Factors Associated with Coping Strategies Due to COVID-19 Pandemic-related Stressors among Omani Adults

Rahma Mohamed Al Kindi^{1*}, Aamal Abdullah Ambusaidi², Alaa Yaqoob Al Mahrooqi³, Noor Hamed Al Omrani³, Maha Khalfan Al Jabri¹ and Hana Harib Al Sumri¹

¹Department of Family Medicine and Public Health, Sultan Qaboos University Hospital, Muscat, Oman ²Department of Behavioral Medicine, Sultan Qaboos University Hospital, Muscat, Oman ³Family Medicine Residency Program, Oman Medical Specialty Board, Muscat, Oman

ARTICLE INFO

Article history:

Received: 25 November 2021 Accepted: 21 March 2022

Online:

DOI 10.5001/omj.2022.84

Keywords:

COVID-19; Psychological Stress; Coping Behaviors; Quality of Life; Mental Health; Psychological Distress; Pandemic; Oman.

ABSTRACT

Objectives: We sought to examine stressors and coping strategies adopted by Omani adults during the COVID-19 pandemic and explore the relationships between coping strategies (avoidant and approach coping) and sociodemographic characteristics. *Methods*: This national cross-sectional survey was conducted throughout Oman between September and December 2020. An online questionnaire was distributed to collect information concerning sociodemographic characteristics, potential stressors experienced during the pandemic, and coping strategies. Results: A total of 790 Omani adults submitted completed questionnaires (response rate 88.4%). High, moderate, and low stress were reported by 492 (62.3%), 139 (17.6%), and 159 (20.1%) participants, respectively. Approach coping mechanisms received a higher mean score than avoidant mechanisms (22.01±6.55 vs. 8.88±4.80). Regarding specific coping strategies, planning had the highest mean score (5.15±1.31), followed by acceptance (4.95±1.34), religion (4.56 ± 1.52) , and positive reframing (4.28 ± 1.89) , while substance use (0.01 ± 0.19) was the least reported followed by humor (0.86 ± 1.43) , denial (0.97 ± 1.56) , and behavioral disengagement (1.02±1.60). Associations were observed between the different coping strategies and participants' gender, age, marital status, exercise level, and stress level $(p \le 0.05)$. Conclusions: During a large-scale pandemic, the psychological impact on the general population is significant, even among individuals not infected with the disease. These results underscore the need for a mental health support system in Oman that can address the general population's needs. Public education on coping strategies and stress management may be helpful.

OVID-19 is a contagious illness caused by a new type of coronavirus previously unreported in humans. The outbreak originated in Wuhan City, China, on 31 December 2019, and was classified as a global pandemic by the World Health Organization on 11 March 2020.¹ By the end of June 2021, the number of confirmed cases worldwide had reached nearly 180 million, with a cumulative death toll of about 686 000 and 438 000 new cases reported daily.² In Oman, 256 542 confirmed cases and 2848 deaths had been disclosed by the same date.³

In response to the COVID-19 pandemic, many individuals have undergone a heightened level of fear, worry, and stress due to a lack of knowledge regarding the nature of the virus.⁴ Attempts to lessen the transmission of the virus have resulted in significant

changes in daily activities and movement, resulting in many individuals facing the new reality of working and studying from home. Remote methods of communication have replaced more personalized, face-to-face modalities, and many individuals and families have experienced complete or partial unemployment. Lockdowns have also severely reduced physical contact between loved ones, friends, and colleagues who live apart. On the other hand, enforced proximity to others has generated its own problems.

In addition, COVID-19 containment measures have also restricted how humans naturally seek to release stress—for instance, by performing reassuring activities in group settings, such as prayers, rituals, communal dining, visiting the sick, and participating in weddings or funerals. After the 1918 Spanish influenza pandemic, the COVID-19 pandemic is the

first major instance in recent history of prolonged and universal social isolation and enforced proximity to family. Moreover, it is the first time that a pandemic has been identified to have the potential to develop stressors powerful enough to trigger mental health conditions and exacerbate existing ones on a truly global scale.⁵

The COVID-19 pandemic is one of the unexpected and unpredictable crises that requires high attention and flexibility in coping with it. According to Lazarus and Folkman, coping is defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person".6 Coping strategies typically fall under three major categories: (1) emotion-oriented or avoidant coping (e.g., denial, substance use, seeking emotional support from others, etc.); (2) problem-focused or active coping, wherein one seeks to gain cognitive understanding of the cause and nature of the stress and take active remedial measures; and (3) social support coping, wherein one seeks support from sources such as family, friends, and peers to manage stressors.^{7,8}

Unlike many commonplace life stressors, the COVID-19 pandemic represents a stressful event of unique scope, intensity, and magnitude.9 Stressors related to COVID-19 include unavoidable disruptions to normal daily activities and limitations to traditional de-stressing mechanisms. As an unprecedented phenomenon, there is minimal literature assessing the psychosocial impact of COVID-19-related stressors on individuals and societies. 10,11 Moreover, no previous research has yet been conducted to assess this topic in Oman. Therefore, the objective of the current study was to identify perceived stressors related to the COVID-19 pandemic among Omani adults, coping strategies used to manage those stressors, and the relationship between coping mechanisms and different sociodemographic characteristics.

METHODS

A national cross-sectional survey was performed over three months from September to December 2020. An electronic questionnaire (using the social survey platform SurveyMonkey.com) was distributed through different social media platforms such as Facebook*, WhatsApp*, Twitter*, Instagram*, and

LinkedIn®. The survey link was also distributed among public figures and social media influencers in Oman with a request to promote and display the survey invitation on their different social media accounts. The survey was open to all Omani adults aged ≥ 18 years. The potential participants were requested to participate after giving their consent. The participation was voluntary and anonymous. The statement of confidentiality and participant's rights were stated clearly at the beginning of the questionnaire, including the right to withdraw at any time. It was made clear that the survey was not intended to offer any medical advice. Each participant was requested to fill out an electronic questionnaire. All responses were coded and stored in a secured database accessible only to the researchers.

A previously described, structured questionnaire was used for data collection. 12 The questionnaire was divided into three sections. Section one sought to obtain information regarding the sociodemographic characteristics of the participants. Section two included 32 items that sought information regarding various potential pandemic-related stressors that the participants might have experienced six months prior to the survey. These included whether the participant or a family member/friend/someone they knew had been suspected of having or diagnosed with COVID-19; any family member/friend/someone they knew had died due to COVID-19; they had heard people talk negatively about COVID-19; the pandemic had affected their education or career; they had been required to cancel or change plans for holidays and travel as a result of the pandemic; they were not able to enjoy activities they were used to (e.g., swimming, shopping, or going to the movies); they were not able to socialize as before; they had experienced reduced access to goods and services; they had been warned for violating lockdowns and curfews; or they had been subjected to travelrelated discrimination. Overall, these stressors were categorized into six types of stressful events: family-related (six items), friend-related (six items), acquaintance-related (six items), self-related (four items), information-related (four items), and COVID-19-related (eight items) events. Participants were requested to provide yes or no responses to all items. In terms of scoring, one point was given to each 'yes' response while zero points were assigned to 'no' responses, for a maximum score of 32. Low, moderate, and high levels of stress

were categorized using scores of 0-10, 11-20, and 21-32, respectively.

Section three of the survey inquired about the coping strategies utilized by the participants to deal with the stressors described in section two. Responses were rated using the Brief Coping Scale; a validated short form of the Coping Orientation to Problems Experienced (COPE) Inventory frequently used to assess coping styles.^{7,13} This section comprised a 14-item subscale set, each with two questions, for a total of 28 statements intended to measure the frequency and nature of the specific coping strategies adopted by the participants in response to stressors experienced in the six months before the survey. The coping strategies assessed in the brief COPE inventory include acceptance, active coping, behavioral disengagement, denial, emotional support, humor, informational support, planning, positive reframing, religion, self-blame, self-distraction, substance use, and venting.¹³ The participants were given a choice of four responses for each statement: (1) "I haven't been doing this at all", (2) "I've been doing this a little bit", (3) "I've been doing this a medium amount", and (4) "I've been doing this a lot". Choosing option 3 or 4 for a given statement indicated that the respondent frequently used that coping strategy while choosing option 1 or 2 indicated that the strategy was not one of the individual's core coping mechanisms. The former responses received scores of one, while the latter received scores of zero. Coping mechanisms were grouped into two broad, independent categories: avoidant coping (behavioral disengagement, denial, self-blame, self-distraction, substance use, venting) and approach coping (acceptance, active coping, emotional/informational support, positive reframing, planning). Humor and religion were included under a third category as these strategies were deemed to constitute neither an avoidant nor approach form of coping.

In the present study, the original English-language version of the questionnaire was translated into Arabic according to published guidelines. ^{12,14} To determine the reliability of the survey, the questionnaire was sent to 25 Omani adults, and their responses were analyzed.

Internal consistency was determined using Cronbach's alpha coefficients (≥ 0.7), corrected item-total correlations (> 0.2), and an inter-item correlation matrix analysis.

Using OpenEpi, an online open-source sample size calculator, the minimum sample size was calculated to be 400 based on an estimated response distribution of 50%, a 5% margin of error, 95% CI, and power of 80%.

To ensure the representativeness of the study sample, a stratified random sampling technique was adopted according to the population sizes of different governorates of Oman.

The IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA) was used to analyze the collected data. Descriptive findings were reported as means and SDs for normally distributed continuous variables and as percentages for categorical variables. Analysis of the associations between the participants' demographic characteristics (categorical variables) and mean brief COPE inventory scores (continuous variable) was carried out using either an independent *t*-test or analysis of variance, depending on the number of categories per variable. In addition, Pearson's chisquared (χ 2) test was applied to compare categorical variables. Statistical significance was determined at $p \le 0.05$.

The Medical Research Ethics Committee of the College of Medicine and Health Sciences, Sultan Qaboos University, Oman, granted ethical approval for this study (REF. NO. SQU-EC/087/2020).

RESULTS

A total of 894 Omani adults responded to the survey, of which 790 returned completed questionnaires giving a response rate of 88.4%. The mean age was 36.2±8.8 years old (range: 18-82 years). Overall, 480 (60.8%) were female and 310 (39.2%) were male. A total of 574 participants (72.7%) were married, 191 (24.2%) were single, 23 (2.9%) were widowed, and two (0.3%) were divorced. Two-thirds of the cohort (n = 531; 67.2%) were employed, while 121 (15.3%) were unemployed, 76 (9.6%) were retired and 62 (7.8%) were students. More than half (n =516; 65.3%) held an undergraduate degree, while 157 (19.9%) had a postgraduate degree, 114 (14.4%) had a secondary school education, and three (0.4%) had primary education. Most participants (n = 601; 76.1%) lived in nuclear families, while the others lived with their extended families (n = 169; 21.4%), alone (n = 14; 1.8%), or with friends/roommates (n = 6; 0.8%).



Table 1: Sociodemographic characteristics of Omani adults (N = 790).

Characteristics	n (%)
Gender	
Male	310 (39.2)
Female	480 (60.8)
Age, years	
18–30	216 (27.3)
31–40	335 (42.4)
41-50	206 (26.1)
> 50	33 (4.2)
Marital status	
Single	191 (24.2)
Married	574 (72.7)
Widowed	23 (2.9)
Divorced	2 (0.3)
Education level	, ,
Primary	3 (0.4)
Secondary	114 (14.4)
Undergraduate (diploma/bachelor's degree)	516 (65.3)
Postgraduate (master's degree/doctorate)	157 (19.9)
Employment status	(, , , ,
Employed	531 (67.2)
Retired	76 (9.6)
Student	62 (7.8)
Unemployed	121 (15.3)
Monthly income, OMR	121 (19.5)
≤ 500	71 (9.0)
501-1000	209 (26.5)
1001–2000	271 (34.3)
2001–3000	114 (14.4)
> 3000	125 (15.8)
Region of residence	12) (1).0)
Muscat	358 (45.3)
North Al Batinah	85 (10.8)
South Al Batinah	62 (7.8)
Al Buraymi	9 (1.1)
A'Dhahirah	49 (6.2)
A'Dakhiliyah	106 (13.4)
Dhofar	22 (2.8)
Musandam	20 (2.5)
North A'Sharqiyah	44 (5.6)
South A'Sharqiyah	34 (4.3)
Al Wusta	1 (0.1)
Presence of chronic disease	1 (0.1)
No	673 (85.2)
Yes	117 (14.8)
	11/ (14.0)
Living circumstances Alone	1/(/10)
With friends/roommates	14 (1.8)
	6 (0.8)
In a nuclear family	601 (76.1)
With extended family	169 (21.4)

Table 1: Sociodemographic characteristics of Omani adults (N = 790).

Characteristics	n (%)
Smoking status	
Non-smoker	735 (93.0)
Current smoker	25 (3.2)
Ex-smoker	30 (3.8)
Exercise level	
None	155 (19.6)
Once a month	122 (15.4)
Once a week	132 (16.7)
≤ 3 times a week	185 (23.4)
> 3 times a week	196 (24.8)

Table 2: COVID-19-related coping strategies employed by Omani adults (N = 790).

Coping mechanism	Mean score* ± SD	
Avoidant coping		
Self-distraction	3.34 ± 1.75	
Denial	0.97 ± 1.56	
Substance use	0.01 ± 0.19	
Behavioral disengagement	1.02 ± 1.60	
Venting	2.26 ± 1.96	
Self-blame	1.29 ± 1.42	
Total category score	8.88 ± 4.80	
Approach coping		
Active coping	2.74 ± 2.18	
Emotional support	2.37 ± 2.13	
Informational support	2.51 ± 1.98	
Positive reframing	4.28 ± 1.89	
Planning	5.15 ± 1.31	
Acceptance	4.95 ± 1.34	
Total category score	22.01 ± 6.55	
Other		
Humor	0.86 ± 1.43	
Religion	4.56 ± 1.52	
Total category score	5.42 ± 2.04	
All categories		
Total score	36.31 ± 10.37	

"Assessed using the Brief Coping Orientation to Problems Experienced Inventory (Carver et al, 1989; Carver, 1997). Participants were given a choice of four responses for each statement: (1) I haven't been doing this at all; (2) I've been doing this a little bit; (3) I've been doing this a medium amount; and (4) I've been doing this a lot. Options 3 or 4 received a score of one, while options I or 2 received a score of zero.

One-third of the respondents (n = 271; 34.3%) had a total monthly income of 1001-2000 OMR (equivalent to approximately \$2600-5200 USD). Most respondents (n = 556; 70.4%) did not have an elderly relative living with them. A minority of the

Table 3: Associations between sociodemographic characteristics and coping strategy categories (avoidant and approach) among Omani adults (N = 790).

Characteristics (n)	Mean score* ± SD		<i>p</i> -value	
	Avoidant coping	Approach coping	Avoidant coping	Approach coping
Gender				
Male (310)	0.68 ± 0.42	1.76 ± 0.57	< 0.001 ^{†^}	$0.002^{\uparrow ^{\wedge}}$
Female (480)	0.78 ± 0.38	1.88 ± 0.53		
Age, years				
18–30 (216)	0.77 ± 0.38	1.77 ± 0.55	0.008*^	0.016*^
31–40 (335)	0.77 ± 0.42	1.84 ± 0.55		
41–50 (206)	0.69 ± 0.38	1.91 ± 0.52		
>50 (33)	0.56 ± 0.39	1.68 ± 0.58		
Marital status				
Single (191)	0.80 ± 0.38	1.75 ± 0.51	$0.024^{\#^{\wedge}}$	0.028*^
Married (574)	0.72 ± 0.40	1.85 ± 0.56		
Widowed (23)	0.89 ± 0.42	2.05 ± 0.53		
Divorced (2)	0.58 ± 0.01	1.92 ± 0.35		
Exercise level				
None (155)	0.70 ± 0.39	1.72 ± 0.54	0.538#	0.058*^
Once a month (122)	0.77 ± 0.38	1.86 ± 0.53		
Once a week (132)	0.73 ± 0.38	1.88 ± 0.54		
≤ 3 times a week (185)	0.77 ± 0.40	1.86 ± 0.64		
> 3 times a week (196)	0.73 ± 0.43	1.83 ± 0.57		
Stress level				
Low (139)	0.69 ± 0.44	1.75 ± 0.60	0.007*^	$0.004^{\#^{\wedge}}$
Moderate (492)	0.73 ± 0.39	1.82 ± 0.52		
High (159)	0.82 ± 0.39	1.95 ± 0.56		
Education level				
Primary (3)	1.83 ± 0.25	1.83 ± 0.25	0.328#	0.328#
Secondary (114)	1.77 ± 0.59	1.77 ± 0.56		
Undergraduate (516)	1.83 ± 0.56	1.83 ± 0.56		
Postgraduate (157)	1.90 ± 0.48	1.90 ± 0.48		
Employment status				
Employed (531)	0.73 ± 0.41	1.85 ± 0.54	0.218#	0.370#
Retired (76)	0.69 ± 0.34	1.88 ± 0.58		
Student (62)	0.83 ± 0.37	1.81 ± 0.50		
Unemployed (121)	0.76 ± 0.39	1.76 ± 0.56		
Monthly income, OMR				
≤ 500 (71)	0.73 ± 0.46	1.67 ± 0.60	0.977#	0.062#
501-1000 (209)	0.74 ± 0.41	1.81 ± 0.54		
1001–2000 (271)	0.75 ± 0.39	1.87 ± 0.54		
2001-3000 (114)	0.73 ± 0.40	1.85 ± 0.56		
> 3000 (125)	0.74 ± 0.37	1.87 ± 0.51		
Smoking status				
Non-smoker (735)	0.74 ± 0.40	1.83 ± 0.55	0.402#	0.724#
Current smoker (25)	0.80 ± 0.41	1.92 ± 0.55		
Ex-smoker (30)	0.66 ± 0.46	1.82 ± 0.58		
Presence of chronic disease				
No (673)	0.74 ± 0.39	1.84 ± 0.54	0.204^{\dagger}	0.107^{\dagger}
Yes (117)	0.75 ± 0.75	1.83 ± 0.58		

[&]quot;Assessed using the brief Coping Orientation to Problems Experienced inventory (Carver et al., 1989; Carver, 1997). Participants were given a choice of four responses for each statement: (1) I haven't been doing this at all; (2) I've been doing this a little bit; (3) I've been doing this a medium amount; and (4) I've been doing this a lot. Options 3 or 4 received a score of one, while options I or 2 received a score of zero. "Assessed using an independent t-test." Assessed using analysis of variance. "Statistically significant association (p < 0.05).



participants (n = 117; 14.8%) had chronic illnesses and 37 (4.7%) had psychiatric disorders. Almost half (n = 381; 48.2%) reported that they exercised more than once a week. Few of the participants (n = 25; 3.2%) were current smokers [Table 1].

The mean perceived stress score of the entire cohort was 15.75 ± 5.39 . Based on their responses to the survey, the majority of the participants (n = 492; 62.3%) had moderate stress levels, whereas 139 (17.6%) and 159 (20.1%) had low and high stress levels, respectively.

The participants reported various means of coping with COVID-19-related stressful events. Based on the brief COPE inventory, the mean total coping score was 36.31±10.37. Of the broad coping categories, approach coping had the highest mean score compared to avoidant coping (22.01±6.55 vs. 8.88±4.80). In terms of specific coping strategies, planning had the highest score (5.15±1.31), followed by acceptance (4.95±1.34), religion (4.56±1.52), and positive reframing (4.28±1.89). Substance use had the lowest mean score (0.01±0.19), followed by humor (0.86±1.43), denial (0.97±1.56), and behavioral disengagement (1.02±1.60) [Table 2].

Associations were observed between the participants' demographic characteristics and the two main categories of coping strategies adopted—avoidant and approach coping. Female participants adopted both avoidant (p < 0.001) and approach (p = 0.002) coping mechanisms more frequently than male participants. In addition, older participants (irrespective of gender) were more likely to employ both avoidant (p = 0.008) and approach (p = 0.016) coping mechanisms. Being married was also associated with greater adoption of both avoidant (p = 0.024) or approach (p = 0.028) coping styles compared to single, divorced, or widowed participants.

Participants who exercised regularly more frequently applied an approach coping strategy (p = 0.058) compared to their sedentary counterparts. In addition, participants who had experienced higher levels of stress adopted both avoidant (p = 0.007) and approach (p = 0.008) coping mechanisms more commonly than participants who had experienced low levels of stress. Other demographic variables such as education level, employment status, monthly income, smoking status, and the presence of chronic disease were not found to be significantly associated with different coping mechanism categories [Table 3].

DISCUSSION

Overall, this study found that 82.4% of surveyed Omani adults reported either moderate or highstress levels in relation to the COVID-19 pandemic. While this is the first study from Oman to assess COVID-19 pandemic-related stressors in the general population, the high prevalence of stress identified is similar to results previously reported from other countries during the 2009 influenza A virus subtype H1N1 pandemic and 2003 severe acute respiratory syndrome outbreak, as well as recent Ebola outbreaks in Africa.¹⁵⁻¹⁸ During such previous outbreaks, individuals from different populations, regions, age groups, and professions reported significant levels of psychological distress. Moreover, during the present pandemic, researchers have recorded comparable findings concerning increased levels of mental distress in different populations, despite utilizing different measurement tools. 19-21 In light of this background, the high levels of stress reported in the present study among the Omani population, including individuals who were not infected and appeared to be at low risk of infection, appear to be well within plausible limits.

Significant associations were observed between perceived stress levels relating to the COVID-19 pandemic and the adoption of coping strategies, irrespective of approach or avoidant coping category. In general, the participants adopted approach coping mechanisms such as planning, acceptance, and positive reframing more frequently than avoidant coping mechanisms such as substance use, denial, and behavioral disengagement. It might be expected that approach coping strategies would promote an individual's sense of efficacy in dealing with stress; however, participants who used active coping methods also reported high levels of stress at a prevalence similar to those who adopted more avoidance-based strategies.

These unusual findings might point to some ambiguity in Omani society associated with the country's unique cultural, ethnic, and religious background. The tendency of Omani individuals to be group-oriented has been attributed to the collective nature of Omani society, leading to a lower diversity of perceptions and expression of emotions and psychological conditions, including a tendency toward somatization.²² Thus, the similarity in stress levels noted in the current study, regardless

of distinctions in coping approach, suggests a contribution, albeit minor, from the collectivist conditioning of Omani individuals. Therefore, future studies need to consider this possibility and develop instruments to probe such culturally specific factors.

In addition, the results of the current study indicate that age, gender, and marital status were significantly associated with different coping strategies adopted during the COVID-19 pandemic in Oman. In particular, the elderly, female participants, and married individuals demonstrated greater levels of psychological distress compared to their respective counterparts, with significantly greater utilization of both of the two primary categories of coping mechanisms. It is possible that older individuals and women may perceive themselves as having less psychological control during the pandemic, resulting in the implementation of multiple coping strategies. Similar findings have been indicated in studies from China and Saudi Arabia, where female gender was a significant predictor of psychological distress.^{23,24}

Moreover, the current study found a significant association between the level of exercise and the adoption of approach coping mechanisms. Thus, a simple and readily available solution to reduce COVID-19-related stress appears to promote exercise and physical activity. Nonetheless, it is important to acknowledge previous research showing that stress may impair physical activityrelated endeavors.²⁵ This calls for efforts on the authorities and health professionals to actively educate the public and encourage them to take up various forms of physical activity as an effective way of pre-empting and releasing stress. In the current study, religion was one of the most commonly utilized coping strategies among Omani adults. This finding is comparable with those reported in several studies worldwide, particularly among people with chronic conditions or disabilities. 26,27 Surprisingly, humor was found to be one of the least frequently used coping methods among Omani adults; in contrast, other studies have shown that humor is an important coping mechanism in response to stressful events.^{28,29} This variation in results is likely the result of cultural factors.

At the time of writing, no other publications regarding COVID-19-related psychological stress and coping strategies were found originating from

Oman. As this appears to be the first such study conducted in the country, the findings provide new baseline information that may help various healthcare professionals, clinicians, psychologists, researchers, policymakers, and planners better understand the coping mechanisms employed by the general population during this pandemic. Such information can help officials to anticipate the sociopsychological impact of future outbreaks as well as identify and support those segments of the population most susceptible to the physiological and psychological effects of the current COVID-19 pandemic. Moreover, the large sample size and the high response rate of the survey were appropriate and can be considered representative of all regions of Oman.

Nevertheless, the study was subject to various limitations. Due to the cross-sectional study design, changes in individual participants' psychological adjustment over time could not be determined; this would have allowed for a more complete understanding of the psychological effects of the pandemic at different stages. In addition, because the constructs were assessed by self-reported measures, relationships between sociodemographic characteristics and stressors and coping strategies could have been influenced by reporter effect and recall bias. Moreover, we used a tool designed to assess coping strategies among Western samples; thus, the instrument might not have detected the adoption of other, more culturally specific coping mechanisms, such as social assurance, forbearance, and fatalism.^{7,13} Finally, the COVID-19 pandemic is an exceptional and unexpected situation; therefore, there were no data available before the pandemic to compare. Thus, the results from this analysis describe only associations, no causal inference can be drawn from any of the analyses described herein.

Future researchers assessing stressors and coping strategies among Omani individuals dealing with high-intensity stressful events of this magnitude should contemplate developing a culturally specific instrument appropriate for Arabic-speaking Middle Eastern populations. Such an instrument should be sensitive to the connections of coping and psychological adjustment in the cultural context in which the stressors occur. Other recommendations include adopting a longitudinal design and multimethod, multi-informant approach.



CONCLUSION

The psychological impact of a large-scale pandemic on the general Omani population is evident, even among individuals not infected with the disease. Based on our findings, mental health interventions and guidelines on reducing stress and coping with COVID-19 are necessary for the Omani population. Furthermore, because psychological resources are limited in Oman, such interventions should target those at increased risk of stress and maladaptive coping mechanisms. The results of this study underscore the necessity of a national mental health support system to meet the psychological needs of the general population.

Disclosure

The authors declared no conflicts of interest. No funding was received for this study.

Acknowledgments

The authors would like to thank the respondents for their participation in this study.

REFERENCES

- Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020 Feb;395(10223):497-506.
- Coronavirus WH. (COVID-19) Dashboard [Internet]. Covid19.who.int. 2021 [cited 2021 June 26]. Available from: https://covid19.who.int.
- Coronavirus WH. (COVID-19) Dashboard [Internet]. Covid19.who.int. 2021 [cited 2021 June 26]. Available from: https://covid19.who.int/region/emro/country/om
- Mental health and COVID-19 [Internet]. Who.int. 2021 [cited 2021 May 19]. Available from: https://www.who.int/teams/mental-health-and-substance-use/covid-19.
- The impact of COVID-19 on mental, neurological and substance use services [Internet]. Who.int. 2021 [cited 2021 May 19]. Available from: https://www.who.int/ publications-detail-redirect/978924012455.
- Lazarus RS, Folkman S. (1984). Stress, appraisal, and coping. New York, NY: Springer. p. 141.
- Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. J Pers Soc Psychol 1989 Feb;56(2):267-283.
- Skinner EA, Edge K, Altman J, Sherwood H. Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. Psychol Bull 2003 Mar;129(2):216-269.
- Liang SW, Chen RN, Liu LL, Li XG, Chen JB, Tang SY, et al. The Psychological Impact of the COVID-19 Epidemic on Guangdong College Students: The Difference Between Seeking and Not Seeking Psychological Help. Front Psychol 2020 Sep;11:2231.
- McGinty EE, Presskreischer R, Anderson KE, Han H, Barry CL. Psychological distress and COVID-19-related stressors reported in a longitudinal cohort of US adults in April and July 2020. JAMA 2020 Dec;324(24):2555-2557
- 11. Rahman MA, Hoque N, Alif SM, Salehin M, Islam SM, Banik B, et al. Factors associated with psychological

- distress, fear and coping strategies during the COVID-19 pandemic in Australia. Global Health 2020 Oct;16(1):95.
- 12. Main A, Zhou Q, Ma Y, Luecken LJ, Liu X. Relations of SARS-related stressors and coping to Chinese college students' psychological adjustment during the 2003 Beijing SARS epidemic. J Couns Psychol 2011 Jul;58(3):410-423.
- 13. Carver CS. You want to measure coping but your protocol's too long: consider the brief COPE. Int J Behav Med 1997;4(1):92-100.
- Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. J Eval Clin Pract 2011 Apr;17(2):268-274.
- Cheng C, Tang CS. The psychology behind the masks: Psychological responses to the severe acute respiratory syndrome outbreak in different regions. Asian J Soc Psychol 2004 Apr;7(1):3-7.
- McCauley M, Minsky S, Viswanath K. The H1N1 pandemic: media frames, stigmatization and coping. BMC Public Health 2013 Dec;13:1116.
- Taha S, Matheson K, Cronin T, Anisman H. Intolerance of uncertainty, appraisals, coping, and anxiety: the case of the 2009 H1N1 pandemic. Br J Health Psychol 2014 Sep;19(3):592-605.
- James PB, Wardle J, Steel A, Adams J. Post-Ebola psychosocial experiences and coping mechanisms among Ebola survivors: a systematic review. Trop Med Int Health 2019 Jun;24(6):671-691.
- Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Res 2020 May;287:112934.
- Huang L, Xu F, Liu HR. Emotional responses and coping strategies of nurses and nursing college students during COVID-19 outbreak. PLoS One 2020 Aug;15(8):e0237303.
- Wu W, Zhang Y, Wang P, Zhang L, Wang G, Lei G, et al. Psychological stress of medical staffs during outbreak of COVID-19 and adjustment strategy. J Med Virol 2020 Oct;92(10):1962-1970.
- Al-Lawati J, Al-Lawati N, Al-Siddiqui M, Anthony SX, Al-Naamani A, Martin RG, et al. Psychological morbidity in primary health care in Oman: A preliminary study. Sultan Qaboos Univ Med J 2000;2(2):105-110.
- 23. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. 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 Mar;17(5):1729.
- 24. Al Mutair A, Alhajji M, Shamsan A. Emotional wellbeing in Saudi Arabia during the COVID-19 pandemic: a national survey. Risk Manag Healthc Policy 2021 Mar;14:1065-1072.
- Stults-Kolehmainen MA, Sinha R. The effects of stress on physical activity and exercise. Sports Med 2014 Jan;44(1):81-121.
- Umucu E, Lee B. Examining the impact of COVID-19 on stress and coping strategies in individuals with disabilities and chronic conditions. Rehabil Psychol 2020 Aug;65(3):193-198.
- Girma A, Ayalew E, Mesafint G. Covid-19 pandemicrelated stress and coping strategies among adults with chronic disease in Southwest Ethiopia. Neuropsychiatr Dis Treat 2021 May;17:1551-1561.
- Peterson C, Seligman ME. Character strengths and virtues: a handbook and clarification. New York: Oxford University Press; 2004.
- Müller L, Ruch W. Humor and strengths of character. J Posit Psychol 2011 Sep;6(5):368-376.