Original Article

Correlates of Health Anxiety: Examining the Role of Metacognitive beliefs and Cyberchondria among Adults

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ABSTRACT

Objective: The present study tries to explore the impact of health anxiety on cyberchondria and mediating effects of metacognitive beliefs.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Bahauddin Zakariya University Multan from September 2021 to January 2022.

Materials and Methods: A sample of 320 normal healthy participants of both genders were selected through a pre-determined criteria comprising of (n=163) male, 59.1% and (n=157) were females, 49.1%. A cross-sectional research design was proposed and purposive sampling technique was employed to collect data. The survey consisted of three highly reliable scales measuring the variables in construct (Health Anxiety Inventory, Cyberchondria Severity Scale and Metacognitions Questionnaire–Health Anxiety). The data was analyzed via Smart PLS 3 and SPSS. Using structural equation modeling.

Results: The findings revealed that health anxiety is a significant predictor of cyberchondria as (β=0.56, $p<0.001$, R^2 = 0.32) and metacognitive beliefs significantly mediates the association between health anxiety and cyberchondria. The indirect effect between health anxiety and metacognitive beliefs is significant (β=0.59, $p<0.001$, R^2 = 0.35) and indirect effect between metacognitive beliefs and cyberchondria is also significant (β=0.43, $p<0.001$, R^2 = 0.43).

Conclusion: The present study observed significant association between health anxiety, metacognitions and cyberchondria. It will help medical practitioners to understand how metacognitive beliefs and health anxiety can cause an increase in cyberchondria in order to design better treatment plans.

Key Words: cyberchondria, health anxiety, metacognitive beliefs

INTRODUCTION

In today's digital world internet is the main source of information. People use different social networking sites according to their needs because these medium provide their user's with a constant stream of information. According to a survey almost 70% of population in US, Europe and Asia use internet for health related information and 40% individuals experience anxiety after searching the symptoms [1].

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The main reason for online symptom searching is to get medical advice and information regarding the disease. The access to a wide range of database resulted in relief for some individuals while for others it will bring distress and anxiety. People having high levels of health anxiety are on the verge of developing cyberchondria. The term cyberchondria also called an online hypochondrium in which a person use internet to gain information regarding the disease. The theoretical models proposed that cyberchondria and health anxiety are a part of vicious cycle. In which an individual use different social networking sites to gain information about health and decrease the levels of anxiety associated with it but this relief is short term as the long term cycle shows elevated levels of anxiety and reassurance seeking [2]. There are many factors that contribute to hypochondria and these factors are called associate factors.

Health anxiety can be defined as the excessive fear of developing an illness with constant reassuring in the form of medical checkups, prescriptions by health professionals and medical information browsing. The condition share some features of hypochondriasis [3]. It mostly affects older people and those with some medical condition but due to its association with

hypochondriasis many professionals ignore the importance of its contribution to cyberchondria. People with health anxiety are afraid of consulting a doctor and suffer long in silence and sometimes the fear and worry leads towards suicide. Such as a person suffering from minor headache may misinterpret it for a brain tumor and this awareness may act as a triggering event which leads to ineffective preventive behaviors (reassurance seeking, internet surfing). During epidemic it was hypothized that the increase usage of internet is the direct cause of health anxiety because media is selectively publishing negative cases online to catch people's attention which will consequently affect their emotional wellbeing. There are many studies that reported that media stir up the anxiety in general population and is the main cause of health anxiety [4, 5.]

Metacognition is a cognitive mechanism that is characterized by thinking, monitoring and coping basically it involves thinking about the belief system of a person and it is linked to problematic internet usage. It has two domains positive and negative. Positive domain refers to positive outcomes of thinking and controllability whereas negative domain refers to the threats and dangers of uncontrollability of thoughts[6]. Bailey and Wells proposed three types of metacognitive beliefs (biased thinking belief, thought illness fusion belief and beliefs about the uncontrollability of thoughts)[7]. Fregus and Spada found significant correlation of cyberchondria with these three constructs. For example individuals having greater health anxiety experience beliefs about uncontrollability and health related concerns (I can't control my thoughts about getting an infection or may I get a virus already?) such troublesome thoughts may lead a person to adopt self-regulatory mechanism and despite of the distress cause by using internet a person continue to fuel the vicious cycle of cyberchondria [6].

MATERIALS AND METHODS

A cross-sectional research design with purposive sampling technique was employed to collect responses from 320 normal healthy participants of both genders which were selected through a pre-determined criteria comprising of (n=163) male, 59.1% and (n=157) were females, 49.1%. The study was conducted from September 2021 to January 2022 at Department of Applied Psychology Bahauddin Zakariyya University, after getting approval from Advanced Studies Research Board. Participants were asked to respond to some filter questions regarding their use of internet and those who qualify will further proceed to the main theme of the study. Inclusion criteria was only those participants who actively use social media as a main source of health related information and exclusion criteria was those who do not use social media for health related symptom searching. They were also asked to express their true responses and ensure about the privacy of their information. The survey consisted of three highly reliable scales measuring the variables in construct. Health Anxiety Inventory an 18-item scale that is based on the cognitive model of hypochondriasis and measures anxiety over the past 6 months. The scale is expressed on a four point Likert scale that ranges from 0 to 3. It consists of two subscales (a) main scale contain 14 items (1. health anxiety, 2. fear related to illness) and (b) negative consequences scale consisted of 4 items (negative consequences if illness occur) [8]. Cyberchondria Severity Scale is a 12-item scale consists of 4 subscales (a) compulsion, (b) distress, (c) excessiveness and (d) reassurance-seeking. Expressed on a five point Likert scale ranging from 1 to 5 [9] and Metacognitions Questionnaire–Health Anxiety is a 14 item scale. Basically it access the cognitions related to health. It consists of three types of beliefs (a) thoughts illness fusion, (b) biased thinking (c) uncontrollable thoughts. Expressed on a four point Likert scale ranging from 1 to 4 [7]. The data was analyzed through SPSS version 23 and Smart PLS version 3.0. The statistical analysis included: (1) Descriptive analysis on research variables and demographic variables. (2) Reliability analysis to access the internal consistency of the scales. (3) Bivariate correlation analysis to explore the relationship between variables. (4) Simple linear regression to investigate the impact of health anxiety on cyberchondria. (5) Mediation analysis to determine the mediating effects.

RESULTS

Demographic characteristics of respondents (n= 320) shows that average age of participants is 22.4 years and most of them are females. Many belong to urban background living in a nuclear family system. The average hours spent on internet is more than 5 searching for psychological and physiological symptoms both while the population is seeking assurance from friends, family and doctors and are not currently on medication form a physician. Mostly people cannot avoid of thinking, reading and talking about illness and went to hospitals to visit friends or family members and for their own health related issues. The table 2 shows Cronbach's alpha and Intercorelations among the scales. The value of alpha is acceptable as all the scales show good reliability (0.8). The descriptive shows that health anxiety has (M=18.6, SD=10.2), metacognition (M=33.3, SD=7.12) and Cyberchondria (M=28.1, SD=10.1). The correlation metrics showed that health anxiety has a moderate positive correlation with metacognitions $p<0.01$ and cyberchondria $p=<0.01$. Similarly metacognition is also positively correlate with cyberchondria $p=<0.01$. The table 3 shows that health anxiety has a significant impact on cyberchondria ($p<0.001$, $R^2 = 0.32$) thus it shows that 30% variation in the model is explained by health anxiety. The table 4 indicates that

metacognitions significantly mediates the relation between health anxiety and cyberchondria. The indirect effect between health anxiety and metacognition is significant ($p<0.001$, $R^2 = 0.35$) and indirect effect between metacognition and cyberchondria is also significant ($p<0.001$, $R^2 = 0.43$).

Table No.1: Socio Demographic Characteristics of Respondents (N=320)

Variables	Number	%tage	Mean	Standard deviation
Gender			1.49	0.50
Male	163	50.9%		
Female	157	49.1%		
Age			22.4	0.60
16 to 61	320			
Marital Status			1.86	0.33
Married	42	13.1%		
Unmarried	278	86.9%		
Ethnicity			1.69	0.46
Rural	99	30.9%		
Urban	221	69.1%		
Family System			1.37	0.48
Nuclear	200	62.5%		
Joint	120	37.5%		
No of hours spent of internet			2.36	0.72
1-2 hours	48	15.0%		
3-4 hours	110	34.3%		
5-more hours	162	50.6%		
Symptoms searched on internet			3.01	0.93
Psychological	36	11.2%		
Physiological	32	10.0%		
Both	146	45.6%		
None	106	33.1%		
Method of prescription			2.95	1.14
Self-prescription	43	13.4%		
Medical prescription	113	35.3%		
None	164	51.2%		
Currently on medication			1.89	0.33
Yes	39	12.1%		
No	281	87.8%		
Satisfaction with physician			1.73	0.85
Yes	158	49.3%		
No	62	19.3%		
Not seeing any physician	100	31.2%		
Seeking reassurance			2.94	1.59
Friends	51	15.9%		
Family	91	28.4%		
Doctor	36	11.2%		
All of above	142	44.3%		
Consulting doctor			1.85	1.30
Always	250	78.1%		
Sometimes	35	10.9%		
Never	35	10.9%		
Visiting relatives/friends in hospital			1.87	1.28
Always	246	76.8%		
Sometimes	44	13.7%		
Never	30	9.37%		
Going to hospital for illness			2.07	1.39
Always	224	70.1%		
Sometimes	56	17.5%		
Never	40	12.5%		
Talking about illness			2.37	1.47
Always	193	60.3%		
Sometimes	75	55.1%		
Never	52	16.2%		
Reading about illness			1.98	1.47
Always	232	72.5%		
Sometimes	42	13.1%		
Never	46	14.3%		
Thinking about illness			2.15	1.46
Always	221	69.0%		
Sometimes	52	16.25%		
Never	47	14.6%		

Table No.2: Correlation between health anxiety, metacognitions and cyberchondria

Measure	Items	Alpha	Health Anxiety	Metacognition	Cyberchondria
1.Health Anxiety	18	0.89	_	0.47**	0.48**
2.Metacognition	14	0.83		_	0.49**
3.Cyberchondria	12	0.86			_
Mean			18.6	33.3	28.1
Standard deviation			10.2	7.12	10.1

Note: N=320, *p <0 .05, **P <0 .01

Table No.3: Simple Linear Regression Analysis between health anxiety and cyberchondria

Paths	Beta	SD	t-value	P value	R Square	F square
Health anxiety -> cyberchondria	0.56	0.05	10.53	0.000***	0.32	0.46

Table No.4: **Metacognitions acting as mediator between intolerance of uncertainty and cyberchondria**

Effects	Paths	Path coefficient	SD	t-value	p-value	R^2	F square
Direct	HA -> CYB	0.56	0.05	10.5	0.000***	0.32	0.46
Indirect	HA -> MC	0.59	0.04	14.1	0.000***	0.35	0.55
	MC -> CYB	0.43	0.08	5.36	0.000***	0.43	0.21
	HA -> CYB	0.29	0.08	3.63	0.000***	0.43	0.10

Note: n=320, HA= health anxiety, MC= metacognitions, CYB=cyberchondria. *p <0 .05, **P <0 .01, ***p< = 0.001.

DISCUSSION

The current study tries to evaluate the relation between health anxiety, cyberchondria and metacognitions. Furthermore the impact of health anxiety on cyberchondria is also explored along with the mediating role of metacognitions. It was hypothized that there exists a significant relation between the variables. The results are supported by previous studies. It was suggested that health anxiety has a positive relation with cyberchondria. The reason is that individuals having high illness anxiety reported more functional impairment and elevated levels of intolerance of uncertainty and fear associated with the disease. To overcome this fear they indulge in online symptom checking behavior. Many clinicians warn their client not to indulge in such behavior because it will produce more harm than benefit [10].

It was reported that negative metacognitive beliefs and health anxiety are positively correlated. Many studies contributed to the fact that people having biased metacognitions about their overall health experience attentional biasness regarding their symptoms. They usually misinterpret their bodily sensations for a dangerous disease thus creating more and more anxiety and exhibiting more catastrophic behaviors such as reassurance seeking and avoidance seeking to gain control on the uncontrollable events [6].

It was suggested that metacognition and cyberchondria significantly correlates with each other and the findings are in consistent with other studies the reason is that when people perceive an event threatening they will try to evaluate its consequence by gaining information related to that event. The information present on internet is not easy to comprehend which will create more stress and succumbed a person into uncertainty to overcome this fear a person indulge in safety-seeking behaviors (reassurance seeking, avoidance) [11]

It was also hypothized that health anxiety is a significant predictor of cyberchondria and the findings are in consistent with other studies [2, 12]. The reason is that people with high levels of anxiety are more eager to look for their health related symptoms. As in today's digital world digital mediums are the constant source of information for their users that's why people adopt these social networking sites to gain information about their symptoms. Through this behavior they tries to lower their levels of anxiety but sometimes these mediums didn't relief them but increase the intensity of apprehensive expectations due to the vast information related to a disease. People mostly misinterpret their symptoms and became more anxious. Thus the vicious cycle begins [13]

It was suggested that metacognitions significantly mediates the association between health anxiety and cyberchondria and the findings are supported by other studies [14]. People having greater health anxiety sometimes misinterpret their bodily sensations and build false cognitions related to disease. The reason for these faulty cognitions are the lack of evidence based information and past beliefs regarding the illness which will create negative cognitions and people use many safety seeking behaviors to reduce the anxiety associated with the disease just like reassurance from friends and family but in modern era people switched towards the social media [15, 16].

CONCLUSION

The findings of the study revealed that there exist a positive correlation between health anxiety, metacognition and cyberchondria. Health anxiety significantly predict cyberchondria and metacognitions significantly mediate the association between health anxiety and cyberchondria.

Author's Contribution:

Concept & Design of Study: Iram Batool
Drafting: Huma Batool, Mahrukh
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