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Cyberchondria among Filipino teacher education students

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ABSTRACT

The internet-dense ecosystem has dramatically influenced the health-seeking behaviors of various population groups, including education students. Exposure to massive and readily accessible online health information increases health anxiety resulting in cyberchondria, a phenomenon characterized by excessive health search on the internet. This cross-sectional research study examined the level of cyberchondria among 179 teacher education students. The findings revealed that excessiveness, distress, reassurance, and compulsion subscales of cyberchondria were at moderate levels. However, higher correlations existed between excessiveness and compulsion subscales and between distress and compulsion subscales. Gender and programs enrolled have very weak relationships with cyberchondria subscales. The weakest association was between the programs enrolled by the students and all cyberchondria subscales. Meanwhile, students' age and year level have slightly higher but weak associations to the cyberchondria subscales, especially the excessiveness and distress subscales. As an intervention, an interdisciplinary collaboration between teacher education programs and the health-related institutes is recommended to promote awareness about cyberchondria, its prevention, and management.

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1. INTRODUCTION

In the Philippines, there is an increase of 70 million Filipinos utilizing the internet whose age range from 16 years old and above [1]. Just recently, another study revealed that almost 86% of the population of internet users in the Philippines were of age 18 to 24 [2]. Labucay [3] posited that among Filipinos, one of the clustered internet uses is information-seeking, predominantly news and health information. With the current public health concern, the COVID-19 pandemic, many including students become more engaged in online searches relative to various alarming health concerns. With the advent of new and advanced technologies, the prime access to the internet with convenience and portability than the usual personal computer or laptop becomes more probable. Considering the advancements in technologies and the internet, Hechanova and Ortega-Go [4] cited that the internet is not inherently good or bad. Educating both users and non-users in regulating the use of the internet lessens untoward consequences such as physical and social harms.

The internet plays a crucial role in the incidence and prevalence of cyberchondria because it opens a pool of readily accessible health information that can illustrate any medical condition's nature. Typically, any person can search for any possible explanations about an experienced sign or symptom. Generally, people tend to become more concerned with health-related issues [5] and the curiosity leads them to search for

information relative to their concerns. The frequently searched information on the web is about symptom evaluation. One study conducted by Mueller *et al.* [6] found out that 35% of adults engage in the web to appraise symptoms. The number may differ between 23% to 75% for which the variation is associated with sociodemographic and disease-related factors. White and Horvitz [2] scrutinized the logistics of information of about 40 million web pages for medical concerns. Data analyses were supported by a survey of health-related engagement to the web. However, there is a risk in engaging non-medical net users to complicated terms and detailed medical descriptions through web-based and medical information-seeking that may lead to self-diagnosis and self-treatment [7]. In addition, the researcher may tend to become more distressed and anxious while engaging in excessive information-seeking [8] through the internet. According to Aiken [9], the anxiety induced by health-related online search is called cyberchondria, also known in cyberpsychology.

To better understand this phenomenon, Aiken [9] recommended that large-scale research on the prevalence and nature of cyberchondria should be conducted. Most studies, however, have been focused on exploring cyberchondria among health science university students [2] and not education students. Majority of the studies conducted are also from the western countries, and available papers from Asia are limited despite the high internet usage of people within the region including Filipinos. It can also be deduced from the studies that specific management of the said phenomenon is quite limited. Cyberchondria management adapts procedures applied to hypochondriasis wherein psychoeducation, a non-pharmacological approach, can be participated by future educators [10]. In this regard, the current study examined the prevalence of cyberchondria among teacher education students.

One of the most used definitions of cyberchondria denotes a pattern wherein people who are anxious or stressed about their health perform an unreasonable search of health-related information on the internet [8]. This relates cyberchondria to a manifestation of reassurance seeking and hypochondriasis, a health anxiety disorder. However, the term cyberchondria as a mental disorder was not entirely accepted by mental health professionals because it does not denote a diagnosis, unlike health anxiety and hypochondriasis [8]. To fully understand its concept, this indicates a more substantial need to study its prevalence, severity, and manifestations in different age groups, gender, socioeconomic status, and educational backgrounds.

Asmund and Taylor [11] defined health anxiety as the wide range of worry individuals can have about their health [12]. Health anxiety is being used alternately with hypochondriasis, a recognized disorder in psychiatric diagnostic classification. However, research supports the link between health anxiety and cyberchondria, where in higher levels of health anxiety are associated with the increased use of the internet searching for health-related information [8]. One of the identified reasons people with health anxiety search the internet for health-related information is their need for reassurance to decrease their level of distress or anxiety. In times that they cannot find relief and reassurance, they go back searching on the internet and later experience repeated disappointments. Köhler [13] said cyberchondria is its modern version [14] of cyberchondria.

Research focusing on students showed that the frequency of seeking information on the internet is associated with emotional stress such as anxiety and compulsiveness [15]. This supports previous studies linking the internet and health anxiety. A theoretical model on the development of cyberchondria highlighted negative metacognitive belief's role for turning online health information-seeking into cyberchondria [16]. In this era where most students have access to the internet, it is quite important to identify factors that increase the likelihood and frequency of students in searching health-related information, especially during the current pandemic where most countries in the world have lesser access to physical health care facilities due to lockdown or community quarantine. There is a need to increase information on how online health information influences health behaviors, both short term, and long term.

A study to explore cyberchondria on individuals with no diagnosed health condition using the CSS scale by Mc Elroy indicated a quarter from the sample with a high level of cyberchondria. They reported difficulty controlling rumination on symptoms or perceived medical conditions online [17]. Another observable trait is searching multiple websites for the same signs and symptoms on different occasions, which is a clear manifestation of excessiveness that later increases their anxiety level. The same study also enumerated reasons for using the internet on health-related concerns, such as not being comfortable discussing doubts with health professionals, barriers to accessing professional health services, and the simplicity of discussing health-related concerns on the internet. A qualitative study on health anxious students revealed that using the internet allows them to filter problems before consultation and become 'expert patents" to justify doctors' visits and reduce anxiety and uncertainty before the visit [18]. The study participants identified several disadvantages to using the internet, such as too much alarming and conflicting health-related information. As to the Filipino internet users, there are minimal data available on the purpose or activities being employed using the web. A paper identified seven goals of using the internet among Filipinos: basic internet use, entertainment, expression and interaction, e-commerce, school-related and technological deviance [4]. The result did not reveal health-seeking practices of Filipinos using the internet. The current study gives us initial knowledge of web-based health-seeking behavior among Filipino students

and create a new taxonomy among Filipino internet users. There is a need to determine if these symptom-related searches led to self-diagnosis or even self-medication.

The study aimed at determining the level of cyberchondria among Filipino teacher education students. It specifically sought answers to the following questions: i) How are the teacher education students described in terms of their selected demographic characteristics such as age, gender, program enrolled, and year level?; ii) What is the level of cyberchondria among the teacher education students in terms of excessiveness, distress, reassurance, and compulsion?; iii) If there are any, how significant are the relationships between the cyberchondria subscales and the teacher education students' selected demographic characteristics?

2. RESEARCH METHOD

2.1. Research design

The research utilized the cross-sectional research design that makes inferences about a population with varied characteristics at one point in time. Since the current research focused on determining the level of cyberchondria among teacher education students from various disciplinal areas, the cross-sectional research design was most suitable to use. In the same vein, this research intended to explore, describe, prove, or refute the assumption that cyberchondria exists among teacher education students. Several tests of correlations between the students' levels of cyberchondria and their selected demographics, such as age, gender, and year level were also determined.

2.2. Sampling

Convenience and snowball sampling techniques were employed to select the 179 teacher education students enrolled in Bachelor of Secondary Education (BSE) and Bachelor of Elementary Education (BEE) programs. Convenience sampling made use of readily accessible teacher education students to respond to the data collection procedures. On the other hand, snowball sampling technique relied on the referral of those who first responded to the survey for additional student-respondents. The researchers find these sampling techniques most feasible and practical considering the strict rules and regulations relative to the government's mandate to contain COVID-19 pandemic through the Enhanced Community Quarantine (ECQ). The sociodemographic profile of the respondents is presented in Table 1.

2.3. Instrumentation

Upon the authors' approval, the study utilized the 12-item Cyberchondria Severity Scale (CSS) of McElroy *et al*. [19] from the original 33-item CSS in 2014. The CSS-12 is a brief, reliable, and valid measure of worry or anxiety attributable to excessive online health research [19]. The CSS-12 contains various subscales, namely, excessiveness, distress, reassurance, and compulsion. The excessiveness subscale refers to the escalating and repeated nature of searches. Furthermore, the distress subscale stands for anxiety and distress because of searches. Meanwhile, the reassurance subscale refers to searches driving individuals to seek out professional medical advice. The compulsion, however, relates to web searches interfering with other aspects of on and offline life. The total score in the CSS-12 ranges from 0-60. In this regard, the researchers opted to cluster the respondents' cyberchondria episodes based on their scores as first-level, second-level, and third-level cyberchondria. The CSS-12 was subjected to pilot testing with a Cronbach alpha of 0.87 for its internal consistency. The collection of data using the CSS-12 was done using Google Form.

2.4. Ethical considerations

The researchers ensured the voluntary participation of the teacher education students as participants of the study. The students participated upon confirmation. They receipt of the informed consent using a confidentiality clause in the research instrument administered via Google Form.

2.5. Treatment of data

Descriptive statistics such as mean score, weighted mean, and standard deviation were used to treat the obtained data. Chi-square test was utilized to determine the correlations between the CSS-12 results and the respondents' selected demographics. The Statistical Package for the Social Sciences (SPSS) version 20 was used. The SPSS is a software package used to analyze statistical data Sigma Plus Statistiek [20].

3. RESULTS

3.1. Research objective 1: How are the teacher education students described in terms of their selected demographic characteristics such as age, gender, program enrolled, and year level?

Table 1 presents the demographic characteristics of the respondents. Out of 179 respondents, 26.8% are male while 73.2% are female. The table indicates that most of the respondents are taking BSE at 66% whereas those who were enrolled in the BEE at 34%. On the other hand, majority of the respondents are within 18-21 years old, which is 59.2%. This explains that the typical age of college students in the Philippines falls in this age range. The majority of the respondents are at their second-year level at 27.9%, while 26.8% of the study is composed of the first and third-year levels. On the other hand, the fourth-year level has the least number of 18.4%.

Table 1. Sociodemographic distribution of the respondents

Baseline characteristic		n	%
Gender	Female	48	26.8
	Male	131	73.2
Program	BEED	61	34.1
	BSED	118	65.9
Age range	18-21	106	59.2
	22-25	42	23.5
	26-29	17	9.5
	30-33	6	3.4
	34-37	6	3.4
	38-41	2	1.1
Level	1st year	48	26.8
	2nd year	50	27.9
	3rd year	48	26.8
	4th year	33	18.4

3.2. Research objective 2: What is the level of cyberchondria among the teacher education students in terms of excessiveness, distress, reassurance, and compulsion?

Table 2 shows the results of the CSS and its subscales. Generally, the CSS of the respondents is 36.18 (SD=8.34) which is regarded as moderate level. This is reflected in the excessiveness (M=10.36, SD=2.41), distress (M=9.99, SD=2.61), reassurance (M=7.63, SD=2.70) and compulsion (M=8.21, SD=2.87) subscales of CSS.

Table 2. Means and standard deviations of the CSS and its subscales

Scale	M	SD
CSS	36.18	8.34
Excessiveness	10.36	2.41
Distress	9.99	2.61
Reassurance	7.63	2.70
Compulsion	8.21	2.87

*CSS: 1–20=mild; 21–40=moderate; 41–60=severe;
Subscales: 1–5=mild; 6–10=moderate; 11–15=severe

3.3. Research objective 3: How significant are the relationships between the cyberchondria subscales and the teacher education students' selected demographic characteristics?

Table 3 presents the correlations among the CSS subscales, namely, excessiveness, distress, reassurance and compulsion. The findings show that there is a moderate association between distress and excessiveness subscales ($r=.463$, $p<.01$). A moderate association exists between reassurance and excessiveness subscales ($r=.463$, $p<.01$). On the other hand, there is a relatively higher association between excessiveness and compulsion subscales ($r=.510$, $p<.01$), as well as distress and compulsion subscales ($r=.601$, $p<.01$). Lastly, distress and reassurance subscales ($r=.451$, $p<.01$), and compulsion and reassurance subscales ($r=.437$, $p<.01$) are moderately associated.

Table 4 describes the correlations between the selected demographic characteristics of the respondents with their CSS and the subscale scores. Significantly, gender and program enrolled have a very weak association with CSS and its subscales. The weakest association exists between the program (BEED or BSED) and the CSS scores ($\eta 2=0.000001$). Age and year level have a weak association to the CSS and its subscales.

Table 3. Correlations between the CSS subscales

	1	2	3	4
Excessiveness	-			
Distress	.463**	-		
Reassurance	.463**	.451**	-	
Compulsion	.510**	.601**	.437**	-

**Correlation is significant at the 0.01 level (2-tailed).

Table 4. Correlations between demographics with CSS and its subscales scores (η^2)

	CSS	Excessiveness	Distress	Reassurance	Compulsion
Gender	.085	.110	.008	.080	.088
Program	.001	.006	.051	.066	.014
Age	.178	.236	.282	.126	.199
Level	.183	.209	.208	.211	.142

4. DISCUSSION

Cyberchondria is a phenomenon characterized by bouts of excessiveness, distress, reassurance, and compulsion associated with constant and disturbing health-seeking behaviors and practices [21]–[25]. The phenomenon was prevalent in various countries like India [26] and other countries. Research on cyberchondria is still in its infancy [27], which is also true in the Philippine context. It is essential to explore if excessive health information-seeking behavior is present to Filipino teacher education students who have more access to the internet due to the sudden shift to online learning because of the COVID-19 pandemic. While studies have examined various factors associated with cyberchondria, the detailed processes involved in developing cyberchondria require further conceptualization [28].

To some extent, the availability of these reading materials in pixels further contributes to the rapid development of cyberchondria. The greater the amount of information are obtained from these sources, the more significant the impact of having constant and endless searches to look for answers relative to health concerns. It is vital to enhance health news's healthy skepticism while simultaneously guarding against information overload [29]. Demographically, the teacher education students are not immune to cyberchondria. While there is a growing trend towards 'lay' people accessing health information from the internet [30], responsible searches are necessary. Conversely, the internet, and related technologies permeate our everyday functioning to the extent that it has become difficult to imagine life without them [14].

The study explored the phenomenon of cyberchondria among 179 Filipino teacher education students in the Philippines. The cyberchondria scale among the students is within moderate scale. This may be attributed to the fact that the education students are already sufficiently informed about some imprecisions of health information that can be readily acquired from various internet sources hence necessitating further interpretation and confirmation from a medical professional. Being informed can have a beneficial effect [31]. Considering the majority in terms of the age range, another factor to this result may be attributed to the parental decision being imposed in terms of handling medical conditions as the students are still in the custody of their parents. Parents are much inclined to seek the assistance of a licensed medical practitioner who can best explain health-related concerns. In the same vein, the researchers believe that the students' lack of experience of actual medical conditions results in a moderate cyberchondria. Personal health status is considered a significant factor for health information-seeking, and individuals with worse health showed higher health-related internet use [32]. Notably, the COVID-19 pandemic has also affected face-to-face consultation with medical practitioners or experts, which can be a factor in higher health-related information searches. The pandemic also changed the dynamics of learning, where everything relied on the internet. The accessibility to available online information also predisposes them to conduct health information searches.

Regarding the moderate association between distress and excessiveness subscales of cyberchondria, it can be deduced that an increase in anxiety means a greater frequency of health information searches. Prolonged exposure to technologies can also heighten the level of distress. For instance, about pain experience and the factors that go with it, individuals who catastrophize pain experiences may be vulnerable to developing severe health anxiety from searching the internet for health information [33]. Additionally, a longer-duration of online health-related use of the internet is associated with increased functional impairment, less education, and increased anxiety during and after checking [34]. Moreover, in an evaluation of the cyberchondria among 171 computer engineering students, it was concluded that the use of the internet leads to the accumulation of vast information that causes anxiety or distress related to their search [35]. However, it is also essential to identify the boundaries between internet addiction and excessive health-seeking information behavior. Internet addiction appears to be a predictor for cyberchondria because problematic users tend to use the internet more for health information and make cognitive interpretation mistakes towards negative scenarios [36].

The moderate association between reassurance and excessiveness subscales intensifies the idea that most information from various internet sources is generalized in their explications of a sign or a symptom. This could be a reason as to why the students' have the compelling need of reassurance so that accurate diagnosis is obtained after seeking out professional medical advice rather than relying on what they have received from their searches. Additionally, the students' medical knowledge level is quite limited; hence their interpretation of existing or felt signs and symptoms require them to search excessively for validation. The search for new knowledge or verifying a current understanding due to the lack of it is one of the most common drives for seeking health information [37].

The relatively higher association between excessiveness and compulsion subscales exemplifies that an escalating and repeated nature of searches due to the availability and accessibility of health information interfere with other aspects of online and offline life. The study findings echo the idea that individuals with questions about their health often turn to the internet for information about their symptoms. The degree to which health anxiety is related to online checking, and clinical variables, remains unclear [34]. It was also cited that individuals can recall experiencing more anxiety during and after searching; such searching may be detrimental to their health [34]. Meanwhile, the higher association between distress and compulsion implies that the higher the anxiety and distress, the greater the compulsive searches. Further, the moderate correlation between distress and reassurance reveals that the amount of anxiety or distress results in a moderate need to seek medical advice. This may be attributed to the fear of hearing diagnoses validated by a medical professional. Additionally, a moderate association between compulsion and reassurance reverberates the notion that because of the adequacy of health information gathered from internet sources, there is a tendency that seeking out medical advice is no longer a priority.

Some of the selected sociodemographic characteristics of the students are also correlated to cyberchondria and its subscales. Notably, gender and program have a very weak association with cyberchondria and its subscales. The result supports Bajcar and Babiak [38] findings indicating gender has no effect or association to cyberchondria but is different from the research of [18], wherein males show higher CSS scores compared to female. This contradicts the study of Batigun *et al*. [39], stating that women may be using the internet more frequently than men to conduct health-related searches. Despite the gender and teacher education program, the cyberchondria subscales are loosely associated. On another note, age and year level have a little higher association to cyberchondria and its subscales. This supports the research by Jacobs [40], indicating that having more education and being younger was associated with health information seeking. Significantly, two high scores come from the association of age to excessiveness and age to distress. Considering the various limitations of the current study in terms of sample selection, and online data collection because of the COVID-19 pandemic, the findings still generally provide significant information as springboard for other researchers to explore the prevalence, nature of cyberchondria, and its management.

4.1. Implications to responsible health-seeking behaviors and practices

While the teacher education students do not belong to any health-related discipline, as individuals, they are equally vulnerable to experience health problems that can challenge their health-seeking behaviors and practices. There is a need to correct their health-seeking behaviors as they are primordial in delivering accurate information to their future target classes. The World Health Organization has emphasized that misinformation spreads rapidly through social media and poses a severe threat [29].

As future members of the teaching workforce, teacher education students need to be empowered in health information literacy. Part of their responsibilities as prospective members of the teaching workforce is to ensure that their future target learners are guided in seeking pieces of health information supported or corroborated by scientific or empirical bases. As learners' world is becoming dense with massive technological advances where information other than health bits are readily accessed with a single click, future teachers need to contemplate how health information literacy is accelerated and taught because of too little. Too much information without an authoritative basis is detrimental to students' psychological well-being. The lack of health information literacy can accentuate a greater tendency to not rely on medical advice. It is also essential to reinforce the responsible use of the internet. While the internet provides vast information, teacher education students must guard their health-seeking behaviors and practices.

Education is a powerful tool to emancipate. For instance, identifying somatoform problems like health anxiety and cyberchondria may help regulate the education program [41]. The awareness about cyberchondria and its ill effects can help prevent this phenomenon at a significant level, thereby improving students' psychological well-being. Anxiety related to health searches are highly prevented by being well-informed. It is indispensable for teacher education students to understand that being well-informed means gaining information from various sources and being more responsible in health searches with more critical thinking and reflective thinking.

5. CONCLUSION

The massive health information made available and accessible through the internet contribute largely to the development of cyberchondria, a phenomenon that entails excessive health searches as a response to an increasing health anxiety. This phenomenon makes everyone vulnerable especially for students who can have access to the internet, anytime and anywhere. Teacher education students, the future members of the teaching workforce, show similar vulnerability in developing or experiencing cyberchondria. In this study, Filipino teacher education students were found to have moderate level of cyberchondria as reflected in the subscales of excessiveness, distress, reassurance and compulsion.

For educational institutions with existing medical or allied health programs, it is suggested that interdepartmental partnerships are initiated and facilitated with teacher education institutions in planning and implementing relative action plans raising awareness about cyberchondria, its prevention, and management. This interdisciplinary or interprofessional collaboration may contribute to a stronger and more efficient and effective facilitation of the aforementioned goals. Lastly, it is recommended that future researchers explore cyberchondria at a larger scale using another group of participants utilizing quantitative, qualitative, and mixed methods research designs.

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