Original Article

MODESTUM

Impact of COVID-19 on mental health in the Middle East: A cross-sectional study

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ARTICLE INFO	ABSTRACT
	Objective: This study aimed to shed the light on the relation between the COVID-19 outbreak and mental health, including depression and anxiety in the Middle East. **Methods:** This is a survey-based study that was conducted online to evaluate the impact of the COVID-19 pandemic on mental health in the Middle East countries. The survey was uploaded on Google Form platform and was distributed through Facebook and WhatsApp platform. **Results:** In this study, 1,281 respondents completed the online survey. Results showed higher percentages of anxiety were diagnosed post-pandemic (38.0%) compared to pre-pandemic (6.8%). Similarly, higher percentages of participants were diagnosed with depression post-pandemic (32.0%) compared with pre-pandemic (5.0%). Also, 43.4% of the participants showed that they always or most of the time felt 'loss of desire or interest in things. Moreover, many participants (22.4%) always/most of the time felt cramps in their chest and heart as soon as they thought of the pandemic. Finally, logistic regression analysis emphasized that gender and age significantly affected the diagnosis of anxiety and depression following the pandemic (p≤0.005). **Conclusions:** This current study highlighted an increase in the diagnosis of anxiety and depression among Middle Eastern following the COVID-19 pandemic. These findings revealed the importance of utilizing health coping or resilience strategies, mental health awareness campaigns, and education programs by the policymakers and stakeholders. **Keywords:** mental health, COVID-19, anxiety, depression, Middle East

INTRODUCTION

In December 2019, an outbreak of a novel coronavirus (COVID-19) emerged in Wuhan, China [1]. The COVID-19 infection was the largest outbreak of atypical pneumonia since the severe acute respiratory syndrome outbreak during the last decade [2]. So, the COVID-19 pandemic became a major challenge to public health policies and health care globally.

Currently and as was reported by the World Health Organization on 12 January 2023, there are over 660 million confirmed cases of COVID-19 with over 6.5 million deaths globally. In the Middle East Region, about 30 million cases were reported. The reported cases of COVID-19 have fluctuated between the Middle East countries. Turkey reported the greatest number of cases, with more than 17 million cases, followed by Iraq (2.5 million cases) and Jordan with more than 1.7 million reported cases [3].

Regardless of the physical symptoms of COVID-19 such as fever, cough, and shortness of breath [4], the outbreak of the COVID-19 epidemic has caused many mental disorders in infected and healthy people [5].

Many researchers studied the psychological impact of outbreaks and reported several risk factors, which might harm mental health during this period in several countries but not in the Middle East [6-9]. Some of these risks were high morbidity and mortality rates, resource instability, fear of stigma and discrimination, besides arising a lot of myths and fake news in the general public [9], and the extensive use of social media [1, 8]. On another hand, the widespread economic instability due to the COVID-19 pandemic, the shift to online learning, and the fear of work loss added to pandemic stress [10].

Although there is much research conducted to assess the impact of COVID-19 on mental health in different countries [6, 8, 11], there is no study conducted in the Middle East Region for this purpose. Therefore, this study aimed to shed the light on the relation between the COVID-19 outbreak and mental health, including depression and anxiety in the Middle East.

Table 1. Demographic characteristics of the study participants (n=1,281)

Parameter	n (%)
Gender	
Male	480 (37.5)
Female	801 (62.5)
Age (years)	
<18	200 (15.6)
18-25	811 (63.3)
26-35	130 (10.1)
36-45	72 (5.6)
>46	68 (5.3)
Educational status	
School level or lower	317 (24.7)
Diploma	196 (15.3)
Bachelor's degree	692 (54.0)
Graduate degree	94 (7.3)
Employment	
Employed	179 (14.0)
Unemployed	1,102 (86.0)
Where were you living during COVID-19 pandemic?	
Countries of the Levant	698 (54.5)
The Arabian Peninsula	268 (20.9)
Iraq	116 (9.1)
Egypt	179 (14.0)
Turkey	16 (1.2)
Iran	4 (0.3)
Income	
Low	148 (11.6)
Moderate	1,032 (80.6)
High	101 (7.9)

METHODS

Study Design, Settings, and Subjects

This is a descriptive cross-sectional survey-based study that was conducted online to evaluate the impact of the COVID-19 pandemic on mental health in November and December 2022 in the Middle East countries including the Arabian Peninsula, Turkey, countries of the Levant, Egypt, Iraq, and Iran.

Questionnaire Development and Data Collection

A draft questionnaire was designed after an extensive literature review of published studies related to the COVID-19 pandemic. English and Arabic languages were used to write the questionnaire. Department of Translation at Applied Science Private University (ASU) validated the translation of the final version. The questionnaire was tested for content validity by experts in the field. The survey collected demographic information about participants. Additionally, the survey included questions about participants' psychological and social condition during the pandemic periods. Internal reliability was assessed by measuring Cronbach's alpha. Then, the survey was uploaded on Google Form platform, and was distributed through Facebook and WhatsApp platform.

Statistical Analysis

Data were analyzed using a statistical package for social science (SPSS Inc., Chicago, IL, USA). The descriptive analysis was performed using mean (M)/standard deviation (SD) for quantitative variables and frequency/percentage for qualitative variables.
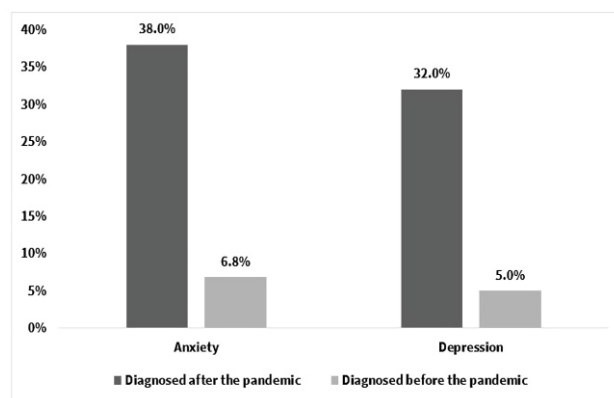
Figure 1. Diagnosis of anxiety & depression among the study participants before & after the COVID-19 pandemic (n=1,281) (Source: Authors' own elaboration)

Univariate and multiple logistic regression were used to screen the predictors affecting the diagnosis of anxiety or depression post pandemic. Significant variables (p≤0.250) resulting from the univariate linear regression were entered into a multiple linear regression model using enter analysis. Variables independence was checked using person correlation, where <0.900 indicates the absence of multicollinearity between the independent variables in regression analysis. Results with a p-value≤0.050, with a 95% confidence interval, were considered significant.

RESULTS

Patient Characteristics

In total, 1,281 respondents completed the online survey, with 62.5% being females (n=801), and 63.3% being in the age range of 18-25 years (n=811). More than half of the respondents (n=692, 54.0%) had completed a bachelor's degree, followed by 16.6% (n=231) completed a high school degree or an equivalent degree. Only 14.0% of the participants (n=179) were employed. Most of the respondents (n=1,032, 80.6%) reported a moderate income (**Table 1**). With regards to the place of residence during the pandemic, the majority (n=698, 54.5%) were living in the countries of the Levant, while 20.9% (n=268) were living in the Arabian Peninsula.

Participants were asked if they were diagnosed with anxiety or depression before and after the pandemic (**Figure 1**), and interestingly, results showed higher percentages of anxiety were diagnosed post-pandemic (38.0%) compared to pre-pandemic (6.8%). Similarly, higher percentages of participants were diagnosed with depression post-pandemic (32.0%) compared with pre-pandemic (5.0%).

As the respondents answered the questions set to assess their depression status post-COVID-19, results showed that many (43.4%) always or most of the time felt 'loss of desire or interest in things'. Many (42.7%) 'felt slow to get things done and lost energy'. The majority of respondents (55.9%) never felt that they 'had thoughts of getting rid of their lives', but many (33.7%) found themselves always/most of the time 'cry easily for the simplest reasons'.

Table 2 clarifies how respondents felt towards the different statements provided towards the assessment of their depression status.

Table 2. Assessment of depression status post-COVID-19 among study participants (n=1,281)

Depression symptoms	n (%)				
	I have always felt that	I used to feel that most time	I used to feel that sometimes	I used to feel it, but rarely	I have never felt like it
Loss of desire or interest in things	255 (23.6)	214 (19.8)	177 (16.4)	129 (11.9)	306 (28.3)
Feeling slow to get things done & lost energy	234 (21.6)	228 (21.1)	210 (19.4)	117 (10.8)	292 (27.0)
I have thoughts to get rid of life	104 (9.6)	114 (10.5)	106 (9.8)	153 (14.2)	604 (55.9)
Crying easily for the simplest reasons	195 (18.0)	170 (15.7)	149 (13.8)	150 (13.9)	417 (38.6)
I blame myself too much for doing some things	179 (16.6)	172 (15.9)	155 (14.3)	150 (13.9)	425 (39.3)
I always feel sad & hopeless about life	175 (16.2)	160 (14.8)	170 (15.7)	132 (12.2)	444 (41.1)
Discomfort over the simplest things dramatically	204 (18.9)	210 (19.4)	160 (14.8)	160 (14.8)	347 (32.1)
I no longer think as much as before about future plans	175 (16.2)	183 (16.9)	130 (12.0)	140 (13.0)	453 (41.9)
After COVID-19, my appetite for food is no longer what it used to be	173 (16.0)	164 (15.2)	124 (11.5)	132 (12.2)	488 (45.1)
I feel more comfortable when I am alone	210 (19.4)	183 (16.9)	163 (15.1)	146 (13.5)	379 (35.1)
I feel sleepy a lot	238 (22.0)	216 (20.0)	150 (13.9)	124 (11.5)	353 (32.7)
Feeling frustrated or hopeless	189 (17.5)	166 (15.4)	167 (15.4)	140 (13.0)	419 (38.8)
Difficulty concentrating on things such as reading newspaper or watching TV	201 (18.6)	187 (17.3)	132 (12.2)	149 (13.8)	412 (38.1)
I feel unimportant in this life	155 (14.3)	155 (14.3)	121 (11.2)	126 (11.6)	524 (48.5)
I feel that my achievements are irrelevant	163 (15.1)	159 (14.7)	144 (13.3)	131 (12.1)	484 (44.7)

Table 3. Assessment of anxiety status post-COVID-19 among study participants (n=1,281)

Anxiety symptoms	n (%)				
	I have always felt that	I used to feel that most time	I used to feel that sometimes	I used to feel it, but rarely	I have never felt like it
I feel cramps in the chest and heart as soon as I think of the Corona pandemic	137 (12.7)	105 (9.7)	77 (7.1)	104 (9.6)	658 (60.9)
I feel trembling when I think of coronavirus	67 (6.2)	133 (12.3)	104 (9.6)	108 (10.0)	669 (61.9)
I feel states of fear and fatigue	106 (9.8)	131 (12.1)	126 (11.7)	140 (12.9)	578 (53.5)
I feel like bad things will happen to me	113 (10.5)	117 (10.8)	137 (12.7)	147 (13.6)	567 (52.5)
I have fantasies and strange ideas	123 (11.4)	134 (12.4)	123 (11.4)	137 (12.7)	564 (52.2)
I started to avoid doing certain things I used to do in the past	115 (10.6)	153 (14.1)	145 (13.4)	137 (12.7)	531 (49.1)
Fear of being in human gatherings	140 (13.0)	157 (14.5)	136 (12.6)	129 (11.9)	519 (48.0)
Feeling psychologically upset and fidgeting	139 (12.9)	166 (15.4)	125 (11.6)	142 (13.1)	509 (47.1)
I prefer to stay alone away from people for fear of contracting Corona	130 (12.0)	143 (13.2)	124 (11.5)	147 (13.6)	537 (49.7)
I feel anxious to do things I used to do	128 (11.8)	141 (13.0)	119 (11.0)	142 (13.1)	551 (51.0)
I feel like things are not going well	130 (12.0)	162 (15.0)	133 (12.3)	130 (12.0)	526 (48.7)
I feel so restless that I was moving much more than usual	116 (10.7)	129 (11.9)	104 (9.6)	118 (10.9)	614 (56.8)
I feel like I am going to lose my life because of coronavirus	107 (9.9)	112 (10.4)	95 (8.8)	130 (12.0)	637 (58.9)
Watch news & stories about coronavirus on media makes me nervous/anxious	121 (11.2)	143 (13.2)	143 (13.2)	165 (15.3)	509 (47.1)
My ability to concentrate in my work/study has become less	163 (15.1)	159 (14.7)	143 (13.2)	126 (11.7)	490 (45.3)
I have sleep problems	160 (14.8)	160 (14.8)	146 (13.5)	126 (11.7)	489 (45.2)
I feel pains that I do not know the source of	139 (12.9)	153 (14.2)	114 (10.5)	142 (13.1)	533 (49.3)
I sweat excessively than usual	94 (8.7)	126 (11.7)	120 (11.1)	124 (11.5)	617 (57.1)

Many respondents suffered from anxiety symptoms post-COVID-19. Many (22.4%) always/most of the time felt cramps in their chest and heart as soon as they thought of the pandemic. Feeling states of fear and fatigue was experienced always/most of the time by 21.9% of the respondents. Fear of being in human gatherings was experienced by 27.5% of respondents always/most of the time, and 24.4% declared that they always/most of the time felt nervous when watching news and stories about COVID-19 on media, while 29.8% always/most of time had declined ability to concentrate in their work or study. As for sleep problems, 29.6% always/most of the time had problems. **Table 3** provides all respondents' answers regarding their anxiety status perception post-COVID-19. Multiple logistic regression analysis of factors affecting diagnosis of anxiety and depression after COVID-19 (**Table 4** and **Table 5**, respectively) highlighted that males were significantly less diagnosed with anxiety (odds ratio [OR]= 0.614, p<0.001) and depression (OR=0.643, p=0.020) post-pandemic. Also, participants aged above 25 years showed higher diagnosed with anxiety (OR=1.480, p=0.009) and depression post-pandemic (OR=1,599, p=0.004) compared to those 25 years or below.

DISCUSSION

This study aimed to investigate the Middle East's mental health burden during the COVID-19 outbreak. The COVID-19 pandemic has significantly impacted individuals' physical and mental health worldwide [12]. The current study's results indicate that the percentages of anxiety and depression were much higher after the pandemic than before, highlighting the adverse impact of the pandemic on mental health.

These findings are consistent with those previously reported in the literature, where the COVID-19 pandemic has been associated with increased anxiety and depression worldwide [13, 14]. The pandemic has caused significant disruptions to daily life, such as social distancing, lockdowns, and quarantines, leading to isolation, loss of income, and increased stressors [15]. Fear of contracting the virus, concern about the health of loved ones, and grief over the loss of life has also contributed to increased levels of anxiety and depression [14].

Table 4. Assessment of factors affecting diagnosis of anxiety post-COVID-19 pandemic among study participants (n=1,281)

Parameters	Diagnoses with anxiety post-pandemic: 0: No & 1: Yes			
	OR	p-value[#]	OR	p-value[$]
Gender				
Male	Reference: 0.621	<0.001^	0.614	<0.001*
Female				
Age				
18-25 years	Reference: 1.441	0.015^	1.480	0.009*
Olderthan 25 years				
Education				
Less than a bachelor's degree	Reference: 0.848	0.223^	0.840	0.203
Bachelor's degree or higher				
Employment				
Employed	Reference: 0.898	0.471	-	-
Unemployed				
Living place				
Levant	Reference: 0.996	0.977	-	-
Other				
Income				
Low	Reference: 1.335	0.135^	1.387	0.095
Moderate or high				

Note. OR: Odds ratio; [#] Using simple logistic regression; [$]Using multiple logistic regression; ^Eligible for entry in multiple logistic regression (significant at 0.25 significance level); & *Significant at 0.05 significance level

Table 5. Assessment of factors affecting diagnosis of depression post-COVID-19 pandemic among study participants (n=1,281)

Parameters	Diagnoses with depression post-pandemic: 0: No & 1: Yes			
	OR	p-value[#]	OR	p-value[$]
Gender				
Male	Reference: 0.639	<0.001^	0.643	<0.002*
Female				
Age				
18-25 years	Reference: 1.586	0.004^	1.599	0.004*
Olderthan 25 years				
Education				
Less than a bachelor's degree	Reference: 0.813	0.146^	0.834	0.212
Bachelor's degree or higher				
Employment				
Employed	Reference: 0.862	0.345	-	-
Unemployed				
Living place				
Levant	Reference: 1.292	0.055^	1.177	0.234
Other				
Income				
Low	Reference: 1.190	0.387	-	-
Moderate or high				

Note. OR: Odds ratio; [#] Using simple logistic regression; [$]Using multiple logistic regression; ^Eligible for entry in multiple logistic regression (significant at 0.25 significance level); & *Significant at 0.05 significance level

Several previous studies contribute to the ongoing debate on the psychological impact of COVID-19 on the long-term mental health of young people [16-19]. While young adults are at the lowest risk of severe physical illness from COVID-19, those aged 18-25 are at greatest risk for adverse mental health outcomes during the pandemic [18, 19]. A study conducted in China showed that about 40.0% of youth participants infected with COVID-19 reported mental health problems and 14.4% of teens reported post-traumatic stress disorder symptoms [16].

Furthermore, the pandemic has also led to significant changes in healthcare delivery, including decreased access to in-person mental health services, which may have contributed to increased levels of anxiety and depression [13]. This has increased the need for telehealth services and other virtual mental health care delivery forms to support individuals during the pandemic [20].

In addition to anxiety and depression, the study participants reported other anxiety-related symptoms, such as chest and heart cramps, fear, fatigue, and sleep problems. Various studies have demonstrated that stressful life events and the outbreak of infectious diseases, such as COVID-19, can adversely impact sleep quality. The current study found that 29.6% of the participants had poor sleep quality [21, 22]. Longitudinal studies have shown that sleep quality is interrelated with anxiety in both directions. People with poor sleep quality are more likely to develop anxiety symptoms, and individuals with greater anxiety are likelier to have poorer sleep quality. Anxiety also affects sleep quality as it can make it difficult for anxious individuals to fall asleep, and they may wake up frequently during the night [22]. Additionally, feeling nervous when watching news and stories about COVID-19, and decline in the ability to concentrate on work or study, also reported by the participants, align with previous studies on the psychological impact of the pandemic [23].

The logistic regression analysis highlights that gender and age significantly affected the diagnosis of anxiety and depression following the pandemic. This finding is consistent with previous reports indicating that women and older adults are more vulnerable to anxiety symptoms and depression during stressful events than men [24, 25]. For example, a study conducted in China found that female healthcare workers had a higher prevalence of anxiety symptoms compared to male healthcare workers [26]. Another study conducted in Italy also reported that women had higher levels of anxiety and depression compared to men during the COVID-19 outbreak [27]. Several factors have been proposed to explain this gender difference in anxiety during the pandemic. One factor is the higher prevalence of caregiving roles among women, which can lead to increased stress and anxiety [28]. In addition, women may be more likely to emotionally process stressors, which can increase their risk for anxiety [29]. Furthermore, women may be more likely to engage in maladaptive coping strategies such as rumination, which can exacerbate anxiety symptoms [30].

Finally, although this study was proactive in revealing the effect of COVID-19 on the diagnosis of anxiety and depression, and in identifying predicting the occurrence of those conditions post pandemic, there were some limitations that must be pointed out. First, this study relied on participants self-reporting on the presence of anxiety and depression post the pandemic, which may over or underestimate that actual rate of diagnosis. Also, in this study we have recruited a convenience sample of participants via social media, which introduced selection bias as most of the respondents were young (less than 25 years old). This may limit the generalizability of results to the general population.

CONCLUSIONS

This study highlighted an increase in the diagnosis of anxiety and depression among Middle Eastern following the COVID-19 pandemic. These findings revealed the importance of prioritizing access to mental health services and support during such pandemics; by utilizing health coping or resilience strategies, mental health awareness campaigns, education programs by the policymakers and stakeholders.

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