.98 ± 11.96) ($p=0.003$). Midwives/nurses were found to be more effective than physicians in reducing anxiety levels. Statistically significant differences in anxiety scores were observed based on the presence of social security, gravidity, history of abortion, and the type of healthcare professional conducting antenatal follow-ups ($p<0.05$). Higher anxiety levels were noted among those women without social security, primiparous women, and those receiving antenatal care from healthcare professionals other than physicians. A significant correlation was found between pregnancy-related anxiety scores and the satisfaction of receiving answers to questions from midwives/nurses

($r=0.143$; $p=0.005$).

The mean total score of the CSS-12 scale was found to be 28.14 ± 9.28 (Median: 28), indicating a moderate level of cyberchondria among the pregnant women. No statistically significant differences were observed between CSS-12 scores and the participants' descriptive characteristics. A statistically significant relationship was found between the total CSS-12 score, its distress and compulsion subscales, and the PrAS score. As the total scores on the CSS-12 and its distress and compulsion subscales increased, pregnancy-related anxiety also increased.

There was also a statistically significant relationship between the subscale's childbirth concerns and baby concerns and the CSS-12 scores. As the scores on these PrAS subscales increased, the level of cyberchondria also increased. The mean scores and correlations of the total and subscales of the PrAS and CSS-12 are presented in Table 2.

Table 2. Mean Scores and Correlations of CSS-12 and PrAS

	Descriptive		Correlation	
	Mean \pm SD (Median)	Min-Max	^a CSS-12 (r)	^a PrAS (r)
Cyberchondria Severity Scale	28.14 ± 9.28 (28)	(12-60)	-	0.130*
Excessiveness	8.48 ± 3.38 (8)	(3-15)	0.810*	0.072
Distress	7.65 ± 2.96 (8)	(3-15)	0.830*	0.185*
Reassurance	6.99 ± 3.33 (7)	(3-15)	0.816*	0.000
Compulsion	4.99 ± 2.33 (4)	(3-15)	0.585*	0.183*
Pregnancy-Related Anxiety Scale				
PrAS	67.30 ± 13.97 (68)	33-107	0.130*	-
Childbirth Concerns	14.45 ± 5.03 (14)	6-24	0.321*	0.490*
Body Image Concerns	8.37 ± 2.59 (8)	5-18	0.087	0.574*
Attitudes Towards Childbirth	7.37 ± 2.81 (7)	3-12	-0.076	0.539*
Worry About Motherhood	4.4 ± 1.88 (3)	3-12	0.092	0.351*
Acceptance of Pregnancy	6.86 ± 3.65 (6)	3-12	-0.081	0.585*
Anxiety Indicators	7.94 ± 2.8 (7)	4-16	0.084	0.705*
Attitudes Towards Medical Staff	7.3 ± 3.27 (7)	3-12	-0.100	0.603*
Avoidance	5.00 ± 2.59 (4)	3-12	0.006	0.189*
Baby Concerns	5.61 ± 2.58 (5)	3-12	0.151*	0.494*

SD: Standard Deviation; a: Overall Scale; r: Pearson correlation confidence; *statistically significant

The study examined both the direct effects of the CSS-12 subscales and total score on pregnancy-related anxiety and the moderating influence of descriptive characteristics on these relationships. The distress, reassurance, and compulsion

subscales of the CSS-12 had a statistically significant direct effect on pregnancy-related anxiety ($\beta=0.976$, $p=0.003$; $\beta=-0.722$, $p=0.008$; $\beta=0.913$, $p=0.007$, respectively), whereas excessiveness did not ($\beta=0.047$, $p=0.866$) (Table

3; Model 1). Cyberchondria had a statistically significant direct effect on pregnancy-related anxiety ($\beta=0.086$, $p=0.012$) (Table 3; Model 2).

In the first model of the moderation analysis, the dependent variable was the PrAS, the independent variable was cyberchondria, and the moderator variable was gravida (Table 3; Model 3). The model was significant ($p=0.014$) and explained 2.8% of the variance in pregnancy-related anxiety. Cyberchondria was found to have a significant positive effect on pregnancy-related

anxiety ($\beta=0.191$, $p=0.014$), while gravida had a significant negative effect ($\beta=-2.964$, $p=0.039$). Pregnancy-related anxiety scores were higher among those multiparous women compared to those primiparous women (68.79 ± 13.25 vs. 65.76 ± 14.55 ; $p=0.035$). It was concluded that the interaction between cyberchondria and gravida was not statistically significant ($\beta=-0.043$, $p=0.781$), indicating that gravida does not moderate the effect of cyberchondria on pregnancy-related anxiety.

Table 3. Regression and Moderation Analysis of CSS-12 and PrAS

	Model Summary		ANOVA		Coefficients			
	R	R ²	F	p	β	SE	t	p
Model 1 (Dependent Variable: PrAS; Independent Variable: CSS-12 Subscales)								
	0.259	0.067	6.660	0.001				
Excessiveness					0.047	0.276	0.169	0.866
Distress					0.976	0.324	3.015	0.003*
Reassurance					-0.722	0.272	-2.656	0.008*
Compulsion					0.913	0.334	2.730	0.007*
Model 2 (Dependent Variable: PrAS; Independent Variable: CSS-12 Total Score)								
CSS-12	0.130	0.017	6.413	0.012	0.086	0.034	2.532	0.012*
Model 3 (Dependent Variable: PrAS; Independent Variable: CSS-12 Total Score; Moderator Variable: Gravida)								
	0.168	0.028	3.602	0.014				
CSS12					0.191	0.077	2.467	0.014*
Gravida					-2.964	1.434	-2.066	0.039*
CSS12xGravida					0.043	0.155	0.278	0.781
(Model 4 (Dependent Variable: PrAS; Independent Variable: CSS-12 Total Score; Moderator Variable: Age)								
	0.182	0.033	4.21	0.005				
CSS12					0.219	0.077	2.815	0.005*
Age					-0.096	0.146	-0.655	0.512
CSS12xAge					-0.037	0.015	-2.471	0.014*

SE: Standard Error; β : Beta *statistically significant

In the fourth model of the moderation analysis, the dependent variable was the PrAS, the independent variable was cyberchondria, and the moderator variable was age (Table 3; Model 4). The model was found to be significant ($p=0.005$) and explained 3.3% of the variance in pregnancy-related anxiety. Cyberchondria had a significant positive effect on pregnancy-related anxiety ($\beta=0.219$, $p=0.005$), while age had no direct effect on pregnancy-related anxiety ($\beta=0.096$, $p=0.512$). However, the interaction between age and cyberchondria was statistically significant ($\beta=-0.037$, $p=0.014$), indicating that older pregnant women might experience varying levels of pregnancy anxiety depending on their cyberchondria levels. Essentially, age acts as a

buffer, weakening the effect of cyberchondria on pregnancy-related anxiety. The relationship between cyberchondria and pregnancy-related anxiety diminished with increasing age.

DISCUSSION

This study examined pregnancy-related anxiety levels, cyberchondria levels, and associated factors in pregnant women. Pregnancy-related anxiety is considered a common and significant psychological issue that can affect pregnant women. It is influenced by numerous factors, including concerns about fetal health, the pregnancy process, childbirth, changes in body image, and the transition to parenthood. Research indicates that 10–30% of pregnant women

experience clinically significant anxiety symptoms (Silva, Nogueira, Clapis, & Leite, 2017; Soto-Balbuena et al., 2018; Fawcett, Fairbrother, Cox, White, & Fawcett, 2019). In this study, it was found that pregnant women experienced moderate levels of pregnancy-related anxiety, with higher levels observed among primiparous women. This finding supports previous studies indicating that first pregnancies are associated with higher anxiety levels (McCarthy, Houghton, & Matvienko-Sikar, 2021; Kara, Var, & Nazik, 2023; Kulakci Altintas, Kilci Erciyas, & Cetin, 2023). The increased stress experienced during first pregnancies may stem from a lack of information and experience (Kulakci et al., 2023).

This study also examined the impact of pregnant women's experiences with responses received from their doctors and midwives/nurses on pregnancy-related anxiety. It was found that receiving responses from doctors did not significantly affect anxiety scores, whereas responses from midwives or nurses were significantly associated with lower anxiety scores. This finding highlights the importance of a secure and supportive relationship between healthcare professionals and patients. The findings suggest that midwives and nurses, who can establish more frequent and personalized contact with pregnant women, are perceived as more approachable and supportive, which may help alleviate anxiety. This finding highlights the need for ongoing midwifery or nursing care in addressing pregnancy-related anxiety, especially in environments where antenatal care may be more medically oriented and less tailored to individual needs. The moderating role of age in the relationship between cyberchondria and pregnancy-related anxiety was also explored in this study. The results showed that increasing age weakened the relationship between cyberchondria and pregnancy-related anxiety. Previous research identified age as a critical factor in how women experience pregnancy-related anxiety (Madhavanprabhakaran, D'Souza & Nairy, 2015). The literature suggests that younger women often experience higher levels of anxiety, which may be attributed to a lack of experience or a perceived lack of control over their pregnancy (Kulakci et al., 2023). This indicates that older pregnant women may be less susceptible to the anxiety-amplifying effects of cyberchondria. With increasing age, women are likely to possess more life experience and better coping strategies to manage health-related concerns. Additionally,

they may evaluate online health information more selectively, reducing the likelihood of such information generating anxiety.

The ease of access and availability of free online health information make it a frequent resource for individuals with health anxiety to explore their symptoms and health concerns (Ozkan, Sungur, & Ozer, 2022). However, the literature provides limited evidence regarding the quality of information available online (Sayakhot & Carolan-Olah, 2016). Research shows that pregnant women frequently turn to the internet for information either before or right after antenatal visits to verify or add to the details they have been provided (Huberty et al., 2013). The findings of this study indicated that most of the pregnant women involved used the internet to obtain health-related information, with a higher rate observed among those who felt their questions were not sufficiently answered by healthcare professionals. The need for information, coupled with women's direct experiences with perceived risks regarding pregnancy complications and health, increases their health-related information-seeking behaviors (Šoštarić et al., 2023). One study discovered that the majority of pregnant women accessed the internet for information at least once a month (Sayakhot & Carolan-Olah, 2016). Individuals experiencing anxiety either avoid additional anxiety-inducing information or seek reassurance through constant information searches. Repeated searches, however, often lead to the emergence of new health concerns rather than alleviating anxiety. Consequently, cyberchondria manifests as a vicious cycle of frequent and excessive online medical information seeking, accompanied by reassurance-seeking behaviors and escalating anxiety (Ozkan et al., 2022). In the study by Demir, Dag and Ozpinar (2024) pregnant women were found to have moderate levels of cyberchondria, which is consistent with the findings of the present study. A strong correlation was found between pregnancy-related anxiety and cyberchondria. In Italy, a study showed that higher levels of depression, anxiety, and stress in women were linked to cyberchondria (Gioia & Boursier, 2020). Similarly, another study indicated a positive correlation between cyberchondria levels and health anxiety (Sahan & Purtul, 2023). In Türkiye, the study found that pregnant women exhibited moderate levels of cyberchondria, which was significantly and positively correlated with health anxiety (Gülec et al., 2024). The study also found that women with greater concerns about

childbirth and their baby exhibited higher levels of cyberchondria. Increased childbirth concerns may drive individuals to search for online content, such as birth stories, medical procedures, and potential complications (Stoll & Hall, 2013). While evidence-based information can be beneficial for pregnant women, unverified content contributes to heightened anxiety. As research indicates, online information-seeking behaviors are frequently associated with reassurance-seeking but can paradoxically elevate anxiety levels (Norr, Albanese, Oglesby, Allan, & Schmidt, 2015). In conclusion, anxiety triggers online information-seeking behaviors in women, and the information accessed online, in turn, exacerbates their anxiety, creating an interrelated cycle of influence.

This study has several limitations that warrant consideration. The primary limitation is its reliance on cross-sectional and self-reported data, which introduces the potential for multiple biases. Social desirability bias may have led participants to give responses they believed were socially acceptable rather than completely accurate. Additionally, recall bias is a concern, as the participants were required to remember experiences that occurred months or even a year earlier, which could affect the reliability of their responses.

CONCLUSION

This study demonstrates that anxiety during pregnancy is shaped by numerous factors, with cyberchondria being one of the significant contributors to pregnancy-related anxiety. Pregnancy anxiety is influenced not only by individual psychological traits but also by interactions with healthcare professionals and the informational support they receive. It was found that the vast majority of the participating pregnant women sought health information online. The dual nature of online health information is emphasized: while the internet can be a valuable resource, it can also contribute to heightened anxiety, especially when pregnant women encounter misleading or distressing information. Healthcare professionals should guide pregnant women on how to use online resources appropriately and emphasize the importance of relying on scientific sources to mitigate the risks of cyberchondria. In this context, education for pregnant women, the provision of accurate information, and the establishment of a reliable support network are crucial.

Ethics Committee Approval

Ethics committee approval was received for this study from the Başakşehir Çam ve Sakura City Hospital Ethical Committee (Date: 16.02.2024, and Approval Number: 2024/120).

Author Contributions

Idea/Concept: Z.A., A.Ö.; Design: Z.A., A.Ö.; Supervision/Consulting: Z.A., A.Ö.; Analysis and/or Interpretation: Z.A., A.Ö., F.G.M.; Literature Search: Z.A., A.Ö., F.G.M.; Writing the Article: Z.A., A.Ö., F.G.M.; Critical Review: Z.A., A.Ö.

Peer-review

Externally peer-reviewed.

Conflict of Interest

The authors have no conflict of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

REFERENCES

- Bayrampour, H., Ali, E., McNeil, D.A., Benzie, K., MacQueen, G., Tough, S. (2016). Pregnancy-related anxiety: A concept analysis. *International Journal of Nursing Studies*, 55, 115–130. doi:10.1016/j.ijnurstu.2015.10.023
- Berg, M., Widdershoven, G., Miedema, M. (2019). The midwife–client relationship and pregnancy-related anxiety: A qualitative study. *Midwifery*, 74, 24–31. doi:10.1016/S0266-6138(05)80197-4
- Brunton, R. J., Dyer, R., Saliba, A., Kohlhoff, J. (2019). The initial development of the Pregnancy-related Anxiety Scale. *Women and Birth*, 32, e118–e130. doi:10.1016/j.wombi.2018.05.004
- Citak Bilgin, N., Coskun, H., Coskuner Potur, D., Ibar Aydin, E., Uca, E. (2021). Psychosocial predictors of the fear of childbirth in Turkish pregnant women. *Journal of Psychosomatic Obstetrics & Gynecology*, 42, 123–131. doi:10.1080/0167482X.2020.1734791
- Conrad, M. (2022). Health information-seeking internet behaviors among pregnant women: A narrative literature review. *Journal of Reproductive and Infant Psychology*, 42, 194–208. doi:10.1080/02646838.2022.2088711
- Demir, Y., Dag, E., Ozpinar, S. (2024). The relationship of E-health literacy with cyberchondria: A cross-sectional study on pregnant women. *Journal of Health Literacy*, 9, 89–101. doi:10.22038/jhl.2024.76171.1501
- Ellis, L., Roberts, L. (2020). Exploring the use and quality of internet discussion forums in pregnancy: A qualitative analysis. *Birth*, 47, 153–161. doi:10.1111/birt.12459

- Fawcett, E. J., Fairbrother, N., Cox, M. L., White, I. R., Fawcett, J. M. (2019). The prevalence of anxiety disorders during pregnancy and the postpartum period: A multivariate Bayesian meta-analysis. *The Journal of Clinical Psychiatry*, *80*, 181. doi:10.4088/JCP.18r12527
- Gao, L. L., Larsson, M., Luo, S. Y. (2013). Internet use by Chinese women seeking pregnancy-related information. *Midwifery*, *29*, 730–735. doi:10.1016/j.midw.2012.07.003
- Giacometti, C. F., Galfano, G. S., Wajman, D. S., Cordioli, E., Beck, A. P. A., Podgaec, S. (2024). Internet use by pregnant women during prenatal care. *Einstein (São Paulo)*, *8*, eAO0447. doi:10.31744/einstein_journal/2024AO0447
- Gioia, F., Boursier, V. (2020). What does predict cyberchondria? Evidence from a sample of women. *Journal of Psychology and Psychotherapy Research*, *7*, 68–75. doi:10.12974/2313-1047.2020.07.6
- Madhavanprabhakaran, G., D'Souza M. S., Nairy, K. S. (2015). Prevalence of pregnancy anxiety and associated factors. *International Journal of Africa Nursing Sciences*, *3*, 1–7. doi:10.1016/j.ijans.2015.06.002.
- Gülec Satir, D., Bakir, S. (2024). The relationship between cyberchondria and health anxiety in pregnant women. *Journal of Consumer Health on the Internet*, 1–13. doi:10.1080/0167482X.2023.2265050
- Huberty, J., Dinkel, D., Beets, M. W., Coleman, J. (2013). Describing the use of the internet for health, physical activity, and nutrition information in pregnant women. *Maternal and Child Health Journal*, *17*, 1363–1372. doi:10.1007/s10995-012-1160-2
- Jacobs, E. J., Van Steijn, M. E., Van Pampus, M. G. (2019). Internet usage of women attempting pregnancy and pregnant women in the Netherlands. *Sexual & Reproductive Healthcare*, *21*, 9–14. doi:10.1016/j.srhc.2019.04.005
- Kara, P., Var, E., Nazik, E. (2023). Determination of adaptation to pregnancy and anxiety levels in primiparous pregnant women and affecting factors. *Journal of Nursology*, *26*, 280–286. doi:10.5152/JANHS.2023.23505
- Solt Kırca, A., Kanza Gül, D. (2020). Gebelik ile İlişkili Anksiyete Ölçeği: Türkçe geçerlilik ve güvenilirlik çalışması. *Celal Bayar Üniversitesi Sağlık Bilimleri Dergisi*, *7*, 529–537. doi:10.34087/cbusbed.757864
- Kulakci Altintas, H., Kilci Erciyas, S., Cetin, S. (2023). Factors affecting health literacy and pregnancy stress in pregnant women. *International Journal of Caring Sciences*, *16*, 686.
- McCarthy, M., Houghton, C., Matvienko-Sikar, K. (2021). Women's experiences and perceptions of anxiety and stress during the perinatal period: a systematic review and qualitative evidence synthesis. *BMC Pregnancy Childbirth*, *21*, 1–12. doi:10.1186/s12884-021-04271-w
- McElroy, E., Kearney, M., Touhey, J., Evans, J., Cooke, Y., Shevlin, M. (2019). The CSS-12: Development and validation of a short-form version of the Cyberchondria Severity Scale. *Cyberpsychology, Behavior, and Social Networking*, *22*, 330–335. doi:10.1089/cyber.2018.0624
- Muse, K., McManus, F., Leung, C., Meghreblian, B., Williams, J.M. (2012). Cyberchondriasis: Fact or fiction? A preliminary examination of the relationship between health anxiety and searching for health information on the internet. *Journal of Anxiety Disorders*, *26*, 189–196. doi:10.1016/j.janxdis.2011.11.005
- Norr, A. M., Albanese, B. J., Oglesby, M. E., Allan, N. P., Schmidt, N. B. (2015). Anxiety sensitivity and intolerance of uncertainty as potential risk factors for cyberchondria. *Journal of Affective Disorders*, *174*, 64–69. doi:10.1016/j.jad.2014.11.023
- Ozkan, O., Sungur, C., Ozer, O. (2022). Investigation of cyberchondria level and digital literacy on women in Turkey. *Journal of Human Behavior in the Social Environment*, *32*, 768–780. doi:10.1080/10911359.2021.1962776
- Prescott, J., Mackie, L. (2017). 'You sort of go down a rabbit hole... You're just going to keep on searching': A qualitative study of searching online for pregnancy-related information during pregnancy. *Journal of Medical Internet Research*, *19*, e194. doi:10.2196/jmir.6302
- Prescott, J., Mackie, L., Rathbone, A. L. (2018). Predictors of health anxiety during pregnancy. *mHealth*, *4*, 1–8. doi:10.21037/mhealth.2018.04.0
- Sahan, F. U., Purtul, S. (2023). Health anxiety and eHealth literacy as predictors of cyberchondria in women. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi*, *14*, 454–461. doi:10.31067/acusaglik.1285876
- Sayakhot, P., Carolan-Olah, M. (2016). Internet use by pregnant women seeking pregnancy-related information: A systematic review. *BMC Pregnancy and Childbirth*, *16*, 65. doi:10.1186/s12884-016-0856-5
- Silva, M. M. D. J., Nogueira, D. A., Clapis, M. J., Leite, E. P. R. C. (2017). Anxiety in pregnancy: Prevalence and associated factors. *Revista da Escola de Enfermagem da USP*, *51*, e03253. doi:10.1590/S1980-220X2016048003253
- Šoštarić, M., Mikac, U., Jokić-Begić, N. (2023). Understanding cyberchondria in pregnant

- women: Longitudinal assessment of risk factors, triggers, and outcomes. *Journal of Psychosomatic Obstetrics & Gynecology*, 44, 2265050.
doi:10.1080/0167482X.2023.2265050
- Soto-Balbuena, C., Rodr guez, M. F., Escudero Gomis, A. I., Ferrer Barriendos, F. J., Le, H. N., Pmb-Huca, G. (2018). Incidence, prevalence and risk factors related to anxiety symptoms during pregnancy. *Psicothema*, 30, 257-263.
doi:10.7334/psicothema2017.379.
- S yler, S., Bier,  ., avmak, D. (2021). Siberkondri Ciddiyeti  leđi Kısa Formu (CSS-12) T rke geerlik ve g venirlik alıřması. In S. Uyar & R. Kır (Eds.), *Davranıřsal Boyutları ile Sađlık* (pp. 1–13). Nobel Bilimsel.
- Stoll, K., Hall, W. (2013). Attitudes and preferences of young women with low and high fear of childbirth. *Qualitative Health Research*, 23, 1495–1505. doi:10.1177/1049732313507501
- Yorgancıođlu Tarcan, G., Karahan, A., Sebik, N. B. (2023). Validity and reliability of the short form cyberchondry (CSS-12) severity scale: a specific application for health informatics. *Hacettepe Sađlık İdaresi Dergisi*, 26, 207-218.