

Impact of COVID-19 on Experiences of Anxiety, Depression, and Coping Ability in Oman

Eman Elsheshtawy, Ahmed Qoura, Amani AlRaisi, Sirous Golchinheydari, Alaa Mahfouz, Miriam Simon

دراسة تأثير وباء الكوفيد على انتشار القلق والاكتئاب واستراتيجيات المواجهة المرتبطة به بين العمانيين

ایمان الششتاوی، احمد قورة، امانی الرئیسیة، سیرس جولشینهیداری، الاء محفوظ، میریام سیمون

Abstract

Background: The COVID-19 pandemic has severely disrupted the social and economic activities of the world as it forced most countries to lockdown with many consequences. **Objectives:** The current study assessed the impact of lockdown on the experiences of stress, anxiety, depression, and coping ability in a cohort in Sohar, Sultanate of Oman. **Method:** A cross sectional study involved 289 participants who completed a socio-demographic questionnaire along with the Perceived Stress Scale (PSS), the Hospital Anxiety and Depression Scale (HADS), and the COPE Inventory. **Results:** In total, 227 (78.5%) participants reported moderate to high levels of stress; 62 (21.4%) reported high anxiety; and 40 (13.8%) had moderate to severe depression. Coping strategies were mean 65.1 ± 12.9 . the highest was acceptance (6.2 ± 1.6) followed by positive reframing, religion (5.8 ± 1.7). Anxiety correlated with denial ($r^2=0.230$, $p < .001$) while depression was negatively correlated with active coping ($r^2=0.135$, $p < .021$). Being a woman and single predicted anxiety. **Conclusion:** There is high use of coping strategies which relatively mitigate the effects of stress. Vulnerable groups should be offered support.

Key words: pandemic, stress, anxiety, depression, coping, Oman

Declaration of interest: None

Introduction

The COVID-19 pandemic has taken the entire world by storm within economically poor and rich countries. Though critical physical symptoms are experienced by patients, the psychological impact of the disease seems also to be widespread. Most nations in the world remain in lock down. There have been drastic shifts in people's routines and socialization opportunities whilst society more widely face additional restrictions imposed to control the spread of infection.^{1,2} The most commonly reported emotional challenges include panic reactions, stress, anxiety, worry, depression and loneliness.^{3,4} In addition, insomnia, denial, anger and fear have been reported globally.⁵ Across the globe, suicides have been linked to COVID-19 and experiences of heightened psychological distress.⁶

The many strains of coronavirus could induce psychopathological sequelae through direct viral infection of the central nervous system (CNS) or indirectly via an immune response. Other factors include the development of peripheral immunological alterations with increased

levels of pro inflammatory cytokines that resemble the changes that happen in people experiencing major depression.⁷

The correlation that exists between stress and coping strategies is well researched in that stress responses are different depending on the type of coping strategies used.^{8,9} Coping strategies refer to the cognitive and behavioral efforts people use to reduce stress. According to the effectiveness of different coping skills used, people may achieve acceptance and peace or experience depression, anxiety, and feelings of anger.¹⁰ In Arab countries, research on the impact of the recent pandemic on the use of coping strategies is limited so far.

The current study aimed to assess the impact of COVID-19 and lockdown in the Sultanate of Oman on people's experiences of anxiety, depression, stress, and coping ability in order to establish which factors might predict the development of anxiety or depression.

Methods

A cross sectional study was conducted through the College of Medicine and Health Sciences in Sohar, Sultanate of Oman from March-May 2020. All scales were distributed online and as paper forms after obtaining approval from the ethics and biosafety committee (NU/COMHS/EBC0016/2020). These were distributed by students to family members, neighbors and friends. The purpose of the research was explained; informed consent obtained. Exclusion criteria included anyone below 18 years of age; anyone having a known psychiatric, neurological illnesses, chronic medical condition, or intellectual disability. A convenience sample comprised 289 participants who responded to a sociodemographic questionnaire and the following outcome measures:

Perceived Stress Scale (PSS)

This self-reported questionnaire assesses perception to stressful life situation over the last month. An Arabic translated and back-translated version was used.^{11,12}

The Hospital Anxiety and Depression Scale (HADS)

An Arabic version was used with a score of 12 or more denoting possible anxiety or depression. The cut-off point had a sensitivity of 0.89 and a specificity of 0.75.^{13,14}

*COPE Inventory*¹⁵

The COPE Inventory is a multidimensional coping inventory to assess the different ways in which people respond to stress. An abbreviated, Arabic version was used, which included 28 items scored from one ("I haven't been doing this at all") to four ("I've been doing this a lot"), exploring 14 strategies. Higher scores reflect a higher tendency to implement the corresponding coping strategies.¹⁶

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences, Version 15.0 (SPSS, v15.0) where descriptive and analytic analyses including mean and standard deviations, for comparison of quantitative and qualitative variables, respectively. Pearson correlation

coefficients were used to detect associations between variables, a p value of < 0.05 was considered significant. Stepwise regression analysis was used to determine which factors predicted anxiety or depression.

Results

A total of 289 participants completed the study: 196 (67.8%) women and 93 (32.2%) men. The mean age was 28.3 ± 10.8 ; 141(61.8%) were single and five were separated (2.2%). All were educated where 180 (62.3%) were college graduated, 250 (86.5%) of middle socioeconomic class.

Of the 289 participants, 227 (78.5%) reported experiencing moderate to high stress levels; 62 (21.4%) elevated level of anxiety; and 40 (13.8%) reported high level of depression (Table 1).

Table 2 shows a statistically significant correlation between perceived stress with anxiety ($r^2 = .164$, $p = .005$) and depression ($r^2 = .258$, $p = .005$). Participants reported greater use of coping strategies (Table 3) with a mean of 65.1 ± 12.9 . Acceptance (6.2 ± 1.6) was the most endorsed category followed by positive reframing and religion both of which were (5.8 ± 1.7) followed by distraction and active coping (5.4 ± 1.7). The least endorsed category was substance use ($2.3 \pm .99$).

The correlation between stress, anxiety, depression, and coping strategies is shown in Table 4. Perceived stress correlated with total coping ($r^2 = .118$, $p = .044$), denial ($r^2 = .184$, $p = .002$), behavioral disengagement ($r^2 = .135$, $p = .021$), self-blame ($r^2 = .180$, $p = .002$). Anxiety correlated with acceptance ($r^2 = .171$, $p = .003$), denial ($r^2 = .230$, $p = .001$), while depression was negatively correlated with emotional support ($r^2 = .199$, $p = .001$), active coping ($r^2 = .135$, $p = .021$), religion ($r^2 = .170$, $p = .004$), acceptance ($r^2 = .215$, $p = .001$).

Table 5 and 6 show that predictors of anxiety and depression where predictors of anxiety with the presence of depression (beta .393), female gender (beta -.716), single (beta -.152), using denial (beta .166) or self-blame (beta -.136) coping strategies. Depression predictors were presence of anxiety (beta .423), high perceived stress (beta .229), younger age (beta -.236), being separated (beta .178) and less use of planning (beta -.170).

Table 1. Levels of perceived stress, anxiety and depression

	Perceived stress		Anxiety		Depression	
	No	%	No	%	No	%
No	0	0	162	56.1	198	68.5
Borderline	62	21.5	65	22.5	51	17.6
Moderate - High	227	78.5	62	21.4	40	13.8

Table 2. Correlation between perceived stress with anxiety and depression

	Anxiety	Depression
Perceived stress	.164**	.258**
<i>p</i> value	.005	.001

** Highly significant $p < .01$

Table 3. Brief cope scores by sub-scale

	Minimum - Maximum	Mean ± SD
Self-distraction	2 - 8	5.4 ± 1.7
Active coping	2 - 8	5.4 ± 1.6
Denial	2 - 8	4 ± 1.5
Substance use	2 - 8	2.3 ± .99
Emotional support	2 - 8	4.6 ± 1.7
Informational support	2 - 8	4.5 ± 1.5
Behavioral disengagement	2 - 8	3.5 ± 1.6
Venting	2 - 8	4.4 ± 1.6
Positive reframing	2 - 8	5.8 ± 1.7
Planning	2 - 8	5.3 ± 1.7
Humor	2 - 8	3.8 ± 1.8

Impact of COVID-19 on mental health in Oman

Acceptance	2 - 8	6.2 ± 1.6
Religion	2 - 8	5.8 ± 1.7
Self-blame	2 - 8	3.8 ± 1.8
Total	28 - 112	65.1 ± 12.9

Table 4. Correlation between perceived stress, anxiety, depression, and coping strategies

	Perceived stress		Anxiety		Depression	
	r²	p	r²	p	r²	p
Self-distraction	.078	.187	.037	.535	-.062	.294
Active coping	.041	.484	-.050	.400	-.135*	.021
Denial	.184**	.002	.230*	.001	.057	.332
Substance	.007	.907	.111	.060	-.043	.470
Emotional support	-.053	.367	-.051	.392	-.199**	.001
Informational support	.610	.304	-.072	.220	.150*	.011
Behavioral disengagement	.135*	.021	.071	.232	-.039	.508
Venting	.121*	.041	.087	.141	-.055	.353
Positive reframing	.075	.203	-.052	.376	-.181*	.002
Planning	.060	.310	.001	.980	-.179*	.002
Humor	.083	.158	.111	.061	-.036	.541
Acceptance	-.068	.251	-.171**	.003	-.215**	.001
Religion	.014	.819	.002	.970	-.170**	.004
Self-blame	.180*	.002	.090	.125	-.009	.880
Total	.118*	.044	.035	.558	-.183**	.002

*significant $p < .05$

** Highly significant $p < .01$

Table 5. Predictors of anxiety in the studied population

	B	Beta	T	P
Depression	.464 ± .069	.393	6.733	.001
Gender	-2.123 ± .715	-.716	-2.969	.003
Substance use	.953 ± .356	.163	2.680	.008
Marital status	-1.601± .611	-.152	-2.619	.009
Denial	.681 ± .258	.166	2.644	.009
Self-blame	.438 ± .208	-.136	-2.130	.034

R²= .264 Dependent factor: anxiety

Table 6. Predictors of depression in the studied population

	B	Beta	T	P
Anxiety	.358 ± .048	.423	7.426	.001
Stress	.175 ± .043	.229	4.074	.001
Planning	-.479± .153	-.170	-3.024	.003
Age	-.104 ± .031	-.236	-3.389	.001
Marital status	1.582 ± .626	.178	2.528	.012
Substance use	-.653 ± .280	-.132	-2.327	.021

Discussion

The current study was conducted in Sohar, Sultanate of Oman. The aim was to assess the impact of lockdown on the experiences of stress, anxiety, depression and associated coping strategies in a group of people contacted through the College of Medicine and Health Sciences.

A high proportion of those studied (78%), reported having experienced significant levels of stress with more than 20% reporting moderate to severe anxiety symptoms. Moderate to severe depressive symptoms were present in 13%, which suggested a correlation between the anxiety, depression, and levels of perceived stress. This is supported in recent studies which suggest a circular relationship between high psychological distress, anxiety and depression where perceived threat leads to negative mood and irritability in response to an existing situation that exacerbates the threat response.^{17,18,19} In one study a

linear continuum was discussed in which fear, anxiety, depression and suicidality were associated with the coronavirus lockdown.²⁰ Most studies in Arab countries found higher rates for depression than for anxiety.^{21,22} The lower incidence of depression may be due to greater ability for using emotion, problem solving, and coping strategies within the Omani population.

The duration of quarantine together with lack of information and supplies, fear of infection, frustration, boredom, stigma and financial loss would increase the risk of having negative psychological consequences.¹⁹ Social isolation was found to increase the risk of having depression or anxiety.^{23,24}

There was significant use of different coping strategies mainly acceptance, positive reframing, religion, and

distraction. These strategies are considered important for managing stress.²⁵ As evident from the results, most participants reported significant levels of stress, but used strategies that mitigate stress and minimize its consequences such that fewer developed anxiety or depression. This was supported by recent studies that a greater focus on media, eating, cooking, and similar served as a distraction and that avoidance or emotion focused strategy tended to decrease stress.^{26,27} A further study supported the role of physical activity on reducing the stress of COVID-19.²⁸

Individuals with significant levels of perceived stress and anxiety used denial and avoidance as ways of coping, which can be beneficial when dealing with high levels of stress to eliminate negative mood, avoid thinking about stressful events. The presence of denial was found to predict high stress and anxiety.^{29,30}

On the other hand, depression was negatively correlated with emotion and coping strategies, such as religion, emotional support, acceptance; and problem-solving strategies, such as active coping, planning, positive reframing. This was similar to recent studies which suggest depression is negatively correlated with certain positive strategies that focus on the future, goal setting and broadening experience.^{31,32}

From the social factors that predicted anxiety and depression were female gender, being single or separated and young age. This was supported by recent studies done in Egypt, Jordan, Saudi Arabia and Oman which concluded that female gender increases the risk for developing anxiety due to social factors of losing supporting environment, fear of illness and arguing about families and friends.^{33,34,35,21,22,36}

Conclusions and recommendations

The recent COVID-19 pandemic and consequent lockdown was associated with increased perceived stress, anxiety, and depression among the studied population. The Omani population use a variety of coping strategies that focus on emotion and problem solving, which can reduce depression.

The current study was applied to a relatively small sample, which makes it less generalizable. Future studies should consider a larger sample size to ensure greater representation. A longitudinal study rather than cross sectional one might identify a causal relationship between the pandemic and its consequences on depression, anxiety, perceived stress, and coping.

References

1. Moukaddam N, Shah A. Psychiatrists beware: the impact of COVID-19 and pandemics on mental health. *Psychiatric Times: MH Life Sciences* 37. 2020;1-3.
2. Wang C. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17(5),1729.
3. Cullen W, Gulati G, Kelly BD. Mental health in the COVID-19 pandemic. *QJM: Int J Med*. 2020;113(5),311-312.
4. Rajkumar R. COVID-19 and mental health: A review of the existing literature. *Asian J Psychiatr*. 52. 2020;102066. 10.1016/j.ajp.2020.102066.
5. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry*. 2020; 002076402091521. doi: 10.1177/0020764020915212
6. Vindegaard N, Benros M. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior and Immunity* 89. 2020;531-542.
7. Wu Y, Xiaolin Xu, Zijun Chen Nervous system involvement after infection with COVID-19 and other coronaviruses *Brain, Behavior, and Immunity*. 2020; 87:18-22.
8. Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. *Clin Med Clin Med Res*. 2016;14(1):7-14.
9. Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y, Zhuang Q. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of coronavirus disease 2019 (COVID-19) in Hubei, China. *Med. Sci. Monit*. 2020;26 doi: 10.12659/2FMSM.924171.
10. Elsheshtawy E, Abo-Elez W, Ashour H et al. Coping strategies in Egyptian ladies with breast

- cancer. *Breast Cancer: Basic and Clinical Research*. 2014;8:97-102
11. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24:385-396
 12. Chaaya M, Osman H, Naassan G, Mahfoud Z. Validation of the Arabic version of the Cohen perceived stress scale among pregnant and postpartum women. *BMC Psychiatry*. 2010; 110:111.
 13. Zigmond, AS; Snaith, RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983;67(6):361-370.
 14. Malasi TH, Mirza IA, el-Islam MF. Validation of the Hospital Anxiety and Depression Scale in Arab patients. *Acta Psychiatr Scand*. 1991; 84(4):323-326.
 15. Carver CS. You want to measure coping but your protocol's too long: consider the Brief COPE. *Int J Behav Med*. 1997;4:92-100.
 16. Alghamdi, M. Cross-cultural validation and psychometric properties of the Arabic Brief COPE in Saudi population. *Med J Malaysia*. 2020;75(5):502-509.
 17. Alison Knopf. During and after COVID-19, anxiety and depression will increase. *The Brown University Child and Adolescent Behavior Letter*. 2020;6-7.
 18. Brooks S, Webster R, Smith L. et al. The impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*. 2020;395:912-920.
 19. Perez-Fuentes MDC, Molero Jurado, MDM, Martos Martinez A, Gazquez Linares JJ. 2020. Threat of COVID-19 and emotional state during quarantine: Positive and negative affect as mediators in a cross-sectional study of the Spanish population. *PLoS One* 15, e0235305.
 20. Konstantinos N, Fountoulakis, Maria K. Apostolidou et al. Self-reported changes in anxiety, depression and suicidality during the COVID-19 lockdown in Greece. *J Affectiv Disord* (pre-print) <https://doi.org/10.1016/j.jad.2020.10.061>
 21. Massad I, Al-Taher R, Massad F, Al-Sabbagh MQ, Haddad M, Abufaraj M. The impact of the COVID-19 pandemic on mental health: early quarantine-related anxiety and its correlates among Jordanians. *East Mediterr Health J*. 2020;26(10):1165-1172.
 22. Alkhamees A, Alrashed S, Alzunaydi A. et al, The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia, *Comprehensive Psychiatry*. 2020;102.
 23. Gualano MR, Lo Moro G, Voglino G, Bert F, Siliquini R, 2020. Effects of Covid-19 Lockdown on Mental Health and Sleep Disturbances in Italy. *Int J Environ Res Public Health* 17.
 24. Solomou I, Constantinidou F. Prevalence and Predictors of Anxiety and Depression Symptoms during the COVID-19 Pandemic and Compliance with Precautionary Measures: Age and Sex Matter. *Int J Environ Res Public Health*. 2020;17.
 25. Johnson JE. Self-regulation theory and coping with physical illness. *Res Nurs Health*. 1999;22: 435-448.
 26. Sameer AS, Khan MA, Nissar S, Banday MZ. Assessment of Mental Health and Various Coping Strategies among general population living Under Imposed COVID-Lockdown Across world: A Cross-Sectional Study. *Ethics Med Public Health*. 2020;15:100571. doi:10.1016/j.jemep.2020.100571
 27. Eden AL, Johnson BK, Reinecke L and Grady SM (2020) Media for Coping During COVID-19 Social Distancing: Stress, Anxiety, and Psychological Well-Being. *Front. Psychol*. 11:577639. doi: 10.3389/fpsyg.2020.577639
 28. Mazza C, et al. 2020. A nationwide survey of psychological distress among Italian people during the COVID-19 Pandemic: immediate psychological responses and associated factors. *Int. J. Environ. Res. Public Health* 17.
 29. Martínez JP, Méndez I, Ruiz-Esteban C, et al. Profiles of Burnout, Coping Strategies and Depressive Symptomatology. *Frontiers in Psychol*. 2020;11:591.
 30. Zhang Y, Zhang H, Ma X, Di Q. Mental Health Problems during the COVID-19 Pandemics and the Mitigation Effects of Exercise: A Longitudinal Study of College Students in China. *Int. J. Environ. Res. Public Health*. 2020;17: 3722; doi:10.3390/ijerph17103722
 31. Skapinakis P, Bellos S, Oikonomou A. Depression and Its Relationship with Coping Strategies and Illness Perceptions during the COVID-19 Lockdown in Greece: A Cross-Sectional Survey of the Population. *Depression Research and Treatment Volume 2020, Article ID 3158954*, <https://doi.org/10.1155/2020/3158954>
 32. Orzechowska A, Zajączkowska M, Talarowska M, Gałęcki P. Depression and ways of coping with stress: a preliminary study. *Med Sci Monit*. 2013;19:1050-1056.
 33. Lai J, et al., 2020. Factors associated with mental health outcomes among health care workers

- exposed to Coronavirus Disease 2019. JAMA Net. Open 3, e203976.
34. El-Zoghby S, Soltan E, Salama H. Impact of the COVID-19 Pandemic on Mental Health and Social Support among Adult Egyptians. J Community Health <https://doi.org/10.1007/s10900-020-00853-5>
35. Abdel-Fattah H, Hussein K, Bahary H. Covid-19 Impact on Mental Health of Egyptians Patients. J Psychiatry Psychiatric Disord. 2020;4(3):87-93
36. Al-Senawi H, Al-Balushi N, Al-Mahrouqi T, et al. Predictors of psychological distress among the public in Oman amid coronavirus disease 2019 pandemic: a cross-sectional analytical study. Psychol Health Med. 2020.

المخلص

الخلفية: لقد تسببت جائحة COVID-19 في تعطيل الأنشطة الاجتماعية والاقتصادية في العالم بشدة حيث أجبرت معظم البلدان على الإغلاق مع العديد من العواقب. **الأهداف:** هدفت هذه الدراسة إلى استكشاف آثار الانغلاق على وجود التوتر والقلق والاكتئاب واستراتيجيات المواجهة المرتبطة التي يستخدمها الأفراد. **الطريقة:** أجريت دراسة مقطعية على 289 شخصاً تم تقييمهم من خلال دراسة للبيانات الاجتماعية والديموغرافية وباستخدام المقاييس التالية: مقياس الإجهاد المدرك لكوهين، ومقياس المستشفى للقلق والاكتئاب ومقياس التأقلم القصير. **النتائج:** 227 (78.5٪) منهم لديهم مستوى متوسط إلى مرتفع من التوتر، 62 (21.4٪) لديهم قلق مرتفع و40 (13.8٪) لديهم اكتئاب متوسط إلى شديد. الاستخدام العالي لاستراتيجيات المواجهة كان المتوسط 12.9 ± 65.1 . وكان أعلاهم القبول (1.6 ± 6.2) يليه إعادة الصياغة الإيجابية، والتدين (1.7 ± 5.8). وارتبط القلق بالإنكار ($r=0.230$ ، ص. 001)، بينما كان الاكتئاب مرتبطاً سلباً بالتكيف النشط ($r=-0.135$ ، ص. 021). كونك أنثى وعازبة تنبأت بالقلق. **الاستنتاجات:** ارتبطت جائحة COVID 19 الأخير بزيادة التوتر والقلق والاكتئاب. هناك استخدام كبير لاستراتيجيات المواجهة بين المواطنين العمانيين. يجب تحديد المجموعة الضعيفة لتقديم الدعم لهم.

Corresponding Author

Dr Eman Elsheshtawy, Professor of Psychiatry, School of Medicine, Mansoura University - Egypt

E-mail: emanmady85@yahoo.com

Authors

Dr Eman Elsheshtawy, Professor of Psychiatry, School of Medicine, Mansoura University - Egypt

Dr Ahmed Qoura, Intern at Sultan Qaboos University Hospital - Sultanate of Oman

Dr Amani AlRaisi, Intern at Sultan Qaboos University Hospital - Sultanate of Oman

Dr Sirous Golchinheydari, Intern at Royal Hospital, Muscat - Sultanate of Oman

Mr Alaa Mahfouz, 6th year medical student, School of Medicine, Mansoura University - Egypt

Dr Miriam Simon, Assistant Professor. Department of Psychiatry and Behavioral Science, National University of Science and Technology - Sultanate of Oman