

**Impact of COVID -19 on the Psychosocial Status of Saudi and Egyptian Population:
Comparative Study**

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EgyptAbstract

Background: The uncertainty and limited predictability surrounding the course of the coronavirus disease 2019 (COVID-19) pandemic has had negative consequences on people's psychosocial health status. The study **aimed** to explore the impact of COVID-19 on the psychosocial status of Saudi and Egyptian population using a comparative design. **Subjects and Method: Design:** A descriptive cross-sectional study was conducted between April 10 and 30, 2020. **Subjects:** Considering 517 participants from both countries (230 Egyptians, and 287 Saudis). For the research purpose, psychosocial status was defined as the general psychological and social conditions of the person that encompasses the anxiety, depression, and obsession feelings of the individual. **Tools** used were COVID-19 Anxiety Scale (CAS), Depressive symptoms questionnaire (DSQ), and obsessive-compulsive disorder questionnaire (OCD). **Results:** The mean psychosocial distress scores were significantly higher among Egyptian participants compared to Saudis. Anxiety was significantly lower among Saudis older than 55 years old compared to Saudis from younger ages. Among Egyptian participants, those who were married, employed, and/or older than 55 years had significantly lower depression and OCD scores; among Saudis, women and unemployed had significantly higher depression and OCD scores. Overall, anxiety, depression, and OCD scores had a significantly positive correlation with one another. **Conclusions:** Egyptians had greater prevalence rates of anxiety, depression, and OCD than Saudis. Many factors served as significant independent predictors for anxiety, depression, and OCD levels including gender, nationality, and employment status. The study reveals some factors associated with psychological impact that may be used to formulate psychological interventions to assist patients with vulnerable mental health statuses during COVID-19 pandemic and future health emergencies.

Keywords: Anxiety; COVID-19; Depression; Obsessive–compulsive disorder; Egypt; KSA.

Introduction

The new coronavirus calls for dramatic psychosocial responses to contain a pandemic of uncertain magnitude. At least in the early days of the pandemic, global interest remained limited largely to physical assessments and not mental ones. Considerable efforts to reduce transmission were enacted to control the spread of SARS-CoV-2, such as lockdowns and limitations on the sizes of public gatherings, but case numbers continued to increase despite asking those who fell ill with COVID-19 to quarantine away from others. Health authorities also worked to enact rapid public health measures such as intensive surveillance, epidemiological investigations, and the closure of public spaces to prevent its transmittance in the population. Now, as vaccination rates increase and cases recede, similar challenges are likely to be experienced with managing psychological distress resulting from the acute phase of the COVID-19 pandemic and its aftermath⁽¹⁾. Effective life support and good handling of the consequences of this crisis must be ensured worldwide, as there is no health without mental health⁽²⁾.

Psychosocial health is defined by the integration of one's thoughts, feelings, and emotions⁽³⁾. Psychosocial wellbeing refers to the aspect of rational thinking that enables people to face their challenges in a positive way. Zinger⁽⁴⁾ noted that psychosocial health is linked to one's past experiences and emotions. It also includes the various dimensions of mental health.

The direct and indirect psychological and social consequences of the global COVID-19 crisis are expected to affect current and future mental health for population. The SARS-CoV-2 virus is believed to infect a variety of areas of the body, including the central nervous, digestive, and reproductive systems⁽⁴⁾; trigger the activation of the body's immune system; and impair brain and mental health functioning^(5,6). In addition, this pandemic has had serious and widespread effects on mental health due to social isolation and restricted social activity, resulting in increased anxiety, stress, loneliness, depression, and suicidal thoughts and attempts⁽⁷⁾. To avoid the negative effects of anxiety, depression, and stress, enacting mental

health assessments and interventions to address public psychological issues, like loneliness and social isolation, should be prioritized. Importantly, depression, stress, and other negative emotions can lead to suicidal behaviors⁽⁸⁾.

During a pandemic, there are two types of anxiety. Healthy anxiety occurs when a person comes into contact with a potentially infected surface/person or exhibits respiratory signs or symptoms such as coughing, sneezing, or fever. On the other side of the coin, an unhealthy kind of anxiety may arise when someone else sneezes or coughs near them. However, these fears and anxieties can be mild and short-lived and can be alleviated through mental rehabilitation⁽⁹⁾. Likewise, the public's augmented worry might increase their distress, which could worsen underlying mental health problems. Confusion and fear of putting oneself and others at risk can increase anxiety, and emotions of paranoia and obsessive-compulsive disorder (OCD) symptoms may be realized by way of infection-related anxiety and excessive hand washing. However, supporting people's confidence and encouraging their self-

expression can help them manage their psychological distress^(10,11).

SARS-CoV-2 has had a significant impact on the mental health of the general public due to its quick evolution into a worldwide pandemic. On January 20th, China confirmed human-to-human transmission of SARS-CoV-2, with several Wuhan health workers found to be infected. Since then, the population has shown increased anxiety-related behaviors, with a significant shortage of face masks, disinfectants, soaps, gloves, and alcohol arising around the world. Similarly, as some preventive remedial strategies were suggested to be able to prevent COVID-19, the general public gathered overnight at pharmacies to purchase vitamins and mouthwash⁽²⁾.

An obsession with avoiding infection and the overwhelming urge to wash one's hands were the most common behaviors in response to the COVID-19 pandemic. Stress usually leads individuals to be afraid and to repeat the same behaviors without satisfaction. Financial instability or damage, unemployment, poverty, quarantining or remaining in isolation at home, and the media's emphasis on the importance of

sanitation were all common factors in the present crisis that led to more distress, psychosocial implications, and worse symptoms among those already infected. The increase in these symptoms may not be immediate, but it likely to be noticeable in the long term with retrospective research and could be attributed to inadequate case detection, disruption of medical services, and revisions of public health priorities ⁽¹²⁾. OCD is known to worsen six months to one year after the end of previous outbreaks, such as those of severe acute respiratory syndrome and Middle East respiratory syndrome ⁽¹³⁾.

To mitigate increases in episodes of OCD and other panic diseases during a public health disaster or emergency such as the COVID-19 pandemic, it is important to detect and address the resulting socioeconomic impacts through introducing pandemic management strategies, social support interviews, and mental health interventions to minimize such adverse effects and improve mental health. In addition, establishing a balance between infection control and the mitigation of socioeconomic adverse effects should be considered ⁽¹⁴⁾. People

should be encouraged to stay connected through social media and to maintain their personal daily lives as much as possible or to adopt alternative behaviors to meet their needs and emotions in the event of a crisis. In addition, the general public should continue to engage in healthy activities for enjoyment and relaxation, to exercise regularly, to get enough sleep, and to eat a healthy diet. To facilitate maximum care and calmness, people can seek up-to-date information and hands-on advice from the WHO website and trusted medical professionals while avoiding paying attention to rumors that enhance levels of discomfort, anxiety, and concern. For particularly anxious patients, the provision of psychological counseling, for example by phone, can help to minimize inadequate follow-up ⁽¹⁵⁾.

Significance of this study

As the global health agencies seek to find diagnostic and therapeutic tools for COVID-19, only a few psychological studies have paid attention to the impact of the COVID-19 pandemic on mental health, despite that it provoked widespread fear and anxiety. Therefore, in order to improve quality of life, it is

necessary to better understand the effects of the COVID-19 pandemic. Patients, survivors of COVID-19, and those who come in contact with COVID-19 cases may feel shame and social exclusion from those around them due to fear and panic as a cause of the pandemic. These negative emotions can lead to an increased risk of developing mental health problems, such as coping disorders, depression, and extreme fear, which can lead to illogical thoughts and dreams. Therefore, it is urgent to assess the psychological effects of the pandemic and study ways to prevent dangerous mental health problems, such as suicidal ideation, from arising due to fears of viral transmission.

Aim of this study

Our study aimed to assess the impact of COVID-19 on the psychosocial status of Saudi and Egyptian population using a comparative design during the early period of the COVID-19 pandemic.

Research question

What are the differences between Egypt and the Saudi population in their psychosocial response during COVID-19?

Subjects and Method

Design and setting:

To achieve the research purpose, this descriptive cross-sectional study was conducted between April 19 and 30, 2020, among the KSA and Egypt populations.

Study subjects:

This study included a purposive sample of 517 individuals who agreed to participate in the study. Participants were male or female and aged 18 to 55 years.

The study sample size was calculated using proportionate representation according to the population censuses of the frequency, and a design effect value of 1.0. Using the open-source OpenEpi version 3.01 software package, the minimum required sample size was determined to be 165 subjects from each country (330 from both) to assure the achievement of a 80% sampling power⁽¹⁶⁾.

Study Tools:

Tool I: Sociodemographic data and personnel characteristics:

A structured questionnaire was established by the study authors that included questions about respondent age, sex, level of education, marital status, and house ventilation and light.

Tool II: COVID-19 Anxiety Scale (CAS):

The COVID-19 Anxiety Scale from a previous study was administered ⁽¹⁷⁾. Participants reported how each item of the 7 items of the scale reflected recent behavior related to COVID 19 using maximum points of 3 (0 = not applicable to me, 3 = very applicable to me). Anxiety is measured by taking an average participant score (0 to 3), so the higher the average, the higher the level of individual anxiety about COVID 19.

Tool III: Depressive symptoms questionnaire (DSQ):

This questionnaire was designed by the study authors to assess traumatic psychological distress and measure depression symptoms among a population during the COVID-19 outbreak. It consists of 14 items with scores ranging from zero to three points (0 = not applicable to me, 3 = very applicable to me) that cover a group of

depressive symptoms, such as disturbances in mood or behaviors, and the effects of depression on sexual desire, appetite, and sleeping patterns because of the COVID-19.

Tool IV: obsessive-compulsive disorder (OCD) questionnaire:

The scale was developed by the study authors to describe how participants feel during the COVID-19 pandemic. It consists of eight items scored using a four-point Likert scale, where zero points correspond to “did not apply to me at all,” one point corresponds to “applied to me to some degree or some of the time,” two points correspond to “applied to me to a considerable degree or a good part of time,” and three points correspond to “applied to me very much or most of the time,” respectively.

Validity of the scales:

The validity of tools II, III, and IV was tested for their content by a jury of five experts in the field of psychiatric, mental health nursing, and community nursing to ascertain the relevance and completeness of the tools; then, the necessary modifications were made accordingly.

Reliability of the scales:

Tools II, III, and IV reliability were assessed by Cronbach's alpha coefficient test to ascertain their internal consistency. All three tools showed a good level of reliability as follows: CAS scale score ($\alpha = 0.88$), DSQ scale score ($\alpha = 0.81$), and OCD scale score ($\alpha = 0.87$).

Data collection and procedures:

An online, survey-based cross-sectional study was conducted in the KSA and Egypt. Social networks such as WhatsApp and Facebook (both Facebook, Inc., Menlo Park, CA, USA) were the main platforms for distribution of the questionnaire. Although the minimum required sample was estimated to be 165 participants from each country, the responses gained from each was a minimum of 230 persons and the total sample was 517 individuals in the entire study and the sampling was readily available. The participants were informed about the study nature, aims, and procedures in the questionnaire. Participant education levels varied between high school, undergraduate, and postgraduate. All participants completed

the questionnaire with no time limit, taking between five and 10 minutes to complete all four questionnaires. No limitations were reported by the participants in understanding the instructions or items. The data-collection process extended over 20 days (April 10–30, 2020).

Pilot study:

A pilot study was conducted on 10% of the estimated required study sample to test the applicability of the data-collection tool and the feasibility of the study. Those who participated in the pilot study were not included in the main study sample. Based on their recommendations and suggestions, the tool was modified and finalized for use in the main study. The pilot study also served to assess the reliability of the anxiety, depression, and OCD scales through measuring their internal consistency.

Statistical analysis:

Statistical analysis was performed using the Statistical Package for Social Science, version 23⁽¹⁸⁾. The nonparametric Mann–Whitney U test was used to compare quantitative

continuous data, while the chi-squared test was used to compare qualitative categorical variables. Fisher's exact test was used when the expected values in one or more of the cells in a 2×2 table were less than 5. For assessment of the inter-relationships among quantitative and ranked variables, Spearman's rank correlation was used. Multiple linear regression analysis was used to identify the independent predictors of the anxiety, depression, and OCD scores, with analysis of variance (ANOVA) applied for the full regression models. All tests were two-sided, and p-values of less than 0.05 were considered statistically significant, while p-values of 0.05 or greater were considered statistically insignificant (NS).

Ethical considerations:

The research proposal was submitted to the ethical committee of a Saudi medical college and was approved prior to commencing data collection. In addition, after reading the introductory information provided about the study, prospective participants were asked to provide their informed consent before starting the questionnaire. Anonymity and confidentiality were granted through

the use of survey identification numbers with no collection of personal identifiers that could be used to identify participants or to associate participants with the collected data. There was no risk of discomfort to the participants, except for the potential inconvenience of the time required to participate in the study. According to the Declaration of Helsinki, all ethical principles of human medical research were observed⁽¹⁹⁾. Additionally, official permission to use and modify the CAS questionnaire was granted by the authors⁽¹⁷⁾.

Results

The sample of the study included a sum of 517 participants, specifically 230 participants from Egypt and 287 participants from the KSA. **Table 1** shows that most participants were aged between 18 and 44 years, with mean ages of 27.7 ± 11.3 years and 25.8 ± 9.6 years for the Egyptian and Saudi participants, respectively. Among them, 48.3% of the Egyptians and 83.3% of the Saudi participants were female. Concerning education, most participants were in university phases of education (49.1% Egyptian and 70.4% Saudi participants). There were statistically

significant differences in sex, the percentage of participants who were living alone, and in the education of the participants between the two groups ($p < 0.05$).

Table 2 indicates the presence of statistically significant differences in the anxiety and OCD scores between the two groups ($p < 0.001$). Also, there was a statistically significant difference in depression scores between Egyptian and Saudi participants ($p = 0.01$). The percentage of Egyptian participants who had anxiety, depression, and OCD disorders was significantly higher than that of Saudi participants.

As shown in **Table 3**, the mean anxiety score was 1.4 ± 0.9 points, the mean depression score was 0.8 ± 0.5 points, and the mean OCD score was 0.7 ± 0.6 points for Egyptian participants, while corresponding mean scores for the participants from KSA were 1.2 ± 0.5 , 0.5 ± 0.4 , and 0.5 ± 0.5 points, respectively. Statistically significant differences were observed in these scores between the two countries, skewing toward Egypt ($p < 0.001$).

Regarding the relationship between anxiety and Egyptian participants' characteristics, **Table 4a** shows that there was no significant variation in anxiety scores based on said characteristics. Meanwhile, **Table 4b** reports on differences in anxiety scores based on Saudi participants' characteristics: a statistically significant difference was detected in anxiety scores based on participants' ages (the lowest mean anxiety scores was found among participants aged older than 55 years), whereas, no statistically significant difference was found in the anxiety scores of Saudi participants based on other characteristics, such as sex, marital status, education, and living alone.

Table 5a reveals a statistically significant difference in mean depression scores based on Egyptian age ($p = 0.006$) marital status and job ($p = 0.001$). Married, employed participants and those older than 55 years of age had the lowest mean depression scores. Concerning the variation in mean depression scores based on Saudi participants' characteristics, **Table 5b** shows that mean depression scores were

significantly higher among female and unemployed participants.

Table 6a shows the difference in mean OCD scores based on Egyptian participants' characteristics. The findings revealed that mean OCD scores were significantly lower for married, employed participants and those who were older than 55 years. Similarly, **Table 6b** shows the difference in mean OCD scores depending on Saudi participants' characteristics. Female and unemployed participants scored significantly higher on the OCD scale compared to males and employed participants.

Regarding the correlation's matrix of anxiety, depression, and OCD scores with some sociodemographic characteristics, **Table 7** demonstrates that anxiety, depression, and OCD had a significantly positive correlation with one another in the whole study sample and among the Egyptians and Saudi participants, respectively, as well. Moreover, the age of participants had a significantly negative correlation with both depression and mean OCD scores. Among Egyptian participants specifically, a statistically significant

negative correlation was detected between participants' educational level and their depression mean score.

Figure 1 demonstrates the existence of a statistically significant positive correlation between anxiety and depression scores. Also, the scores of both anxiety and depression were significantly and positively correlated with OCD.

The multivariate analysis in **Table 8** shows that the nationality of Saudi participants was a significantly negative independent predictor of anxiety, whereas female sex was a positive independent predictor of the anxiety score. Together, these two factors explain 0.04% of the variation in anxiety scores. Meanwhile, **Table 9** demonstrates that age, employment status, and the nationality of Saudi participants was a statistically significant negative independent predictor of depression mean score. On the other hand, female sex and living alone were positive predictors of the depression mean score.

Finally, as shown in **Table 10**, employment status and the nationality of

Saudi participants were significantly predictor of the OCD mean score; these negative independent predictors of the three factors together explain 0.08% of the OCD mean score, whereas female sex the variation in the OCD score was a significantly positive independent

Table 1 : Sociodemographic characteristics of the participants in the study sample according to their nationality

Sociodemographic characteristics	Nationality				χ^2 test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	No.	%	No.	%		
Age (years):						
< 18	35	15.2	10	3.5		
18–44	159	69.1	247	86.1		
45–54	29	12.6	23	8.0		
≥ 55	7	3.0	7	2.4		
Range	17–65		17–55			
Mean ± SD	27.7 ± 11.3		25.8 ± 9.6		0.18	0.68
Median	25.0		25.0			
Sex:						
Male	119	51.7	48	16.7		
Female	111	48.3	239	83.3	71.58	< 0.001*
Marital status:						
Unmarried	121	52.6	166	57.8		
Married	109	47.4	121	42.2	1.41	0.23
Education:						
Basic/intermediate	52	22.6	71	24.7		
University	113	49.1	202	70.4	55.39	< 0.001*
Postgraduate	65	28.3	14	4.9		
Living alone:						
No	205	89.1	274	95.5		
Yes	25	10.9	13	4.5	7.54	0.006*
Job status:						
Unemployed	114	49.6	162	56.4		
Working	116	50.4	125	43.6	2.43	0.12

(*) Statistically significant at p < 0.05

Table 2: Anxiety, depression, and OCD status among participants by nationality

	Nationality				χ^2 test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	No.	%	No.	%		
Cutoff: mean + 1 SD						
Anxiety:						
Present	61	26.5	27	9.4	26.48	< 0.001*
Absent	169	73.5	260	90.6		
Depression:						
Present	48	20.9	36	12.5	6.50	0.01*
Absent	182	79.1	251	87.5		
OCD:						
Present	54	23.5	32	11.1	13.99	< 0.001*
Absent	176	76.5	255	88.9		

(*) Statistically significant at $p < 0.05$ **Table 3:** Comparison between Saudis and Egyptians Psychosocial status

Condition	Nationality				Mann–Whitney U test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	Mean \pm SD	Median	Mean \pm SD	Median		
Anxiety	1.4 \pm 0.9	1.00	1.2 \pm 0.5	1.00	19.70	< 0.001*
Depression	0.8 \pm 0.5	0.64	0.5 \pm 0.4	0.43	38.13	< 0.001*
OCD	0.7 \pm 0.6	0.63	0.5 \pm 0.5	0.38	19.34	< 0.001*

(*) Statistically significant at $p < 0.05$

Table 4a: Comparison of Egyptians' anxiety scores by their sociodemographic characteristics

	Anxiety score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	1.4 ± 0.5	1.00	3.27	0.35
18–44	1.4 ± 0.6	1.00		
45–54	1.4 ± 0.7	1.00		
≥ 55	1.1 ± 0.4	1.00		
Sex:				
Male	1.4 ± 0.6	1.00	0.78	0.38
Female	1.5 ± 0.6	1.00		
Marital status:				
Unmarried	1.5 ± 0.6	1.00	2.34	0.13
Married	1.4 ± 0.6	1.00		
Education:				
Basic/intermediate	1.4 ± 0.5	1.00	0.13	0.94
University	1.4 ± 0.6	1.00		
Postgraduate	1.4 ± 0.7	1.00		
Living alone:				
No	1.4 ± 0.6	1.00	0.02	0.90
Yes	1.4 ± 0.7	1.00		
Job status:				
Unemployed	1.5 ± 0.6	1.00	0.93	0.34
Working	1.4 ± 0.6	1.00		

Table 4b: Comparison of Saudis' anxiety scores by their sociodemographic characteristics

	Anxiety score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	1.6 ± 0.7	1.50	9.77	0.02*
18–44	1.2 ± 0.5	1.00		
45–54	1.3 ± 0.5	1.00		
≥ 55	0.9 ± 0.4	1.00		
Sex:				
Male	1.1 ± 0.5	1.00	2.38	0.12
Female	1.2 ± 0.5	1.00		
Marital status:				
Unmarried	1.2 ± 0.5	1.00	0.57	0.45
Married	1.2 ± 0.5	1.00		
Education:				
Basic/intermediate	1.2 ± 0.6	1.00	0.04	0.98
University	1.2 ± 0.5	1.00		
Postgraduate	1.2 ± 0.4	1.00		
Living alone:				
No	1.2 ± 0.5	1.00	0.95	0.33
Yes	1.1 ± 0.5	1.00		
Job status:				
Unemployed	1.2 ± 0.5	1.00	0.28	0.59
Working	1.2 ± 0.5	1.00		

(*) Statistically significant at $p < 0.05$

Table 5a: Comparison of Egyptians' depression scores by their sociodemographic characteristics

	Depression score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.9 ± 0.5	0.71	12.33	0.006*
18–44	0.8 ± 0.5	0.71		
45–54	0.6 ± 0.4	0.50		
≥ 55	0.3 ± 0.3	0.36		
Sex:				
Male	0.7 ± 0.5	0.57	3.62	0.06
Female	0.8 ± 0.5	0.71		
Marital status:				
Unmarried	0.9 ± 0.5	0.79	11.31	0.001*
Married	0.7 ± 0.4	0.57		
Education:				
Basic/intermediate	0.8 ± 0.5	0.71	4.79	0.09
University	0.8 ± 0.5	0.79		
Postgraduate	0.7 ± 0.5	0.57		
Living alone:				
No	0.8 ± 0.5	0.64	0.00	0.97
Yes	0.8 ± 0.5	0.64		
Job status:				
Unemployed	0.9 ± 0.5	0.79	10.81	0.001*
Working	0.7 ± 0.4	0.57		

(*) Statistically significant at $p < 0.05$

Table 5b: Comparison of Saudis' depression scores by their sociodemographic characteristics

	Depression score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.8 ± 0.8	0.61	4.67	0.20
18–44	0.5 ± 0.4	0.43		
45–54	0.5 ± 0.3	0.50		
≥ 55	0.3 ± 0.4	0.21		
Sex:				
Male	0.4 ± 0.3	0.29	9.28	0.002*
Female	0.6 ± 0.5	0.43		
Marital status:				
Unmarried	0.6 ± 0.5	0.43	2.35	0.13
Married	0.5 ± 0.4	0.36		
Education:				
Basic/intermediate	0.5 ± 0.5	0.36	0.34	0.84
University	0.5 ± 0.4	0.43		
Postgraduate	0.4 ± 0.4	0.40		
Living alone:				
No	0.5 ± 0.4	0.43	0.19	0.66
Yes	0.6 ± 0.4	0.50		
Job status:				
Unemployed	0.6 ± 0.5	0.50	7.99	0.005*
Working	0.4 ± 0.4	0.36		

(*) Statistically significant at $p < 0.05$

Table 6a: Comparison of Egyptians' OCD scores by their sociodemographic characteristics

	OCD score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.7 ± 0.6	0.75	9.18	0.03*
18–44	0.7 ± 0.6	0.63		
45–54	0.5 ± 0.8	0.38		
≥ 55	0.3 ± 0.4	0.13		
Sex:				
Male	0.6 ± 0.5	0.50	2.62	0.11
Female	0.8 ± 0.6	0.75		
Marital status:				
Unmarried	0.8 ± 0.6	0.75	7.34	0.007*
Married	0.6 ± 0.5	0.38		
Education:				
Basic/intermediate	0.7 ± 0.5	0.63	5.93	0.051
University	0.8 ± 0.6	0.75		
Postgraduate	0.6 ± 0.6	0.38		
Living alone:				
No	0.7 ± 0.6	0.63	0.13	0.72
Yes	0.8 ± 0.7	0.63		
Job status:				
Unemployed	0.8 ± 0.6	0.75	7.27	0.007*
Working	0.6 ± 0.5	0.50		

(*) Statistically significant at $p < 0.05$

Table 6b: Comparison of Saudis' OCD scores by their sociodemographic characteristics

	OCB score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.9 ± 0.8	0.63	4.55	0.21
18–44	0.5 ± 0.4	0.38		
45–54	0.5 ± 0.5	0.38		
≥ 55	0.3 ± 0.4	0.13		
Sex:				
Male	0.3 ± 0.4	0.19	14.63	< 0.001*
Female	0.5 ± 0.5	0.38		
Marital status:				
Unmarried	0.5 ± 0.5	0.38	1.32	0.25
Married	0.4 ± 0.4	0.38		
Education:				
Basic/intermediate	0.5 ± 0.5	0.38	1.58	0.45
University	0.5 ± 0.5	0.38		
Postgraduate	0.3 ± 0.3	0.25		
Living alone:				
No	0.5 ± 0.5	0.38	0.59	0.44
Yes	0.4 ± 0.5	0.25		
Job status:				
Unemployed	0.5 ± 0.5	0.38	10.95	0.001*
Working	0.4 ± 0.4	0.25		

(*) Statistically significant at $p < 0.05$

Table 7: Correlation matrix of anxiety, depression, and OCD scores as well as age and education by nationality

	Spearman's rank correlation coefficient		
	Anxiety	Depression	OCD
Egyptian (n = 230)			
Anxiety			
Depression	0.484**		
OCD	0.512**	0.681**	
Age	-0.079	-0.270**	-0.160*
Education	0.031	-0.139*	-0.111
Saudi Arabian (n = 287)			
Anxiety			
Depression	0.321**		
OCD	0.379**	0.614**	
Age	-0.033	-0.153**	-0.152*
Education	-0.012	-0.027	-0.035
Total (N = 517)			
Anxiety			
Depression	0.419**		
OCD	0.470**	0.654**	
Age	-0.055	-0.196**	-0.144**
Education	0.043	-0.029	-0.043

(*) Statistically significant at $p < 0.05$ (**) Statistically significant at $p < 0.01$

Table 8: Best-fitting multiple linear regression model for anxiety scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	1.54	0.10		15.543	< 0.001	1.34	1.73
Saudi	-0.25	0.05	-0.22	-4.808	< 0.001	-0.35	-0.15
Female sex	0.09	0.05	0.08	1.685	0.093	-0.02	0.20

r-squared = 0.04

Model ANOVA: F = 11.57; p < 0.05

Variables entered and excluded: age, education, marital status, job status, and living alone

Table 9: Best-fitting multiple linear regression model for depression scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	1.11	0.11		10.232	< 0.001	0.89	1.32
Saudi	-0.28	0.04	-0.29	-6.536	< 0.001	-0.36	-0.20
Age	-0.01	0.00	-0.15	-3.117	0.002	-0.01	0.00
Female sex	0.10	0.05	0.10	2.075	0.038	0.01	0.20
Living alone	0.15	0.08	0.08	1.928	0.054	0.00	0.31
Employed	-0.10	0.05	-0.10	-2.106	0.036	-0.19	-0.01

r-squared = 0.11

Model ANOVA: F = 14.31; p < 0.05

Variables entered and excluded: education, and marital status

Table 10: Best-fitting multiple linear regression model for OCD scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	0.85	0.11		8.106	< 0.001	0.65	1.06
Saudi	-0.28	0.05	-0.27	-5.854	< 0.001	-0.38	-0.19
Female sex	0.13	0.05	0.12	2.451	0.015	0.03	0.24
Employed	-0.14	0.05	-0.13	-2.902	0.004	-0.23	-0.04

r-squared = 0.08

Model ANOVA: F = 15.73; p < 0.05

Variables entered and excluded: age, education, marital status, job status, and living alone

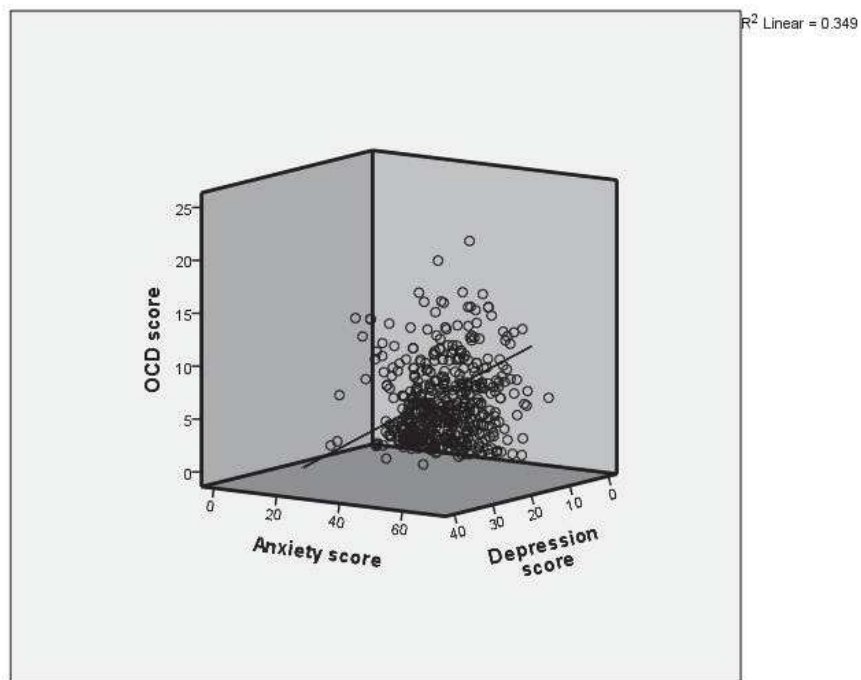


Figure 1: Correlation matrix of anxiety, depression, and OCD scores.

Discussion

The COVID-19 pandemic caused many sources of stress, including health concerns, isolation-related stress, relationship conflicts, and long-term financial stress. Stressful changes in gut microbiota and gut permeability as well as changes in circadian rhythm have remarkable effects on cell immunity, including the response to COVID-19⁽²⁰⁾. Many of the effects of stress are mediated by changes in immune cell energy regulation in the mitochondria of these responding cells. Stress, including high levels of stress associated with existing medical conditions, together with many of its symptoms, can make individuals more susceptible to serious infections⁽²¹⁾.

Regarding the characteristics of our study sample, the number of Saudi participants in the study was greater than the number of Egyptian participants. This discrepancy in the participation rate was most probably due to the fact that Saudi individuals had higher levels of enthusiasm to participate in research studies; better Internet access; and more open-minded awareness and knowledge among the community about the importance of the problem, the rapid spread of the SARS-CoV-

2 virus in Saudi community, and the desire to understand prevention measures to protect themselves from COVID-19. Additionally, Saudi participants seek to understand the psychological problems that they were exposed to during social isolation in order to rid themselves of such problems. This result is congruent with those of Alyami et al. (2021)⁽²²⁾, who found that the majority of their study sample was Saudi.

Concerning the personal characteristics of the Saudi portion of our study sample, our investigation revealed that the greatest percentage of Saudi participants were married, had a university education, employed, and of a majority age. Such a group of Saudi people, who are married, employed, adults, and highly educated could have greater levels of responsibility, knowledge, and enough experience in life to make them desire and have the willingness to contribute to our study. Our findings are comparable to those of Alyami et al. (2021)⁽²²⁾ and Shahin and Hussien (2020)⁽²³⁾, who stated that the majority of their Saudi sample was married, had a university education, employed, and of a majority age.

In addition, our study determined that most Saudi participants were female. Saudi women generally have more freedom and free time to agree and engage in research than men. On the contrary, Alkwiese et al. (2020) ⁽²⁴⁾ emphasized that most of their Saudi participants were men. In contrast, Egyptian men were more active than Egyptian women in our study sample, which is attributed to the fact that many Egyptian women refused inclusion in this study because of the mental load and feelings of hopelessness and helplessness; stress; and the burden of COVID-19 on their lives, their family, and their children. This result was congruent with that of a recent study by Hussien and Shahin (2020) ⁽²⁵⁾ conducted in Egypt, which found that the percentage of male participants exceeded that of female ones in their study sample. In the opposite way, female participants were significantly more prevalent than male ones in a different recent study from Egypt ⁽²⁶⁾. Also, Meng et al. (2020) ⁽²⁷⁾ showed that the number of non-Saudi female participants was higher than that of non-Saudi males.

The current study results showed that Egyptians had greater prevalence rates of anxiety, depression, and OCD than Saudis. The explanation for these findings is that the

Saudi government has provided safe nutritional support and financial subsidy for survival and enacted preventive measures like mask-wearing and social distancing promptly, even before the first COVID-19 case was confirmed in the KSA, which may have reduced early levels of public stress and anxiety. Other measures included the prevention of any unnecessary gatherings; a transient closing of educational institutions and mosques; and postponement or canceling of religious events such as Umrah, entertainment, and sporting events. These measures were carried out with compulsive curfew implementation for the public health interest despite the socioeconomic, political, and religious challenges. In accordance with our results, Shahin and Hussien (2020) ⁽²³⁾ detected higher levels of depression, anxiety, and stress among Egyptians than among Saudis during the COVID-19 crisis. Moreover, feelings of uncertainty were found to be remarkably more prevalent among Egyptian university students than Saudi participants during the pandemic ⁽²⁸⁾. Also, Qiu et al. (2020) ⁽²⁹⁾ reported increased prevalence rates of anxiety, depression, and OCD during the COVID-19 pandemic among study participants due to enhanced public panic.

The present study revealed an increased prevalence of depression, anxiety, and OCD among Saudis of younger ages. This finding might be due to the fact that the youth are full of energy, and their happiness is contingent on actions such as traveling and gathering together. Unfortunately, the COVID-19 pandemic has deprived younger individuals worldwide of fun times with each other in clubs or other places of enjoyment, which may increase the possibility of progression of depression, anxiety, and other psychiatric problems. In the same way, Wang et al. (2020) ⁽³⁰⁾ reported an increase in anxiety, depression, and OCD in the young age group.

The current study reported higher mean scores of depression, anxiety, and OCD in female Saudi participants. These findings may be attributed to the fact that Saudi women are used to living on welfare and usually receive financial support from their husbands or their parents that permit their walking to recreational places and picnic with their friends or relatives and shopping for clothes and other things. With the COVID-19 pandemic, they became deprived of such enjoyable and fun times due to the social distancing and strict rules enacted by the Saudi government to reduce the transmission of SARS-CoV-2. Similarly,

Wang et al. (2020) ⁽³⁰⁾ observed an increase in anxiety, depression, and OCD among Saudi women more than Saudi men. On the contrary, Alyami et al. (2021) ⁽²²⁾ emphasized that prevalence rates of anxiety, depression, and OCD were greater in men of older ages in their KSA population study.

The current study mentioned that the mean scores of anxiety, depression, and OCD among female Egyptian participants were insignificantly higher than those for male ones. The explanation for this finding might be that Egyptian women are responsible for the family and household needs, so they were worried about their family contracting COVID-19 and were affected economically as well, which placed a heavy burden on them due to their inability to meet their children's needs given the multiple responsibilities they had. Kazmi et al. (2020) ⁽³¹⁾ agreed with the results of our study, finding a greater level of anxiety among female participants than male ones.

Concerning the age of Egyptian participants, the present study mentioned that depression and anxiety were more common among those of younger ages. This occurrence could be due to the social distancing and closures of schools, cafes, universities, and clubs that made young people have to stay home all the

time, leading to boredom and pushing them to quarrel more frequently with their family members and siblings. This finding was similar to that of a study by Kazmi et al. (2020) ⁽³¹⁾, which detailed a higher level of psychological problems among younger than elderly participants during the COVID-19 pandemic. In contrast, Qiu et al. (2020) ⁽²⁹⁾ reported that the depression level was insignificantly different based on the age of participants in China.

Regarding the employment-related impact among the Egyptian participants, our study demonstrated that anxiety, depression, and mean OCD scores were greater among unemployed individuals. In the same vein, Kazmi et al. (2020) ⁽³¹⁾ emphasized that depression and anxiety were more common in unemployed people than employed ones.

The present study illustrated that the mean score of anxiety among Egyptian participants was the highest, followed in descending order by those of depression and OCD. In opposition, Lai et al. (2020) ⁽¹⁾ and Wang et al. (2020) ⁽³⁰⁾ found that the prevalence of psychiatric problems in non-Saudi participants was arranged in ascending order as follows: anxiety, depression, and OCD.

Regarding the correlation between anxiety, depression, and OCD in the Saudi population, the current study stated that there was a significantly positive correlation. This may be due to a fear of contracting COVID-19 and the stress related to such fears, which made them anxious about their health and caused them to behave in an obsessive manner, washing hands and clothes excessively, avoiding touching anything or any person, acting in a ritualistic manner in all areas of life, and thinking very much about the ideas of infection and death from SARS-CoV-2. These restrictive and routine manners made such individuals become very sad and depressed. Correspondingly, Harper et al. (2020) ⁽³²⁾ noticed increased OCD behaviors among participants aiming to protect themselves from viral contamination, such as increased social distancing and hand hygiene practices, together with heightened anxiety and depression levels. Similarly, a study by Ahorsu et al. (2020) ⁽³³⁾ demonstrated the same outcomes as ours.

Concerning the correlation among anxiety, depression, and OCD of the Egyptian participants, our study stated that there was a significantly positive correlation. Likewise, Abba-Aji et al. (2020) ⁽³⁴⁾ found that there was a significantly positive correlation

between anxiety, depression, and OCD of the participants in their study.

Conclusions

This study concluded that Egyptian participants had a remarkably higher stress level, including in the areas of anxiety, depression, and OCD, concerning COVID-19 compared to Saudi participants. In greater detail, anxiety was significantly lower in Saudi adults over the age of 55 years. However, married and employed participants and participants over 55 years old had significantly lower mean OCD and depression scores among Egyptians than single, unemployed, and younger participants. Female and unemployed individuals had significantly higher depression and mean OCD scores in the Saudi group than male and employed participants. On the other hand, the mean scores for anxiety, depression, and OCD were significantly correlated.

Participants' age was significantly inversely correlated with both depression and mean OCD scores. In addition, a statistically significant negative correlation was found between participants' educational level and mean depression scores, especially in Egypt.

Following the regression analysis, the nationality of the Saudi participants was deemed an independent negative predictor of anxiety. In addition, the age, employment status, and nationality of Saudi participants were statistically significant independent negative predictors of the mean depression score. The employment status and nationality of Saudi participants were also significantly negative independent predictors of the mean OCD score, while female sex was a significantly positive independent predictor of the mean OCD score.

Recommendations

In short, concerning the current situation associated with COVID-19, the public's mental health requires more attention from governmental, private, and nongovernmental organizations. Society needs to pay greater attention to seniors when major public health emergencies or pandemic crises occur and provide them with more human care and psychological interventions. Also, using psychological counseling and psychoeducation, social media can help to avoid poor follow-up and provide a good understanding of the impacts of a health emergency on the public's mental health, promoting mental wellness. It is recommended to construct an evidence-

based, tailored mental health promotion program that focuses on improving psychological and psychiatric health, reducing stress and anxiety among people, and enhancing the coping strategies available for application in catastrophic and long-lasting crises.

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