Health-Anxiety and COVID-19 Stress with Mediating Role of Generalized Anxiety Disorder and Obsessive-Compulsive Disorder Among Individuals Diagnosed with COVID-19

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The present study aims to investigate the relationship between health anxiety and COVID-19 stress with mediating role of generalized-anxiety disorder and obsessive-compulsive symptoms among individuals diagnosed with and without COVID-19. A total of 837 participants were targeted, and 474 respondents met the study inclusion and exclusion criteria. Google Form included sample demographic information with measures of the Coronavirus Stress Scale (CSS; Taylor et al., 2020), Health Anxiety Inventory (HAI; Abramowitz et al., 2006), Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Woody et al., 1995), and Generalized Anxiety Disorders Scale (GAD; Spitzer et al., 2006). We performed t-test, correlation and mediation analysis (through PROCESS and AMOS) using SPSS version 27. Results indicate that diagnosed individuals were significantly different on HAI, GAD, OCS, and COS compared to those never diagnosed. Similarly, women scored higher on health anxiety, generalized anxiety symptoms, obsessive-compulsive symptoms and COVID-19 stress than men. In addition, a significant positive relationship was found between health anxiety and COVID-19 stress with mediating role of generalized anxiety symptoms, and obsessive-compulsive symptoms in increasing COVID-19 stress.

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It is concluded that diagnosed individuals with COVID-19 and women were found more vulnerable to health anxiety, generalized anxiety symptoms, obsessive-compulsive symptoms and COVID-19 stress during the pandemic.

Keywords. Health anxiety, generalized anxiety disorders, obsessive-compulsive disorder, coronavirus disease, COVID-19 stress.

The coronavirus disease 2019 outbreak, commonly called COVID-19, caused a constellation of acute respiratory problems for some known and unknown reasons, and its outbreak started in Wuhan, Hubei Province, China, in 2019 (Wang et al., 2020). COVID-19 cases spread quickly throughout the world, beginning in Italy (4,618,040), Spain (4,943,855), Germany (4,635,558), and then in the United States (41,395,425) and India (33,738,188) (World Health Organization, 2020b). Worldwide, novel coronavirus cases have been reported, approximately 248 million with 5 million deaths and 225 million recovered cases. Many cases were reported in the USA, India, and Brazil, and the lowest cases were reported in China due to their effective lockdown strategies implemented at well time. In Pakistan, the first case was reported in March 2020, total cases reached 1,274,578 with 28477 deaths at the end of September 2021, and the number of cases decreased after vaccination. This prevalence would probably be high if undetected cases could be tested at the right time (Lau et al., 2021).

Pandemic situations and lockdowns significantly influenced economic growth, education, and individuals' psychological well-being (Poudel & Subedi, 2020; Said & Refaat, 2021; Saladino et al., 2020). During the pandemic situation, health anxiety and health-related concerns increased among individuals (Wu et al., 2021), and stress was triggered due to worries and fears (Chew et al., 2020a; Shahbaz et al., 2021), and obsessive-compulsive symptoms (Pedrosa et al., 2020). People started to use unfamiliar precautions and extra self-care, such as excessive hand-washing, wearing masks and gloves, avoiding social situations, and gathering to reduce fear of COVID-19 and life threats (Browning et al., 2021; Cannito et al., 2021). Everybody in the pandemic was following instructions and using tactics, but the uncertain, insecure and unsafe situation significantly enhanced health anxiety. Fear about health and related concerns provoked psychological problems among the general public, and this frequency was found to be higher among those who experienced COVID-19 diagnosis (Majeed et al., 2021; Xiong et al., 2020). Similarly, in the Italian sample, stress and depression were found to be

higher at the beginning and family members they experienced or working outside were found to be more stressed (Mazza et al., 2020; Roma et al., 2020)

COVID-19 stress was the main factor of emotional symptoms among the general public (Shi et al., 2017). This can be observed through different studies; for example, five studies reported 29.6%, seven studies investigated COVID-19 caused anxiety symptoms of approximately 31.9%, and fourteen studies examined 33.7% of depressive symptoms during the pandemic (Salari et al., 2020). Individuals are more concerned about health or overly anxious to perceive more serious concerns and stress. These health concerns are positively associated with excessive worries and obsessive-compulsive symptoms (Nissen et al., 2020b). Due to the COVID-19 pandemic obsessive-compulsive symptoms triggered in the general public and significantly affected the individuals diagnosed with OCD (Grant et al., 2022; Wheaton et al., 2021). According to an estimate, individuals with low health anxiety perceive a lower frequency of psychological symptoms. For example, 10% of participants improved their symptoms, 47% perceived the severity of the same symptoms, and 38% perceived high symptoms (Storch et al., 2021).

Moreover, research data reported 33/61 participants, and almost 54% reported high symptoms severity due to fear of COVID-19 (Tanir et al., 2020). COVID-19 stress is significantly associated with health anxiety-related symptoms (Chew et al., 2020b; Huang & Zhao, 2020). It is seen that fear of COVId-19 is significantly triggered by health anxiety, and it can be harmful to an individual's mental health (Benatti et al., 2020), and over time, this crisis cause stressors, which lead to psychiatric symptoms (Duan & Zhu, 2020; Huang & Zhao, 2020).

People were more fearful and panicked in a pandemic situation due to fear of COVID-19 disease and perceived higher mental health problems (Nearchou et al., 2020). Some authors have reported fear of COVID-19 had a strong association with anxiety (Mertens et al., 2020), stress (Tzur Bitan et al., 2020), and depressive symptoms (Mamun & Griffiths, 2020). Fear of having COVID-19 triggered anxiousness, illness-related anxieties, and obsessive-compulsive symptoms (Cannito et al., 2020; Cunning & Hodes, 2021). Moreover, during this pandemic situation prevalence of psychiatric symptoms, particularly depressive (33.7%), anxiety (31.9%), and stress-related symptoms (29.6%), increased even among the general public (Salari et al., 2020). Huang and Zaho (2020) reported 20.1% depressive symptoms and 35.1% anxiety symptoms, especially GAD, among the general community sample in China. Rodríguez-Rey et al. (2020) investigated mental health problems in the Spanish community

sample, including 25% anxiety symptoms, 41% depressive and stress-related symptoms, and 36% perceived moderate to severe psychological issues. Frequent anxiety-related symptoms cause physical and mental health problems, eventually developing health anxiety and related symptoms, i.e. as upset stomach, chest pain, trouble thinking, and fear of heart attack (Shevlin et al., 2020). The population is vaccinated, which is another reason that reduced the prevalence of COVID-19 (Huang & Zhao, 2020). On the other end, females during the pandemic situation were found more worried and stressful because of risks associate with health (Vesga-López et al., 2008).

The present study aims to investigate a bridging role of health anxiety with COVID-19 stress and COVID-19 stress triggered among individuals through excessive worries and obsessive-compulsive symptoms during the pandemic. In this regard, we aim to explore the differences between individuals diagnosed with COVID-19 and never diagnosed with COVID-19 on the variable of health anxiety, excessive worries, obsessive-compulsive symptoms and COVID-19 stress. We also investigate the role of gender during the pandemic situation on health anxiety, excessive worries, obsessive-compulsive symptoms, and COVID-19 stress. Another study objective examined the relationship between health anxiety and COVID anxiety with the mediating role of excessive worries and obsessive-compulsive symptoms during the COVID-19 outbreak.

The following hypotheses were structured; such as a) there would be a significant difference on health anxiety, COVID-19 stress, excessive worries and obsessive-compulsive symptoms between individuals diagnosed with and without COVID-19, b) there would be a significant difference on the variable of health anxiety, COVID-19 stress, excessive worries, and obsessive-compulsive symptoms between men and women and c) there would be a relationship between health anxiety and COVID-19 stress with mediating role of excessive worries and obsessive-compulsive symptoms among individuals during the pandemic outbreak in Pakistan.

Method

Design

This study was conducted during the COVID-19 pandemic between April 2020 to October 2021. The Institutional Review Board (IRB), Government College University Faisalabad, approved the study protocols. All the methods and procedures were used according to the

given instructions and guidance by the IRB. The study sample size was calculated using software (G-Power, version 3.1.9.4). In this study, an error was fixed $\alpha = .01$, effect size $d = .41$ utilizing the power of .95 (Faul et al., 2009). Through this software sample size of 398 was generated, and we recruited a sample of N = 586 respondents, and $n = 474$ participants met the established study criteria.

Sample

An online questionnaire was shared with 837 respondents, and 586 participants responded to the questionnaire. After security, 474 respondents met the inclusion-exclusion criteria. In this study, two kinds of subjects were included such as 1) those who never experienced coronavirus disease 245(51.7%), and 2) those who experienced COVID-19 and now they have recovered 229(48.3%). Participants who currently/ in the past have a history of medical or psychiatric illnesses were excluded from the study. Conversely, participants included are never diagnosed with COVID-19 and have no medical and psychiatric illnesses history. The sample age range was 25-50 years. Participants' educational level was at least metric and above in this study.

Measures

Demographic Information

We used the demographic form to obtain personal information about the subjects. Such as age, education, occupation, family members, monthly income, family system, history of illness, and prior treatment.

Short Health Anxiety Inventory (SHAI)

SHAI is 18 items scale designed to assess the level of an individual's perception of how awful it would be to be ill (Abramowitz et al., 2006). SHAI consisted of three subscales: namely, illness likelihood, illness severity, and body vigilance. Each item of SHAI is scored from 0 to 3. The total scale range is 0–54, and the SHAI has been found to have high test-retest reliability ($r = .90$). SHAI reliability estimation was .92 with test-retest reliability of .57 and items correlation coefficient of .40 to .77.

Generalized Anxiety Disorders Scale (GAD-7)

The Generalized anxiety disorder scale comprises seven items designed to screen anxiety symptoms severity (Spitzer et al., 2006). This scale item assesses various symptoms like 'inability to stop

worrying, excessive worry, restlessness, difficulty in relaxing, nervousness, easy irritation, and fear of something awful happening'. GAD scores are calculated on a 4-point Likert scale '*not at all*' = 0 and *'nearly every day'* = 3). The GAD total score range is 0-21 with '*minimal anxiety'* = 0-4, '*mild anxiety'* = 10-14, *moderate anxiety'* =15-21, and '*severe anxiety'* = 15-21. The scale Cronbach's alpha is calculated at .89, which indicates the test is reliable.

Coronavirus Stress Scales (CSS)

The CSS consists of 36 items designed to assess the level of stress due to coronavirus disease (Taylor et al., 2020). The CSS has six dimensions: danger and contamination, fears of socioeconomic consequences, xenophobia, compulsive checking and reassurance-seeking, and traumatic stress symptoms. The CSS is scored on a 5-points Likert scale from 0 to 4. The CSS Cronbach's alpha for each domain is calculated from .83 to .94.

Yale-Brown Obsessive-Compulsive Scale (Y-BOCS)

Y-BOCS is 10 items scale designed for an individual's obsessive and compulsive symptoms severity (Woody et al., 1995). The first 5 items are constructed to assess obsessive symptoms and the last five statements are relevant to the compulsions. Each statement is scored on 5-point Likert-type scales from 0 to 4. The total scale range is 0-40 with different levels of symptom severity; 0-7 indicates subclinical symptoms, 8-15 mild symptoms severity, 16-23 moderate symptoms severity, 24-32 severe symptoms severity, and 32-40 extreme symptoms severity. Scale internal consistency is calculated at .86 with inter-rater reliability of .97 and test-retest .64.

Procedure

Initially, the research committee discussed the research proposal, and then it was submitted to the Institutional Review Board (IRB), Government College University, Faisalabad, for approval. We collected the sample through online resources. Informed consent was obtained from the study participants through email and WhatsApp messages before the study commenced. It was also described in the consent form the received information would remain confidential and participants' identity would never be disclosed. In addition, the researchers described that the received data would be used only for research. For those participants who agreed with the response and were willing to participate in the study, the link was shared with them only to fill out the questionnaires. Researchers explained that your

participation would be a volunteer. A convenient sampling technique was used to collect the data.

Result

We used descriptive statistics to explore the frequency, mean and standard deviation. An independent-sample t-test was used to determine gender differences between individuals diagnosed with COVID-19 and those never diagnosed with COVID-19. Moreover, mediation analysis was used to explore the relationship between health anxiety and COVID-19 stress with buffering the role of GAS and OCS among subjects diagnosed with and without COVID-19. The SPSS version 27 was used to analyse the results.

Eight hundred thirty-seven participants were targeted, and 474 subjects met the study inclusion-exclusion criteria. The sample comprised participants diagnosed with COVID-19 229(48.31%), and those never diagnosed with COVID-19 245(51.69%). Women were 243 (49.37%), and men were 240(50.63%). In the sample, single was 232 (48.94%), married 228(48.10%), and divorced/separated was 14 (2.96%). Participants from the joint family system were 256(54.01%) and from the nuclear family system 218(45.99%). Participants' education level was intermediate 152(32.07%), undergraduate 196 (41.35%), and graduate 126(26.58%). Participants were taken from middle 216(45.57%) and high socioeconomic status 258(54.43%). Among sample students were 251(52.95%), employees were 156 (32.91%), and running business was 67(14.14%). The sample age range was 25-50 years ($M = 23.41$ & $SD = 6.58$ years).

Findings of Table 1 indicate that individuals diagnosed with COVID-19 scored higher on generalized anxiety symptoms, obsessive-compulsive symptoms, and COVID-19 stress as compared to those who were never diagnosed with COVID-19 (i.e., $t = -12.97$; $p < .00$, $t = -28.72$; $p < .00$ $t = -20.92$; $p < .00$, $t = -28.83$; $p < .00$) respectively. Similarly, diagnosed individuals scored higher on danger, socio-economic consequences, xenophobia, contamination, traumatic stress symptoms, compulsive checking as compared to those who never diagnosed with COVID-19 (i.e., $t = -7.33$; $p < .00$, $t = -14.52$; $p < .00$, $t = -11.21$; $p < .00$, $t = -6.22$; $p < .00$, $t = -7.05$, $p < .00$, $t = -6.48$; $p < .00$, $t = -8.40$; $p < .00$) respectively. Furthermore, individuals who experienced COVID-19 perceived higher scores on illness likelihood factor; illness severity factor; body vigilance factor; and over short health anxiety (i.e., $t = -8.00$; $p < .00$, $t = -9.46$; $p < .00$, $t = -5.77$; $p < .00$, $t = -9.39$; $p < .00$) respectively.

Table 1

t-Test Statistics for Health Anxiety, Generalized Anxiety Symptoms, Obsessive-Compulsive Symptoms Disorder, And COVID-19 Stress Between Individuals Diagnosed And Never Diagnosed With COVID-19 (N = 474)

Variables	INDW-COVID-19 (*n* = 245) *M(SD)*	IDW-COVID-19 (*n* = 229) *M(SD)*	*t*(472)	*p*	95% *CI* LL	UL	Cohen's *d*
GAS	7.97(5.90)	15.49(6.72)	12.97	.00	-8.66	-6.38	1.19
OBS	2.39(1.87)	8.91(2.97)	28.72	.00	-6.96	-6.07	2.62
CMS	1.97(2.09)	7.94(3.90)	20.92	.00	-6.53	-5.41	1.90
OCS	4.36(3.34)	16.85(5.83)	28.83	.00	-13.33	-11.63	2.62
DAN	8.85(5.43)	12.56(5.56)	7.33	.00	-4.69	-2.71	.67
SEC	5.50(3.90)	11.56(5.34)	14.52	.00	-6.88	-5.24	1.30
XEN	6.71(4.56)	11.92(5.45)	11.29	.00	-6.11	-4.30	1.04
CON	4.71(5.33)	10.82(5.52)	6.22	.00	-4.08	-2.12	1.13
TRS	4.47(4.88)	8.11(6.30)	7.05	.00	-4.65	-2.62	.65
CCH	7.44(5.66)	10.90(5.93)	6.48	.00	-4.50	-2.41	.60
CSS	43.72(27.98)	65.56(28.68)	8.40	.00	-26.95	-16.73	.77
ILF	6.08(4.34)	9.67(5.39)	8.00	.00	-4.47	-2.70	.73
ISF	1.86(1.78)	3.87(2.76)	9.46	.00	-2.42	-1.59	.88
BVF	3.47(2.35)	4.73(2.41)	5.77	.00	-1.69	-.83	.54
SHAI	11.41(7.04)	18.28(8.88)	9.39	.00	-8.31	-5.43	.86

Note. INDW-COVID-19 = Individuals Never Diagnosed With COVID-19; IDW-COVID 19 = Individuals Diagnosed With- COVID-19 SED = Std. Error Difference; GAS = Generalized Anxiety Symptoms; OBS = Obsessive Symptoms; CMS = Compulsive Symptoms; OCS = Obsessive-Compulsive Symptoms; DAN = Danger; SEC = Socio-economic Consequences; XEN = Xenophobia; CON = Contamination; TSS = Traumatic Stress Symptoms; COM = Compulsive Checking; CSS = COVID-19 Stress Scale; ILH = Illness Likelihood Factor; ISVF = Illness Severity Factor; BVIF = Body Vigilance Factor; SHAI = Short Health Anxiety Inventory.

Findings of Table 2 reveal that diagnosed individuals with COVID-19 perceived higher scores on generalized anxiety, obsessive symptoms, compulsive symptoms, COVID-19 stress as compared to those who were never diagnosed with COVID-19 (i.e., *t* = -6.64; *p* < .00, *t* = -8.55; *p* < .00, *t* = -6.11; *p* < .00, *t* = -7.86; *p* < .00) respectively. In pandemic, diagnosed individuals scored higher on danger, socio-economic consequences, xenophobia, contamination, traumatic stress symptoms, compulsive checking as compared to those who never diagnosed with COVID-19 (i.e., *t* = -4.19; *p* < .00,

t = -6.94; p < .00, t = -3.93; p < .00, t = -1.15; p < .00, t = -2.91; p < .00, t = -2.60, p < .00, t = -3.85; p < .00) respectively. Furthermore, individuals who experienced COVID-19 disease in the pandemic perceived higher scores on illness likelihood factor; illness severity factor; body vigilance factor; and over short health anxiety (i.e., *t = -4.77; p < .00, t = -3.65; p < .00, t = -2.95 p < .00, t = -4.79; p < .00)* respectively.

Table 2

Gender Differences in Health Anxiety, Generalized Anxiety Symptoms, Obsessive-Compulsive Symptoms, and COVID-19 Stress between Men and Women (N = 474)

Variables	Men (n = 240) M(SD)	Women (n = 234) M(SD)	t(472)	p	95% CI LL	95% CI UL	Cohen's d
GAS	9.53(6.48)	13.82(7.57)	6.64	.00	-5.56	-3.02	.61
OBS	4.09(3.42)	7.09(4.18)	8.55	.00	-3.68	-2.30	.80
CMP	3.73(4.09)	6.06(4.20)	6.11	.00	-3.08	-1.58	.56
OCS	7.82(6.95)	13.15(7.77)	7.86	.00	-6.65	-3.99	.72
DAN	9.58(5.59)	11.78(5.80)	4.19	.00	-3.22	-1.16	.39
SEC	6.82(4.87)	10.14(5.53)	6.94	.00	-4.25	-2.38	.64
XEN	8.25(5.11)	10.27(6.01)	3.93	.00	-3.01	-1.00	.36
CON	8.93(5.37)	9.52(5.91)	1.15	.24	-1.61	.42	.10
TRS	5.47(5.51)	7.04(6.19)	2.91	.00	-2.62	-.51	.25
CCH	8.42(5.90)	9.86(6.12)	2.60	.00	-2.52	-.35	.23
CSS	49.16(28.94)	59.74(30.76)	3.85	.00	-15.97	-5.19	.35
ILF	6.73(5.08)	8.96(5.19)	4.77	.00	-3.14	-1.31	.43
ISF	2.43(2.38)	3.27(2.58)	3.65	.00	-1.28	-.38	.34
BVF	3.76(2.50)	4.42(2.37)	2.95	.00	-1.10	-.22	.27
SHAI	12.93±8.55	16.66(8.39)	4.79	.00	-5.26	-2.20	.44

Note. SED = Std. Error Difference; GAS = Generalized Anxiety Symptoms; OBS = Obsessive Symptoms; CMS = Compulsive Symptoms; OCS = obsessive-compulsive Symptoms; DAN = Danger; SEC = Socio-economic Consequences; XEN = Xenophobia; CON = Contamination; TSS = Traumatic Stress Symptoms; COM = Compulsive Checking; CSS = COVID-19 Stress Scale; ILH = Illness Likelihood Factor; ISVF = Illness Severity Factor; BVIF = Body Vigilance Factor; SHAI = Short Health Anxiety Inventory.

Figure 1

Scores difference between individuals never diagnosed with COVID-19 and individuals diagnosed with COVID-19 on the scale of HAI, GAS, OCS, and CSS.
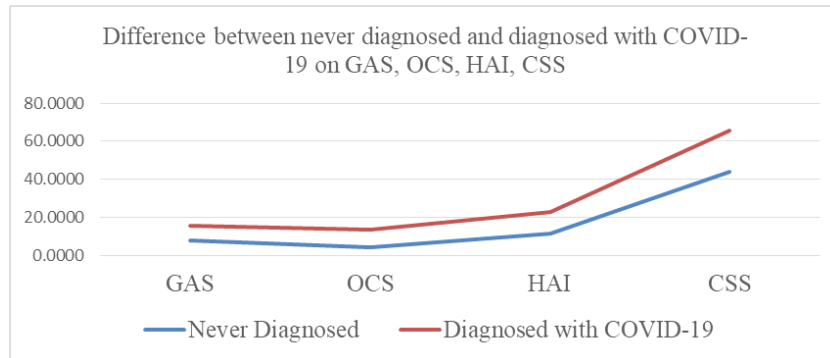
Note. INDWC = Individuals never diagnosed with COVID-19; IDWC = Individuals diagnosed with COVID-19; SHAI = Short Health Anxiety Inventory; GAS = Generalized Anxiety Symptoms; OCS = obsessive-compulsive symptoms; CSS = COVID-19 Stress Scale.

Findings reported that individuals who experience COVID-19 disease perceived a relatively high degree of health anxiety, obsessive and compulsive symptoms, generalized anxiety symptoms and stress in pandemic situations compared to individuals who never experienced COVID-19 (Figure 1).

Table 3

Mediation Analysis between health anxiety and COVID-19 stress through generalized anxiety disorder and obsessive-compulsive disorders among individuals diagnosed with COVID-19 and never diagnosed with COVID-19 (N = 474)

Predictors	GAS			OCS			CSS		
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
Constant	6.68	.62	.01	4.42	.64	.01	21.43	2.57	.01
SHAI	.39	.04	.01	.45	.04	.01	.22	.15	.01
GAS							.34	.19	.01
OCS							.15	.18	.01
	$R^2=16$			$R^2=21$			$R^2=32$		
	$F(3,470) = 87.18$, $p < .01$			$F(3,470) = 120.07$, $p < .01$			$F(3,470) = 71.82$, $p < .01$		

Note. Coeff = Coefficient; SE = Standard Error; SHAI = Short Health Anxiety Inventory; GAS = Generalized Anxiety Symptoms; OCS = Obsessive-Compulsive Symptoms; CSS = COVID-19 Stress Scale.

Table 4

Indirect Effect of Generalized Anxiety Disorder and Obsessive-Compulsive Disorders between Health Anxiety and Covid-19 Stress among Individuals Diagnosed with COVID-19 and Never Diagnosed with COVID-19 (N = 474)

Mediator	Effect	Boot SE	Confidence Interval	
			Boot LLCI	Boot ULCI
GAS	.46	.09	.29	.65
OCS	.22	.08	.05	.38

GAD = Generalized Anxiety Symptoms; OCD = Obsessive-Compulsive Symptoms.

Figure 2

Statistical Model of Mediation Analysis for CSS
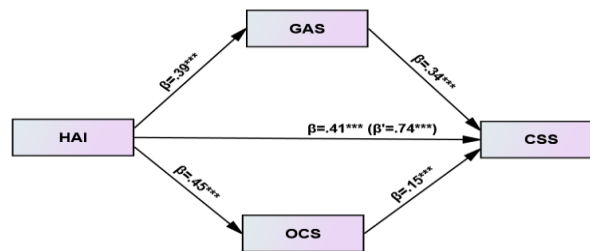
Health anxiety significantly positively associates with generalized anxiety disorder and obsessive-compulsive disorder. Furthermore, health anxiety has significant positive relationship with stress; whereas, obsessive-compulsive disorder and generalized anxiety disorder significantly positively associate with stress during pandemic situations (Figure 2; Tables 3, 4).

Findings reported in Table 5 suggest that age is significantly negatively associated with OBS, CMS, OCS, DAN, XEN, COM, CSS, ILF, BFV, and SHAI. MI is significantly negatively associated with GAS, while MI and age are insignificantly related to demographic characteristics and measured variables. Moreover, a significant positive relationship is observed among measured variables (i.e., GAS, OBS, CMS, OCS, DAN, SEC, XEN, CON, TSS, COM, CSS, ILF, BFV, and SHAI) respectively.

Table 5

Mean, Standard Deviation, and Inter-correlation Among Demographics Characteristics and Measured Variables Among the Individuals Diagnosed With COVID-19 And Never Diagnosed With COVID-19 (N = 474)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1-AGE	-	-.054	.055	-.174**	-.176**	-.164**	-.182**	-.096*	-.063	-.106*	-.086	-.089	-.111*	-.111*	-.097*	-.071	-.116*	-.112*
2-EDU		-	.008	.060	.038	.002	.021	.074	.006	.033	.074	.025	.024	.046	.019	.050	.052	.041
3-MIN			-	-.109*	-.036	-.033	-.037	-.011	.006	-.014	.003	-.012	.019	-.014	-.082	-.022	-.042	-.067
4-GAS				-	.574**	.423**	.533**	.487**	.311**	.351**	.341**	.386**	.412**	.496**	.400**	.302**	.234**	.395**
5-OBS					-	.737**	.928**	.354**	.435**	.363**	.287**	.336**	.336**	.394**	.363**	.400**	.290**	.417**
6-CMS						-	.936**	.278**	.400**	.327**	.287**	.406**	.316**	.386**	.380**	.460**	.215**	.422**
7-OCS							-	.338**	.447**	.370**	.308**	.399**	.350**	.418**	.399**	.462**	.270**	.450**
8-DAN								-	.486**	.448**	.613**	.548**	.650**	.829**	.372**	.289**	.232**	.373**
9-SEC									-	.513**	.416**	.437**	.429**	.564**	.320**	.326**	.162**	.333**
10-XEN										-	.512**	.427**	.412**	.598**	.354**	.272**	.186**	.344**
11-CON											-	.572**	.554**	.766**	.324**	.293**	.105*	.309**
12-TSS												-	.692**	.821**	.405**	.368**	.099*	.378**
13-COM													-	.818**	.360**	.281**	.225**	.361**
14-CSS														-	.424**	.354**	.191**	.411**
15-ILF															-	.632**	.566**	.944**
16-ISF																-	.374**	.776**
17-BVF																	-	.733**
18-SHAI																		-
M	23.41	15.49	7816	11.61	5.55	4.86	10.41	10.65	8.44	9.23	9.21	6.24	9.12	54.28	7.82	2.84	4.08	14.74
SD	6.58	3.09	7834	7.34	4.09	4.31	7.83	5.80	5.46	5.65	5.64	5.90	6.05	30.30	5.19	2.2	2.46	8.67

Note. EDU = Education; MIN = Monthly Income; GAS = Generalized Anxiety Symptoms; OBS = Obsessive Symptoms; CMS = Compulsive Symptoms; OCD = Obsessive-Compulsive Symptoms; DAN = Danger; SEC = Socio-economic Consequences; XEN = Xenophobia; CON = Contamination; TSS = Traumatic Stress Symptoms; COM = Compulsive Checking; CSS = COVID-19 Stress Scale; ILH = Illness Likelihood Factor; ISVF = Illness Severity Factor; BVIF = Body Vigilance Factor; SHAI = Short Health Anxiety Inventory; M = Mean; SD = Standard Deviation.

Note. $^*p < .05$, $^{**}p < .01$.

Findings reported in Table 5 suggest that age is significantly negatively associated with generalized anxiety, obsessive symptoms, compulsive symptoms, COVID-19 stress as compared to those who were never diagnosed with COVID-19. In addition, pandemic, diagnosed individuals scored higher on danger, socio-economic consequences, xenophobia, contamination, traumatic stress symptoms, compulsive checking as compared to those who never diagnosed with COVID-19

Discussion

Findings reveal that health anxiety was higher among individuals diagnosed with COVID-19 than those who never experienced COVID-19. Research supported the pandemic situation triggers health anxiety among individuals diagnosed with COVID-19. They perceived the pandemic as worsening daily, and hospitals were packed, no proper medication was accessible, and available medications are not working (Newby et al., 2020). Individuals who experienced COVID-19, their health anxiety activated when they experienced various COVID-19 related symptoms; their health concerns, body vigilance, and panic increased the severity related to illness factors (Salari et al., 2020). Furthermore, results indicate that COVID-19 related stress was higher in diagnosed individuals and lower among individuals they never diagnosed with COVID-19. These findings are consistent with the previous study, which reported that diagnosed individuals go through life-threatening situations and feel uncertain and critical during the pandemic crisis, which triggers stress (Mautong et al., 2021). Diagnosed individuals with COVID-19 feel danger, fear of economic turmoil, xenophobia, the anxiety of getting worse, checking behaviors, and traumatic stress compared to their counterparts (Magano et al., 2021).

Other findings of the study indicate that subjects who experienced COVID-19 perceived higher GAS symptoms than those who never experienced COVID-19. Laposa et al. (2015) reported that GAS symptoms were higher among diagnosed individuals with COVID-19. GAS symptoms were consistent with fears of losing a job, economic crisis, and worries about children and financial arrangements if the problem becomes more serious. Similarly, the obsessive and compulsive symptoms were also higher among diagnosed individuals with COVID-19. Research supported various psychosocial and pandemic situations, and obsessive-compulsive symptoms were triggered due to fear of having COVID-19 and following the strict SOPs (Fineberg et al., 2020) in the beginning, people came to know

COVID-19 may spread from one individual to another, increasing the tendency of obsessive-compulsive symptoms (Fontenelle & Miguel, 2020). These outbreaks enhance hand-washing compulsions (Hassoulas et al., 2022). Similar findings were observed during the pandemic in Italy that one-third of the participants experienced obsessive-compulsive symptoms (Benatti et al., 2020; Davide et al., 2020). Some symptoms like contaminations symptoms (Sica et al., 2021), hand washing compulsion (Dennis et al., 2021), social distancing (Nissen et al., 2020a), and rituals that increase the tendency of obsessive-compulsive symptoms(Abramowitz & Jacoby, 2014).

Further findings reported that health anxiety, GAS, OCS, and COVID-19 stress were higher among females than men. Evidence said concerns and stress are more prevalent among females because of their sensitive and conscious attitudes (McLean et al., 2011; Vesga-López et al., 2008). Similarly, females perceived more obsessive-compulsive symptoms, which trigger anxieties due to fear of having a COVID-19 outbreak in the family, especially in mothers who have younger kids and are fearful of the pandemic and following SOPs and excessive hand-washing reduces the chance of having COVID-19 (Darvishi et al., 2020). Due to the pandemic outbreak, mental health problems and physical discomfort were seen higher in young females than men and women who responded to this pandemic situation more critically and anxiously(Kang et al., 2020). WHO reported a 3.6% population perceived anxiety disorders globally, and this prevalence is higher in females at 4.6% compared to men at 2.6%, evidenced from Southeast Asia (Islam et al., 2020). Similarly, stress and health anxieties were higher among women than men(Pérez et al., 2021). Health anxiety, generalized anxiety disorders, and obsessive-compulsive symptoms were significantly triggered during the peak stage of the COVID-19 pandemic; when the number of cases significantly increased, the lockdown was implemented, and the death rate was also reported higher (Rubin & Wessely, 2020).

Moreover, the findings indicated that health-anxiety/concerns significantly correlate with stress in the pandemic, and GAS and OCS symptoms significantly mediate between health anxiety and COVID-19 stress. Research evidence reported health anxiety triggered during the COVID-19 pandemic (Pieh et al., 2020). It caused stress and health anxiety significantly started generalized anxiety disorders and obsessive-compulsive symptoms, which increases the degree of stress during a pandemic (Abba-Aji et al., 2020; Wheaton et al., 2021). During a pandemic, health anxiety is triggered among individuals; they fear their health conditions or potentially life-threatening diseases perceived high degree of stress (Sauer et al.,

2020). In Pakistan, during the third wave, regular increase in COVID-19 cases, and the death rate increased. This information consistently provoked health anxiety, increasing the tendency for generalized anxiety disorder and obsessive-compulsive symptoms to be revealed as stressors (Asmundson & Taylor, 2020). The COVID-19 pandemic confirmed health anxiety's impact on the emotional response to the pandemic (Jungmann & Witthöft, 2020). Health-anxiety/health concerns are significantly associated with virus anxiety (Jungmann & Witthöft, 2020), anxiety disorders, illness anxiety disorder, and social isolation (Pera, 2020). Some studies reported that although it is difficult to differentiate health anxiety during the pandemic from pre-existing or premorbid health anxiety when there was no pandemic, health anxiety was significantly triggered and positively associated with pre-existing health anxiety (Asmundson & Taylor, 2020). As stated in the literature, health anxiety increases the stress during a pandemic when the chance of having COVID-19 is higher and most individuals are in stressful situations (Mautong et al., 2021).

Conclusion

It is concluded that health anxiety, generalized anxiety symptoms, obsessive-compulsive symptoms, and stress were found to be higher in the individuals diagnosed with COVID-19 than those who never experienced this novel coronavirus. Females perceived higher health anxiety, generalized anxiety symptoms, obsessive-compulsive symptoms, and COVID-19 stress than males. Health anxiety significantly correlates with COVID-19 stress, and generalized anxiety symptoms and obsessive-compulsive symptoms triggered by health anxiety significantly cause COVID-19 stress.

Implications of the Study

This study provides a significant background to the clinician and scientists on how health concerns cause OCS and GAS-related symptoms and the role of health anxiety in stress. This study will help the practitioners understand the impact of health anxiety in diagnosing and treating GAS and OCS and differentiate and understand the psychiatric problems before and after the pandemic.

Limitations and Recommendations

This study does not explain health anxiety among kids and older adults because only young and late adults were taken. The sample was collected online, only educated people participated, and the findings does not explain the health anxiety, generalized anxiety, obsessive-compulsive symptoms, and stress among low-educated or uneducated individuals. In this study, the sample was collected from the urban areas where internet facility was available; people with no internet facility, or smart or laptop computers did not participate in the study; if possible, the findings will be more informative. Only individuals diagnosed with COVID-19 and those who never experienced COVID-19 were included. The study does not explain the stress and health anxiety level among those with some comorbid medical and psychiatric illnesses.

References

Abba-Aji, A., Li, D., Hrabok, M., Shalaby, R., Gusnowski, A., Vuong, W., Surood, S., Nkire, N., Li, X. M., Greenshaw, A. J., & Agyapong, V. I. O. (2020). COVID-19 Pandemic and Mental Health: Prevalence and Correlates of New-Onset Obsessive-Compulsive Symptoms in a Canadian Province. *International Journal of Environmental Research and Public Health*, *17*(19), Article 19. doi.org/10.3390/ijerph17196986

Abramowitz, J. S., Deacon, B. J., & Valentiner, D. P. (2007). The Short Health Anxiety Inventory: Psychometric properties and construct validity in a non-clinical sample. *Cognitive Therapy and Research*, *31*, 871-883

Abramowitz, J. S., & Jacoby, R. J. (2014). Obsessive-compulsive disorder in the DSM-5. *Clinical Psychology: Science and Practice*, *21*(3), 221-235. doi.org/10.1111/cpsp.12076

Asmundson, G. J. G., & Taylor, S. (2020). How health anxiety influences responses to viral outbreaks like COVID-19: What all decision-makers, health authorities, and health care professionals need to know. *Journal of Anxiety Disorders*, *71*, 102-211. doi.org/10.1016/j.janxdis.2020.102211

Benatti, B., Albert, U., Maina, G., Fiorillo, A., Celebre, L., Girone, N., Fineberg, N., Bramante, S., Rigardetto, S., & Dell'Osso, B. (2020). What Happened to Patients With Obsessive Compulsive Disorder During the COVID-19 Pandemic? A Multicentre Report From Tertiary Clinics in Northern Italy. *Frontiers in Psychiatry, 11*, 720. doi.org/10.3389/fpsyt.2020.00720

Browning, M. H. E. M., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., Cloutier, S., Vu, T. M., Thomsen, J., Reigner, N., Metcalf, E. C., D'Antonio, A., Helbich, M., Bratman, G. N., & Alvarez, H. O. (2021). Psychological impacts from COVID-19 among

university students: Risk factors across seven states in the United States. *PLOS ONE, 16*(1), e0245327. doi.org/10.1371/journal.pone.0245327

Cannito, L., Anzani, S., Bortolotti, A., Palumbo, R., Ceccato, I., Di Crosta, A., Di Domenico, A., & Palumbo, R. (2021). Temporal discounting of money and face masks during the covid-19 pandemic: The role of hoarding level. *Frontiers in Psychology*, *12*, 2215.

Cannito, L., Di Crosta, A., Palumbo, R., Ceccato, I., Anzani, S., La Malva, P., Palumbo, R., & Di Domenico, A. (2020). Health anxiety and attentional bias toward virus-related stimuli during the COVID-19 pandemic. *Scientific Reports*, *10*(1), Article 1. doi.org/10.1038/s41598-020-73599-8

Chew, N. W. S., Lee, G. K. H., Tan, B. Y. Q., Jing, M., Goh, Y., Ngiam, N. J. H., Yeo, L. L. L., Ahmad, A., Ahmed Khan, F., Napolean Shanmugam, G., Sharma, A. K., Komalkumar, R. N., Meenakshi, P. V., Shah, K., Patel, B., Chan, B. P. L., Sunny, S., Chandra, B., Ong, J. J. Y., … Sharma, V. K. (2020a). A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. *Brain, Behavior, and Immunity*, *88*, 559-565. doi.org/10.1016/j.bbi.2020.04.049

Chew, N. W. S., Lee, G. K. H., Tan, B. Y. Q., Jing, M., Goh, Y., Ngiam, N. J. H., Yeo, L. L. L., Ahmad, A., Ahmed Khan, F., Napolean Shanmugam, G., Sharma, A. K., Komalkumar, R. N., Meenakshi, P. V., Shah, K., Patel, B., Chan, B. P. L., Sunny, S., Chandra, B., Ong, J. J. Y., … Sharma, V. K. (2020b). A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. *Brain, Behavior, and Immunity, 88*, 559-565. doi.org/10.1016/j.bbi.2020.04.049

Cunning, C., & Hodes, M. (2021). The COVID-19 pandemic and obsessive–compulsive disorder in young people: Systematic review. *Clinical Child Psychology and Psychiatry*, 13591045211028168. doi.org/10.1177/1359 1045211028169

Darvishi, E., Golestan, S., Demehri, F., & Jamalnia, S. (2020). A Cross-Sectional Study on Cognitive Errors and Obsessive-Compulsive Disorders among Young People During the Outbreak of Coronavirus Disease 2019. *Activitas Nervosa Superior*, *62*(4), 137-142. doi.org/10.100 7/s41470-020-00077-x

Davide, P., Andrea, P., Martina, O., Andrea, E., Davide, D., & Mario, A. (2020). The impact of the COVID-19 pandemic on patients with OCD: Effects of contamination symptoms and remission state before the quarantine in a preliminary naturalistic study. *Psychiatry Research*, *291*, 113213. doi.org/10.1016/j.psychres.2020.113213

Dennis, D., Radnitz, C., & Wheaton, M. G. (2021). A Perfect Storm? Health Anxiety, Contamination Fears, and COVID-19: Lessons Learned from Past Pandemics and Current Challenges. *International Journal of Cognitive Therapy*, *14*(3), 497-513. doi.org/10.1007/s41811-021-00109-7

Duan, L., & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. *The Lancet Psychiatry*, *7*(4), 300-302. doi.org/10.1016/S2215-0366(20)30073-0

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160.

Fineberg, N. A., Van Ameringen, M., Drummond, L., Hollander, E., Stein, D. J., Geller, D., Walitza, S., Pallanti, S., Pellegrini, L., Zohar, J., Rodriguez, C. I., Menchon, J. M., Morgado, P., Mpavaenda, D., Fontenelle, L. F., Feusner, J. D., Grassi, G., Lochner, C., Veltman, D. J., … Dell'Osso, B. (2020). How to manage obsessive-compulsive disorder (OCD) under COVID-19: A clinician's guide from the International College of Obsessive Compulsive Spectrum Disorders (ICOCS) and the Obsessive-Compulsive and Related Disorders Research Network (OCRN) of the European College of Neuropsychopharmacology. *Comprehensive Psychiatry, 100*, 152-174. doi.org/10.1016/j.comppsych.2020.152174

Fontenelle, L. F., & Miguel, E. C. (2020). The impact of coronavirus (COVID-19) in the diagnosis and treatment of obsessive-compulsive disorder. *Depression and anxiety*, *37*(6), 510-511.

Grant, J. E., Drummond, L., Nicholson, T. R., Fagan, H., Baldwin, D. S., Fineberg, N. A., & Chamberlain, S. R. (2022). Obsessive-compulsive symptoms and the Covid-19 pandemic: A rapid scoping review. N*euroscience & Biobehavioral Reviews*, *132*, 1086-1098. doi.org/10.1016/j.neubiorev.2021.10.039

Hassoulas, A., Umla-Runge, K., Zahid, A., Adams, O., Green, M., Hassoulas, A., & Panayiotou, E. (2022). Investigating the association between obsessive-compulsive disorder symptom subtypes and health anxiety as impacted by the COVID-19 pandemic: A cross-sectional study. *Psychological Reports*, *125*(6), 3006-3027. doi.org/10.1177/00332941 21 1040437

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. *Psychiatry research*, *288*, 112954.

Islam, Md. S., Ferdous, Most. Z., & Potenza, M. N. (2020). Panic and generalized anxiety during the COVID-19 pandemic among Bangladeshi people: An online pilot survey early in the outbreak. *Journal of Affective Disorders*, *276*, 30-37. doi.org/10.1016/j.jad.2020.06.049

Jungmann, S. M., & Witthöft, M. (2020). Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to coronavirus anxiety? *Journal of Anxiety Disorders*, *73*, 102239. doi.org /10.1016/j.janxdis.2020.102239

Kang, L., Ma, S., Chen, M., Yang, J., Wang, Y., Li, R., Yao, L., Bai, H., Cai, Z., Xiang Yang, B., Hu, S., Zhang, K., Wang, G., Ma, C., & Liu, Z. (2020). Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel

coronavirus disease outbreak: A cross-sectional study. *Brain, Behavior, and Immunity, 87,* 11-17. doi.org/10.1016/j.bbi.2020.03.028

Laposa, J. M., Collimore, K. C., Hawley, L. L., & Rector, N. A. (2015). Distress tolerance in OCD and anxiety disorders, and its relationship with anxiety sensitivity and intolerance of uncertainty. *Journal of Anxiety Disorders*, *33*, 8-14. doi.org/10.1016/j.janxdis.2015.04.003

Lau, H., Khosrawipour, T., Kocbach, P., Ichii, H., Bania, J., & Khosrawipour, V. (2021). Evaluating the massive underreporting and undertesting of COVID-19 cases in multiple global epicenters. *Pulmonology*, *27*(2), 110-115. doi.org/10.1016/j.pulmoe.2020.05.015

Magano, J., Vidal, D. G., Sousa, H. F. P. e, Dinis, M. A. P., & Leite, Â. (2021). Psychological Factors Explaining Perceived Impact of COVID-19 on Travel. *European Journal of Investigation in Health, Psychology and Education*, *11*(4), Article 4. doi.org/10.3390/ejihpe11040083

Majeed, S., Schwaiger, E. M., Nazim, A., & Samuel, I. S. (2021). The Psychological Impact of COVID-19 Among Pakistani Adults in Lahore. *Frontiers in Public Health, 9*, 578366. doi.org/10.3389/fpubh.2021.578366

Mamun, M. A., & Griffiths, M. D. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. *Asian Journal of Psychiatry*, *51*, 102073. doi.org/10.1016/j.ajp.2020.102073

Mautong, H., Gallardo-Rumbea, J. A., Alvarado-Villa, G. E., Fernández-Cadena, J. C., Andrade-Molina, D., Orellana-Román, C. E., & Cherrez-Ojeda, I. (2021). Assessment of depression, anxiety and stress levels in the Ecuadorian general population during social isolation due to the COVID-19 outbreak: A cross-sectional study. *BMC Psychiatry, 21*(1), 212. doi.org/10.1186/s12888-021-03214-1

Mazza, C., Ricci, E., Biondi, S., Colasanti, M., Ferracuti, S., Napoli, C., & Roma, P. (2020). A Nationwide Survey of Psychological Distress among Italian People during the COVID-19 Pandemic: Immediate Psychological Responses and Associated Factors. *International Journal of Environmental Research and Public Health*, *17*(9), Article 9. doi.org/10.3390/ijerph17093165

McLean, C. P., Asnaani, A., Litz, B. T., & Hofmann, S. G. (2011). Gender differences in anxiety disorders: Prevalence, course of illness, comorbidity and burden of illness. *Journal of Psychiatric Research*, *45*(8), 1027-1035. doi.org/10.1016/j.jpsychires.2011.03.006

Mertens, G., Gerritsen, L., Duijndam, S., Salemink, E., & Engelhard, I. M. (2020). Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *Journal of Anxiety Disorders*, *74*, 102258. doi.org/10.1016/j.janxdis.2020.102258

Nearchou, F., Flinn, C., Niland, R., Subramaniam, S. S., & Hennessy, E. (2020). Exploring the Impact of COVID-19 on Mental Health Outcomes in Children and Adolescents: A Systematic Review. *International Journal*

of Environmental Research and Public Health, 17(22), Article 22. doi.org/10.3390/ijerph17228479

Newby, J. M., O'Moore, K., Tang, S., Christensen, H., & Faasse, K. (2020). Acute mental health responses during the COVID-19 pandemic in Australia. *PLOS ONE, 15*(7), e0236562. doi.org/10.1371/journal.pone.0236562

Nissen, J. B., Højgaard, D. R. M. A., & Thomsen, P. H. (2020a). The immediate effect of COVID-19 pandemic on children and adolescents with obsessive compulsive disorder. *BMC Psychiatry*, *20*(1), 511. doi.org/10.1186/s12888-020-02905-5

Nissen, J. B., Højgaard, D., & Thomsen, P. H. (2020b). The immediate effect of COVID-19 pandemic on children and adolescents with obsessive compulsive disorder. *BMC Psychiatry*, *20*(1), 1-10.

Pedrosa, A. L., Bitencourt, L., Fróes, A. C. F., Cazumbá, M. L. B., Campos, R. G. B., de Brito, S. B. C. S., & Simões e Silva, A. C. (2020). *Emotional, Behavioral, and Psychological Impact of the COVID-19 Pandemic. Frontiers in Psychology*, *11*, 2635. doi.org/10.3389/fpsyg.2020.566212

Pera, A. (2020). Depressive Symptoms, Anxiety Disorder, and Suicide Risk During the COVID-19 Pandemic. *Frontiers in Psycholog*y, *11*, 572699. doi.org/10.3389/fpsyg.2020.572699

Pérez, S., Masegoso, A., & Hernández-Espeso, N. (2021). Levels and variables associated with psychological distress during confinement due to the coronavirus pandemic in a community sample of Spanish adults. C*linical Psychology & Psychotherapy*, *28*(3), 606-614. doi.org/10.1002/cpp.2523

Pieh, C., Budimir, S., & Probst, T. (2020). The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria. *Journal of Psychosomatic Research*, *136*, 110186. doi.org/10.1016/j.jpsychores.2020.110186

Poudel, K., & Subedi, P. (2020). Impact of COVID-19 pandemic on socioeconomic and mental health aspects in Nepal. *The International Journal of Social Psychiatry*, *66*(8), 748-755. doi.org/10.1177/0020764020942247

Rodríguez-Rey, R., Garrido-Hernansaiz, H., & Collado, S. (2020). Psychological Impact and Associated Factors During the Initial Stage of the Coronavirus (COVID-19) Pandemic Among the General Population in Spain. *Frontiers in Psychology*, *11*, 1540. doi.org/10.3389/fpsyg.2020.01540

Roma, P., Monaro, M., Colasanti, M., Ricci, E., Biondi, S., Di Domenico, A., Verrocchio, M. C., Napoli, C., Ferracuti, S., & Mazza, C. (2020). A 2-Month Follow-Up Study of Psychological Distress among Italian People during the COVID-19 Lockdown. *International Journal of Environmental Research and Public Health*, *17*(21), Article 21. doi.org/10.3390/ijerph17218180

Rubin, G. J., & Wessely, S. (2020). The psychological effects of quarantining a city. BMJ, m313. doi.org/10.1136/bmj.m313

Said, E., & Refaat, G. (2021). How Did the COVID-19 Pandemic Affect Higher Education Learning Experience? An Empirical Investigation of Learners' Academic Performance at a University in a Developing Country. *Advances in Human-Computer Interaction*, 2021, e6649524. doi.org/10.1155/2021/6649524

Saladino, V., Algeri, D., & Auriemma, V. (2020). The Psychological and Social Impact of Covid-19: New Perspectives of Well-Being. *Frontiers in Psychology*, *11*, 2550. doi.org/10.3389/fpsyg.2020.577684

Salari, N., Hosseinian-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., ... & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Globalization and health*, *16*(1), 1-11.

Sauer, K. S., Jungmann, S. M., & Witthöft, M. (2020). Emotional and Behavioral Consequences of the COVID-19 Pandemic: The Role of Health Anxiety, Intolerance of Uncertainty, and Distress (In) Tolerance. *International Journal of Environmental Research and Public Health*, *17*(19), Article 19. doi.org/10.3390/ijerph17197241

Shahbaz, S., Ashraf, M. Z., Zakar, R., & Fischer, F. (2021). Psychosocial, emotional and professional challenges faced by female healthcare professionals during the COVID-19 outbreak in Lahore, Pakistan: A qualitative study. *BMC Women's Health*, *21*(1), 197. doi.org/10.1186/s12905-021-01344-y

Shevlin, M., Nolan, E., Owczarek, M., McBride, O., Murphy, J., Gibson Miller, J., Hartman, T. K., Levita, L., Mason, L., & Martinez, A. P. (2020). COVID-19-related anxiety predicts somatic symptoms in the UK population. *British Journal of Health Psychology*, *25*(4), 875-882.

Shi, B., Li, S., Zhang, X., & Zhang, D. (2017). Social- versus personal-oriented purchases: Impacts of worry versus sadness on young consumers. *Journal of Consumer Marketing*, *34*(7), 566-576. doi.org/10.1108/JCM-02-2017-2117

Sica, C., Caudek, C., Cerea, S., Colpizzi, I., Caruso, M., Giulini, P., & Bottesi, G. (2021). Health Anxiety Predicts the Perceived Dangerousness of COVID-19 over and above Intrusive Illness-Related Thoughts, Contamination Symptoms, and State and Trait Negative Affect. *International Journal of Environmental Research and Public Health*, *18*(4), Article 4. doi.org/10.3390/ijerph18041933

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092-1097. doi.org/10.1001/archinte.166.10.1092

Storch, E. A., Sheu, J. C., Guzick, A. G., Schneider, S. C., Cepeda, S. L., Rombado, B. R., Gupta, R., Hoch, C. T., & Goodman, W. K. (2021).

Impact of the COVID-19 pandemic on exposure and response prevention outcomes in adults and youth with obsessive-compulsive disorder. *Psychiatry Research, 295*, 113597.

Tanir, Y., Karayagmurlu, A., Kaya, İ., Kaynar, T. B., Türkmen, G., Dambasan, B. N., Meral, Y., & Coşkun, M. (2020). Exacerbation of obsessive compulsive disorder symptoms in children and adolescents during COVID-19 pandemic. *Psychiatry Research, 293*, 113363.

Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020). Development and initial validation of the COVID Stress Scales. *Journal of Anxiety Disorders*, *72*, 102232. doi.org/10.1016/j.janxdis.2020.102232

Tzur Bitan, D., Berzin, D., & Cohen, A. d. (2020). Hidradenitis suppurativa and schizophrenia: A nationwide cohort study. *Journal of the European Academy of Dermatology and Venereology, 34*(3), 574-579. doi.org/10.11 11/jdv.15997

Vesga-López, O., Schneier, F., Wang, S., Heimberg, R., Liu, S.-M., Hasin, D. S., & Blanco, C. (2008). Gender differences in Generalized Anxiety Disorder: Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *The Journal of Clinical Psychiatry*, *69*(10), 1606-1616.

Wang, Y., Zhang, D., Du, G., Du, R., Zhao, J., Jin, Y., Fu, S., Gao, L., Cheng, Z., Lu, Q., Hu, Y., Luo, G., Wang, K., Lu, Y., Li, H., Wang, S., Ruan, S., Yang, C., Mei, C., … Wang, C. (2020). Remdesivir in adults with severe COVID-19: A randomised, double-blind, placebo-controlled, multicentre trial. The Lancet, *395*(10236), 1569-1578. doi.org/10.1016/S 0140-6736(20)31022-9

Wheaton, M. G., Messner, G. R., & Marks, J. B. (2021). Intolerance of uncertainty as a factor linking obsessive-compulsive symptoms, health anxiety and concerns about the spread of the novel coronavirus (COVID-19) in the United States. *Journal of Obsessive-Compulsive and Related Disorders*, *28*, 100605. doi.org/10.1016/j.jocrd.2020.100605

Wheaton, M. G., Ward, H. E., Silber, A., McIngvale, E., & Björgvinsson, T. (2021). How is the COVID-19 pandemic affecting individuals with obsessive-compulsive disorder (OCD) symptoms? *Journal of Anxiety Disorders, 81*, 102410. doi.org/10.1016/j.janxdis.2021.102410

Woody, S. R., Steketee, G., & Chambless, D. L. (1995). Reliability and validity of the Yale-Brown Obsessive-Compulsive Scale. B*ehaviour Research and Therapy*, *33*(5), 597-605. doi.org/10.1016/0005-7967(94)0 0076-v

World health organization (2020b). *Infection Prevention and Control for the Safe Management of a Dead Body in the Context of COVID-19: Interim Guidance. Geneva*. https://iris.who.int/bitstream/handle/10665/331538/ WHO-COVID-19-lPC_DBMgmt-2020.1-eng.pdf?isAllowed=y.& sequence=1

Wu, X., Nazari, N., & Griffiths, M. D. (2021). Using Fear and Anxiety Related to COVID-19 to Predict Cyberchondria: Cross-sectional Survey Study. *Journal of Medical Internet Research*, *23*(6), e26285. doi.org/10.2 196/26285

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, *277*, 55-64. doi.org/10.1016/j.jad.2020.08.001