Journal of Islamic Nursing, 2022, 7(1), 1-8
DOI : https://doi.org/10.24252/join.v7i1.27606
Submitted 22 February 2022, Accepted 22 May 2022

pISSN 2528-2549; eISSN 2549-5127

CORONAVIRUS VARIANTS-ASSOCIATED-PSYCHOLOGICAL DISTRESS IN ARAB COMMUNITIES

Mahmoud Abdel Hameed Shahin[1*]
[1]Associate Professor of Critical Care Nursing, Nursing Department, Mohammed Al-Mana College for Medical Sciences, Dammam, Kingdom of Saudi Arabia
*E-mail: Mahmood81us@yahoo.com, M.shahin@machs.edu.sa

Abstract

The confusion surrounding the coronavirus disease (COVID-19) pandemic and its variants, such as Delta and Omicron, has created negative health and psychological consequences globally. The study aimed to compare the psychological influence of the COVID-19 variants on the general population of two Arab countries after some time of the pandemic. A descriptive, comparative, cross-sectional study was carried out in January 2022 on 1,219 participants from the Kingdom of Saudi Arabia (KSA) and Egypt. The COVID-19 anxiety scale (CAS), depressive symptoms questionnaire (DSQ), and obsessive-compulsive disorder (OCD) questionnaire were used to assess the psychosocial status of the participants. The results revealed a statistically significant difference in all psychological distress parameters between Egyptian and Saudi participants with Egyptians more likely to suffer psychological problems. Egyptians had more psychological distress than Saudis during the pandemic of the COVID-19 variants. The findings also revealed that the anxiety, depression, and OCD scores had a significantly positive correlation with each other. In conclusion, the study indicated a difference in the psychological state of the population and showed different reactions to this epidemic and varying levels of responses to the Corona pandemic and its variants. It is recommended to use psychological counseling and psychoeducation via social media taking into consideration the psychosocial and financial factors of the population to avoid poor follow-up and provide insight into the impact of a health emergency on the public's psychological well-being over an extended period.

Keywords*: Anxiety, COVID-19 variants, depression, obsession, and psychological distress*

Introduction

COVID-19, a novel respiratory illness caused by infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused a worldwide pandemic, and research suggests that individuals with underlying medical conditions, like diabetes, hypertension, and cardiovascular disease, are at increased risk of more severe health outcomes following infection (Zhang et al., 2020). At illness onset, common signs and symptoms of COVID-19 include fever (98%), cough (76%), shortness of breath (55%), fatigue (44%), sputum production (28%), headache (8%), coughing up blood (5%), and diarrhea (3%) (World Health Organization, 2020). The consequences of COVID-19 include acute respiratory distress syndrome and acute heart injury with secondary bacterial infection (Huang et al., 2020).

In the months following the global spread of COVID-19, a growing volume of research on the virus's effects on humans arose. To date, local and universal health organizations, including the World Health Organization (WHO), continue to provide live updates, information, and recommendations on COVID-19 transmission, variants, and mortality rates from around the world. In 2021, The Centers for Disease Control and Prevention has identified two main variants of the virus (SARS-CoV-2) that causes coronavirus disease 2019 (COVID-19) as variants of concern, namely, Delta and Omicron, which triggered the recommendation of the third poster dose of COVID-19 globally (CDC, 2021).

The mere fact is that the global interest remained largely limited to physical rather than mental assessments of people throughout the pandemic. Psychosocial health is defined as the state of integration of a person's thoughts, feelings, and emotions (Zinger, 2011). The COVID-19 pandemic had severe and widespread effects on mental health due to social isolation and limited social functioning, leading to increased anxiety, stress, loneliness, depression, and suicidal intention (Matthews et al., 2019). Indeed, effective life support and proper management of the consequences of this crisis must be ensured worldwide, as there is no health and well-being without mental health (Chen et al., 2020).

Significance of the study: To improve quality of life, a better understanding of the impact of the COVID-19 pandemic is needed. Patients, COVID-19 survivors, and those in direct contact with COVID-19 cases may experience stigma and social exclusion from those around them due to the fear and panic associated with the pandemic and the uncertainty associated with the COVID-19 variants. These negative emotions can lead to an increased risk of developing mental health problems, such as adaptation disorders, depression, extreme anxiety, and fear, which can lead to irrational thoughts and nightmares. Much research has been conducted to study the psychological impact of the Coronavirus on the general population in several countries around the world at the beginning of the emergence of the Corona pandemic, but it was important to study these psychological consequences on citizens and residents after some time of pandemic and its transformation from an emergency situation to a chronic disaster that we live daily to know the extent of the psychological impact or psychological wellbeing of people in selected Arab countries. Therefore, it was important to assess the psychological effects of the pandemic and find ways to prevent the onset of dangerous mental health problems caused by fear of contracting the COVID-19 and its multiple variants.

The current study **aimed** to compare psychological distress (anxiety, OCD, and depressive symptoms) between two population groups, one from Saudi Arabia and the other from Egypt, during the pandemic of COVID-19 and its variants.

Research questions: The study had three research questions: 1) What are the sociodemographic characteristics of the participants? 2) What is the level of psychological distress during coronavirus variants among participants? 3) Is there a difference in psychological distress among participants based on their nationalities?

Methods

Research Design and Setting

A descriptive, comparative, cross-sectional study was conducted in January 2022 on populations from KSA and Egypt. The two countries were chosen because of the ease of collecting data from them for the researcher, in addition to the fact that these are two of the largest Arab countries and had high numbers of COVID-19 variants cases during the pandemic (World Health Organization, 2022). Those two countries were targeted by the researcher in many similar studies since the time of the emergence of COVID-19 in the world.

Sample and Sampling

This study involved a convenience sample of 1,219 people from both KSA (589 participants, 48.32%) and Egypt (630 participants, 51.68%). The population of Egypt is high, and it is more than three times the population of Saudi Arabia. The required study sample size was estimated based on the Saudi and Egyptian censuses at a confidence level of 97%, with a confidence limit of 5%, a predicted frequency of 50%, and the design effect value at 1.0. Using the open-source free OpenEpi software package version 3.01, the minimum sample size required was 471 participants from each country, however, the sample size was increased to a total of 1,219 subjects to ensure that 97% of the sampling power was achieved (Dean, Sullivan, & Soe., 2013).

Study Tools

The current study used a questionnaire that encompassed four main parts to collect data regarding the sociodemographic characteristics of the participants, their anxiety, depression, and obsessive-compulsive disorder manifestations.

I. Socio-demographic data and personal characteristics: designed to gather information regarding the participants' age, sex, level of education, marital status, and other details.

II. COVID-19 Anxiety Scale (CAS): The COVID-19 anxiety scale was adopted from a previous study (Silva et al., 2020). Participants reported how each of the tool's seven items reflected their recent behavior related to COVID-19 using a Likert scale ranging from zero (not applicable to me) to three (very applicable to me). Anxiety was measured by taking the average scores from the participants (0–3), so the higher the average score, the higher the individual's anxiety level about COVID-19.

III. Depressive Symptoms Questionnaire (DSQ): This questionnaire was designed by the study's author using the available literature to assess psychological distress and measure the population's depressive symptoms during the COVID-19 outbreak. It consists of 14 items with scores ranging from (0-3), where zero means doesn't apply to me at all, and three corresponds to applies to me a lot or most of the time. The total score of the DSQ ranged between zero and 42, and the items of the questionnaire covered a group of depressive symptoms, such as mood or behavior disturbances, and the effect of depression on libido, cravings, appetite, and sleeping habits during the COVID-19 pandemic.

IV. Obsessive-Compulsive Disorder (OCD) Questionnaire: The study's author developed this scale to describe how

participants felt during the COVID-19 pandemic concerning obsession in terms of hand hygiene and alcohol hand rub practices, social distancing, and physical contact behaviors. It consists of eight items rated on a four-point Likert scale, where zero corresponds to doesn't apply to me at all, and three corresponds to applies to me a lot or most of the time. The total score of the OCD questionnaire ranged from zero to twenty-four for each participant.

Validity and Reliability of the Scales

The study tool was piloted on 10% of the research's required sample to test the scales' applicability and the research's feasibility. Participants in the pilot study were excluded from the main study sample. Based on the respondents' recommendations, the instrument was modified and refined for use in the primary study. The content validity of tools II, III, and IV was examined by a panel of five experts in the field of psychology, psychiatry, mental health nursing, and community nursing to verify the appropriateness of the tools. Then, the necessary modifications were made accordingly. Reliability was assessed by Cronbach's alpha test to check the scales' internal consistency. Three tools showed acceptable reliability as follows: CAS scale ($\alpha = 0.82$), DSQ scale ($\alpha = 0.85$), and OCD scale ($\alpha = 0.83$). The tools were used in a former similar study conducted by the researcher within a research team and reflected acceptable reliability for the three scales (El-slamoni et al., 2022).

Data Collection and Procedures:

An online question-pro survey was distributed to the public in Saudi Arabia and Egypt during January 2022. Social networks, such as WhatsApp and Facebook (both Facebook, Inc., Menlo Park, CA, USA), were the main distribution platforms for the questionnaire to the available sample. The link allows the participant to fill out the questionnaire only once to ensure that there is no repetition. Participants were informed about the nature, objectives, and procedures of the study in the questionnaire. All the participants completed all four questionnaire portions in five to 10 minutes, though there was no time limit. The participants did not report any problems understanding the instructions or items.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences, Version 26 (IBM Corporation, 2019). 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. To evaluate the interrelationships between the quantitative and ranked variables, the secondary correlation Spearman's rank was used. All tests were two-sided, and a p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

The research proposal was submitted to the ethics committee of a Saudi medical school and approved before dat collection commenced (Ethical Approval No. SECD 16-14/11/2021). In addition, after reading the introductory information provided in the study, potential participants were asked to provide autonomous informed consent before starting the questionnaire with having the full right to decide not to participate or withdraw anytime. Anonymity and confidentiality were granted using survey identifiers without the need to collect personal identifiers that could be used to identify participants or link participants to the collected data. There was no risk of harm or discomfort to the participants, except for the potential inconvenience of the time it took to participate in the study. All ethical considerations of the scientific research were strictly followed throughout the research implementation process.

Results

The results of the current research are illustrated in four tables. The study sample consisted of a total of 1,219 participants—630 participants from Egypt and 589 participants from Saudi Arabia. Table 1 shows that most of the participants were between the ages of 18 and 44 years old, with a mean age of 27.3 and 26.1 years for Egyptian and Saudi participants, respectively. Female representation was greater in the Saudi community as 80.48% of Saudis and 48.1% of Egyptians were female. In terms of educational attainment, most of the participants were university graduates (49.52% Egyptians and 68.76 % Saudis); However, postgraduate holder participants were more from Egypt compared with Saudi Arabia (26.03% vs 5.43%).

Table 1: Participants' sociodemographic characteristics according to nationality (N=1219)

Sociodemographic Data		Egyptian (n = 630)		Saudi Arabian (n = 589)	
		No.	%	No.	%
Age (years)	< 18	116	18.41	23	3.90
	18–44	387	61.43	501	85.06
	45–54	98	15.56	50	8.49
	≥ 55	29	4.60	15	2.55
	Mean ± SD	27.3 ± 11.7		26.1 ± 10.2	
Gender	Male	327	51.90	115	19.52
	Female	303	48.10	474	80.48
Marital status	Unmarried	326	51.75	337	57.22
	Married	304	48.25	252	42.78
Education	School	154	24.44	152	25.81
	Undergraduate	312	49.52	405	68.76
	Postgraduate	164	26.03	32	5.43

Table 2 reflects the presence of a statistically significant difference in the percentage of people who had symptoms of anxiety, depression, and OCD in the two countries ($p < 0.001$). The percentage of Egyptians with anxiety disorders, depression, and OCD disorders was significantly higher than that of the Saudi participants ($p < 0.001$).

Table 2: Psychological distress among participants based on nationality (N=1219)

Psychological distress Cut off: Mean + 1 SD		Egyptian (n = 630)		Saudi Arabian (n = 589)		χ^2 test	p-value
		No.	%	No.	%		
Anxiety	Present	188	29.84	62	10.53	27.33	< 0.001*
	Absent	442	70.16	527	89.47		
Depression	Present	149	23.65	74	12.56	9.32	< 0.001*
	Absent	481	76.35	515	87.44		
OCD	Present	174	27.62	76	12.90	14.78	< 0.001*
	Absent	456	72.38	513	87.10		

(*) Statistically significant at p < 0.001

As expressed in Table 3, the mean anxiety score was 1.46 ± 0.92 points, the mean depression score was 0.93 ± 0.61 points, and the mean OCD score was 0.12 ± 0.72 points for Egyptians, while the corresponding mean scores for anxiety, depression, and OCD of Saudi participants were 1.21 ± 0.6, 0.62 ± 0.51, and 0.66 ± 0.62 points, respectively. Statistically significant differences were observed in these scores between the two countries, favoring Egypt ($p < 0.001$).

Table 3: Comparison of mean anxiety, depression, and OCD scores per nationality

Psychological distress	Nationality: Egyptian (n = 630)		Nationality: Saudi Arabian (n = 589)		Mann–Whitney U test	p-value
	Mean ± SD	Median	Mean ± SD	Median		
Anxiety	1.46 ± 0.92	1.23	1.21 ± 0.6	1.12	19.7	< 0.001*
Depression	0.93 ± 0.61	0.79	0.62 ± 0.51	0.54	38.13	< 0.001*
OCD	0.12 ± 0.72	0.84	0.66 ± 0.62	0.49	19.34	< 0.001*

(*) Statistically significant at p < 0.05

Concerning the correlation matrix of anxiety, depression, and OCD scores for the entire sample, Table 4 shows a significant positive correlation between anxiety, depression, and OCD within the entire study sample ($p < 0.01$), meaning that, once one of them increases, the other two variables subsequently increase.

Table 4: Correlation matrix of mean anxiety, depression, and OCD scores

Total (N= 1,219)	Spearman's rank correlation coefficient	
	Anxiety	Depression
Depression	0.433**	
OCD	0.489**	0.643**

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

Discussions

The novel coronavirus pandemic has produced many sources of stress, including health problems, isolation, relationship conflict, and long-term financial worries (Vinkers et al., 2020). The stress associated with exposure to COVID-19 may make people more susceptible to varied and serious infections (Anderson, 2020).

Regarding the characteristics of the sample, more Egyptians than Saudis have participated in the study. The reason for the difference in participation rates may be due to the population density in Egypt compared to the Kingdom of Saudi Arabia,
the open awareness and knowledge in the community about the importance of this issue, the rapid spread of the COVID-19 virus in Egypt, and the desire to understand what precautions protect against COVID-19 and what are the recent updates, especially about Omicron. This result contradicted the results of Alyami et al. (2021) and El-slamoni et al. (2022), who found in their studies that the participants from Saudi Arabia were more than that from Egypt.

Regarding the personal characteristics of the Saudi portion of the current sample, the survey revealed that more than half of the participants were university-educated Saudis. This demographic may have a higher level of responsibility, knowledge, and enough life experience to motivate them to contribute to the current research. Again, the results are comparable with those of Alyami et al. (2021) and Shahin and Hussien (2020), who reported that most of their Saudi respondents had university degrees and were employed.

Additionally, the current study determined that most of the Saudi participants were women. Saudi women in general have more freedom and free time to consent and participate in research than men. In contrast, Alkwiese et al. (2020) indicated that most of their Saudi Arabian participants were male. On the contrary, Egyptian men were more active than Egyptian women in the current study, which is attributed to many Egyptian women refusing to participate in such studies due to the psychosocial burden and feelings of helplessness; stress; and the effect of COVID-19 on their lives, families, and children. This finding is consistent with a recent study by Hussien and Shahin (2020), which showed a higher proportion of male participation than female participation in a COVID-19 survey in their sample from Egypt. In contrast, female participants significantly outnumbered males in another recent study from Egypt (Abdelgeleel et al., 2021). Moreover, a study by Meng et al. (2020) showed a higher number of non-Saudi women participating in their study than non-Saudi men.

The results of the current study show that Egyptians had significantly higher rates of anxiety, depression, and obsession than Saudis. The reason for this could be that the Saudi Arabian government provided medical and financial assistance for people during the pandemic. Higher psychological distress can be related to the lack of information and the uncertainty associated with the ongoing and rapid variation of the COVID-19 virus that affected all aspects of life including work, study, and traveling, which certainly increased the burden on individuals and families, especially that of a financial nature.

Consistent with the current study's findings, El-slamoni et al. (2022) found a significantly higher level of anxiety, depression, and OCD for Egyptians compared to Saudi participants at the beginning of COVID-19 emergence. Also, Shahin and Hussien (2020) found higher levels of depression, anxiety, and stress among Egyptians than Saudis during

the COVID-19 crisis. Furthermore, feelings of uncertainty were found to be significantly more common among Egyptian university students than among Saudi participants during the pandemic (Hussien et al., 2020). Moreover, Qiu et al. (2020) reported increased rates of anxiety, depression, and OCD during the COVID-19 pandemic among study participants due to heightened public panic.

Concerning the correlation between anxiety, depression, and OCD in the population, the present study indicated a significant positive correlation between them. In other words, the higher the level of one of them, the higher the other two variables. This may be due to people's fears of contracting COVID-19 and the associated stress, causing people to worry about their health and leading to obsessive behavior, excessive hand washing, avoiding touching anything or anyone, acting ritualistically in all aspects of life, and being preoccupied with thoughts of COVID-19 infection and subsequent death. These restrictive behavioral patterns made people very sad and depressed.

Similarly, Harper et al. (2021) documented an increase in OCD behaviors among participants aimed at protecting themselves from viral infections, such as increasing social distancing and practicing hand hygiene as well as increased levels of anxiety and depression. Likewise, a study by Ahorsu et al. (2020) demonstrated similar results to that of the current study concerning the confirmed significant positive correlation among the variables. In the same vein, Abba-Aji et al. (2020) found a significant positive correlation between anxiety, depression, and OCD among their study participants.

Conclusions

In conclusion, different variants of the Coronavirus may have a clear impact on the psychological state of the population globally, moreover, the findings of the study indicated a difference in the psychological state of the population and showed different reactions to this epidemic and varying levels of responses concerning the Corona pandemic. Although the Corona pandemic has continued for more than two years now, however, the population in Arab countries still has a high level of anxiety, depression, and obsessiveness concerning this deadly changing disease. Egyptian participants during COVID-19 had a remarkably higher level of psychological distress, including anxiety, depression, and OCD than their Saudi counterparts. Additionally, the mean scores for anxiety, depression, and OCD were significantly correlated with each other, meaning that once one of them increased for an individual, the two others were likely to increase correspondingly.

Recommendations

Due to the ongoing COVID-19 virus variation, the public's mental health requires more attention from government, private, and non-government organizations. Societies need to pay greater attention to vulnerable people during public health emergencies, such as pandemics, and provide them with more humane care and psychological interventions.

Additionally, the use of psychological counseling and psychoeducation via social media can help avoid poor follow-up and provide insight into the impact of a health emergency on the public's psychological well-being, thereby promoting mental health. An appropriate, evidence-based mental health promotion program should be developed that focuses on improving psychological well-being, reducing people's stress and anxiety, and enhancing coping strategy utilization in long-lasting crises.

Funding: The researcher did not receive any funding.

Conflict of Interest: No conflict of interest exists for this research work.

References

Abba-Aji, A., Li, D., Hrabok, M., Shalaby, R., Gusnowski, A., Vuong, W., . . . Greenshaw, A. J. (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), 6986. doi: https://doi.org/10.2196/preprints.19648.

Abdelgeleel, S., Eldin, D., & Shahin, M. (2021). Medical specialty students' perceptions, experiences, and barriers regarding online learning: A cross-sectional study during the COVID-19 pandemic. *Medical Science Journal,*

25(111), 1123-1132. Retrieved from https://www.discoveryjournals.org/medicalscience/current_issue/v25/n111/A15.pdf.

Ahorsu, D. K., Lin, C.-Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: Development and initial validation. *International Journal of Mental Health and Addiction*, 1-9. doi: https://doi.org/10.1007/s11469-020-00270-8.

Alkwiese, M., Alsaqri, S. H., Aldalaykeh, M., Hamzi, M., Mahdi, M., & Shafie, Z. (2020). Anxiety among the general population during Coronavirus-19 Disease in Saudi Arabia: Implications for a mental support program. *medRxiv*. doi: https://doi.org/10.1101/2020.05.07.20090225.

Alyami, H. S., Naser, A. Y., Dahmash, E. Z., Alyami, M. H., & Alyami, M. S. (2021). Depression and anxiety during the COVID-19 pandemic in Saudi Arabia: A cross-sectional study. *International Journal of Clinical Practice*, e14244. doi: https://doi.org/10.1101/2020.05.09.20096677.

Anderson, G. (2020). Psychological stress and Covid-19: Interactions with gut microbiome and circadian rhythm in driving symptom severity. *Preprint. CRC Scotland & London.*

CDC. (2021). SARS-CoV-2 Variant Classifications and Definitions, Centers for Disease Control and Prevention. From https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-classifications.html

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., . . . Wei, Y. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. *The Lancet, 395*(10223), 507-513. doi: https://doi.org/10.1016/S0140-6736(20)30211-7.

Dean, A., Sullivan, K., & Soe, M. (2013). Open Epi: Open-Source Epidemiologic Statistics for Public Health, Version 3.01. Retrieved 1 April 2020, from https://www.openepi.com/Menu/OE_Menu.htm.

El-slamoni, M., Shahin, M., & Ahmed, M. (2022). Impact of COVID-19 on the Psychosocial Status of Saudi and Egyptian Population: Comparative Study. *Tanta Scientific Nursing Journal*, *25*(2), 264-294. doi: https://doi.org/10.21608/TSNJ.2022.236077

Harper, C. A., Satchell, L. P., Fido, D., & Latzman, R. D. (2021). Functional fear predicts public health compliance in the COVID-19 pandemic. *International Journal of Mental Health and Addiction*, *19*, 1875–1888. doi: https://doi.org/10.1007/s11469-020-00281-5.

Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., . . . Gu, X. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet, 395*(10223), 497-506. doi: https://doi.org/10.1016/S0140-6736(20)30183-5.

Hussien, R., Elkayal, M., & Shahin, M. (2020). Emotional intelligence and uncertainty among undergraduate nursing students during the COVID-19 pandemic outbreak: A comparative study. *The Open Nursing Journal, 14*(1), 220-231. doi: https://doi.org/10.2174/1874434602014010220.

Hussien, R., & Shahin, M. A. H. (2020). Coronavirus disease-19 quarantine experience in the Middle East region: Emotional status, health patterns, and self-efficacy survey. *Open Access Macedonian Journal of Medical Sciences, 8*(T1), 330-345. doi: https://doi.org/10.3889/oamjms.2020.5256.

IBM Corporation. (2019). IBM SPSS Statistics for Windows (Version 26.0) Armonk, NY: IBM Corp. Available from: https://www.ibm.com/support/pages/how-cite-ibm-spss-statistics-or-earlier-versions-spss. Retrieved from https://www.ibm.com/support/pages/how-cite-ibm-spss-statistics-or-earlier-versions-spss

Matthews, T., Danese, A., Caspi, A., Fisher, H. L., Goldman-Mellor, S., Kepa, A., . . . Arseneault, L. (2019). Lonely young adults in modern Britain: Findings from an epidemiological cohort study. *Psychological Medicine, 49*(2), 268-277. doi: https://doi.org/10.1017/S0033291718000788.

Meng, H., Xu, Y., Dai, J., Zhang, Y., Liu, B., & Yang, H. (2020). Analyze the psychological impact of COVID-19 among the elderly population in China and make corresponding suggestions. *Psychiatry Research, 289*, 112983. doi: https://doi.org/10.1016/j.psychres.2020.112983.

Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry, 33*(2):e100213corr1. doi: https://doi.org/10.1136/gpsych-2020-100213.

Shahin, M. A. H., & Hussien, R. M. (2020). Risk perception regarding the COVID-19 outbreak among the general population: A comparative Middle East survey. *Middle East Current Psychiatry*, *27*(1), 1-19. doi: https://doi.org/10.1186/s43045-020-00080-7.

Silva, W. A. D., de Sampaio Brito, T. R., & Pereira, C. R. (2020). COVID-19 anxiety scale (CAS): Development and psychometric properties. *Current Psychology, 13*, 1-10. doi: https://doi.org/10.1007/s12144-020-01195-0.

Vinkers, C. H., van Amelsvoort, T., Bisson, J. I., Branchi, I., Cryan, J. F., Domschke, K., . . . de Quervain, D. (2020). Stress resilience during the coronavirus pandemic. *European Neuropsychopharmacology, 35*, 12-16. doi: https://doi.org/10.1016/j.euroneuro.2020.05.003.

World Health Organization. (2020). Clinical management of COVID-19: Interim guidance, 27 May 2020: World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/332196.

World Health Organization. (2022). WHO Coronavirus (COVID-19) Dashboard. Retrieved 2 January 2022 from https://covid19.who.int/

Zhang, Y., Geng, X., Tan, Y., Li, Q., Xu, C., Xu, J., . . . Liu, F. (2020). New understanding of the damage of SARS-CoV-2 infection outside the respiratory system. *Biomedicine & pharmacotherapy, 127*, 110195. doi: https://doi.org/10.1016/j.biopha.2020.110195.

Zinger, L. (2011). Pearson Education, Inc. Personal Fitness. from https://pdfslide.net/embed/v1/11-powerpoint-lecture- outlines-prepared-by-dr-lana-zinger-qcc-cuny#.