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Original Article

Anxiety and Depression Among Egyptians During the COVID-19 Pandemic Lockdown

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Abstract

Background: The COVID-19 pandemic was associated with a multiplicity of pressures. Experiencing lockdown, self-isolation, and the loss of beloved ones are the main risk factors for the development of mental health disorders during the pandemic. In low- and middle-income countries, infection control precautions, surveillance databases, laboratory capacity, and public health funds are limited, so the psychological influences of the pandemic on the public can be even worse.
Objective(s): This study was conducted to assess anxiety and depression among Egyptians during the COVID-19 pandemic lockdown.
Methods: A cross-sectional study using an e-survey distributed in May 2020 for the assessment of sociodemographic and occupational data and a validated Arabic questionnaire to assess depression by the Patient Health Questionnaire (PHQ-9) and anxiety by the General Anxiety Disorder questionnaire (GAD-7).
Results: Five hundred and eighty-nine participants were included in the study, with a mean age of 28.3 ± 11.2 years. About 43.6% of the sample resided in the Suez Canal region, and about 58.6% were university students. Among the study population, 46.5% expressed moderate to severe anxiety and 64.3% expressed moderate to severe depression. The study demonstrated that all participants showed high frequencies of depression and anxiety regardless of variations in age, sex, educational level, occupation, or chronic diseases.
Conclusion: Depression and anxiety rates during the COVID-19 pandemic lockdown were higher than before the pandemic, so identification, social support, and early intervention are very important to prevent additional complications.

Keywords: Anxiety, COVID-19, depression, Egypt

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INTRODUCTION

The novel SARS-CoV-2, known to cause coronavirus disease 2019 (COVID-19), emerged in Wuhan, China, and spread rapidly to every continent [(1)]. SARS-CoV-2 is very contagious and has efficient person-to-person transmission, which could be more evident in healthcare settings [(2)]. On March 11, 2020, COVID-19 was reported as a global pandemic; in the Eastern Mediterranean Region, more than 17 out of 22 countries had reported infected cases [(3, 4)].

The COVID-19 pandemic was associated with a multiplicity of pressures [(2)]. Experience of such a warning to health and life, to lockdown, self-isolation, job loss, family struggles, or loss of loved ones, are among the main pressures associated with the pandemic. Recent preliminary research has demonstrated that both forefront medical staff and the public are experiencing a range of psychological problems, including stress-related disturbances, anxiety, and depression [(5-9)].

As the crisis continues, its impact on people's psychological well-being and mental health will likely increase. Moreover, stress-related reactions, such as generalized fear and fear-induced over-reactive behavior among the public, could disturb infection control [(2)].

Therefore, monitoring mental health during the pandemic seems like an extremely important task. The World Health Organization recommends conducting successive surveys during the pandemic about people's mental health, as understanding how humans respond to the pandemic may aid in the anticipation of undesirable situations and benefit the initiation of mitigating measures [(2)]. Holmes et al. indicated that the collection of data on the mental health and psychological effects of the COVID-19 pandemic

across the whole population, as well as in vulnerable groups, is the immediate priority during the pandemic [10].

In low- and middle-income countries, such as Egypt, where infection control precautions, surveillance databases, laboratory capacity, and public health funds are limited [11, 12], the response to the COVID-19 pandemic is challenging, and as a result, the psychological influences of the pandemic on the public can be even worse. Therefore, we performed this cross-sectional study to assess depression and anxiety and their correlating factors among the population in Egyptian governorates during the COVID-19 pandemic. The findings can help in identifying the population at high risk of depression and anxiety and detecting potential associations for possible interventions during similar future conditions.

METHODS

Study design

A web-based cross-sectional survey to assess anxiety and depression among Egyptian adults during the COVID-19 pandemic.

Study population and sampling technique

According to the Egyptian Government's public mandates to reduce face-to-face encounters and home isolation, an online snowball sampling procedure was adopted to collect data from people aged 18 years and older. The link to the form was disseminated to all social media and email groups during the period between May 2020 and the end of June 2020.

Sample size

After reviewing previous studies, we determined the following criteria to calculate the least sample size: population size of 100 million, prevalence of anxiety (4.75%), confidence level of 95%, and 2% absolute precision. The lowest sample size was calculated using the equation; Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)] [13].

The sample size needed was 435 participants. Then, we increased the least sample size by about 40% to serve in stratifying statistical analyses of depression and anxiety into mild to moderately severe and very severe and to overcome any unexpected invalid questionnaires. The sample size frame is shown in (Figure I).

Data collection tool

A web-based questionnaire was used including the following sections:

- Section (1): Sociodemographic data (age, sex, level of education, governorate, residence, occupational data, chronic diseases, and causes for going out during the lockdown period).
- Section (2): depression (PHQ-9); it entailed nine questions regarding feelings in the past 2 weeks. Answers were on a 4-rate scale, ranging from not at all to nearly every day. Each answer received a score then the total score is calculated. A score of <5 indicated no or minimal depression. A score of 5–9 indicated mild depression. A score of 10–14 indicated moderate depression. A score of 15–19 indicated moderately severe depression. A score of (≥20) indicated severe depression. We used a validated version in Arabic [14] .
- Section (3): Generalized Anxiety Disorder 7-item questionnaire (GAD-7) [15]; it consisted of 7 questions on feelings in the last 2 weeks. Answers were on a 4-rate scale ranging from 'not at all = 0, 'several days = 1, 'more than half the days = 2, and 'nearly every day = 3. Each answer was scored then a total score was calculated. We used a validated Arabic version.

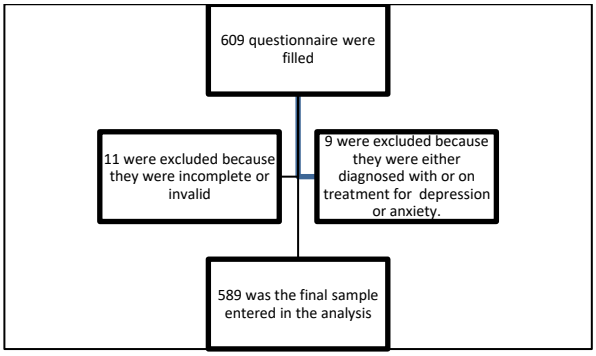

Figure I: sample recruitment

All three questionnaires were in one link on the Google form, involving informed consent, and published on all social media (online supplemental material). We activated the 'limit to one response' option to avoid duplicate responses.

RESULTS

Sociodemographic and health information

A total of 589 participants from various Egyptian governorates completed the e-survey (Table 1); aged 28.3 ± 11.2 years, with female sex predominance, representing 54.8 % of the sample; they were distributed nearly in all the Egyptian regions with different representations, nevertheless, they were more distributed in urban areas (84.6%) than in rural areas. Nearly half of the participants were university students (48.9%). About 38% of the study participants were working, while the remaining 62% were either student, housewives, had no job or retired. About 20.8% had a chronic illness or were on regular treatment (Table 1). Participants were asked about whether they went out during the lockdown period or not and the causes of their going out are shown in figure (1).

Psychological symptoms

Anxiety and depression were assessed among the participants using validated questionnaires, which are GAD-7 and PHQ-9, respectively, the scores are shown in Table (2). Only 10.7% of participants had neither depression nor anxiety, while the remaining 89% had either depression, anxiety, or both.

Participants were asked if they had any of the above symptoms and to what extent they affected participants' work or daily activities; 23.4% had no difficulty, 56% had difficulty to some extent, 14.8% stated it was very difficult, and 5.8% stated it was complicated

Table 1: Socio-demographic characteristics of studied adult Egyptians

Socio-demographic characteristic		Adut Egyptians (n = 589)	
		No.	%
%Age in years	< 30	362	61.3
	30 - < 45	165	28
	45 - < 60	53	9
	≥ 60	9	1.5
	Mean ± SD	28.3 ± 11.2	
Sex	Male	266	45.2
	Female	323	54.8
Education level	Undergraduate student	345	58.6
	Graduated	159	27
	Postgraduate studies	85	14.4
Occupation	Student/ housewife/ no work	357	60.6
	Healthcare worker	54	9.2
	Employee	152	25.8
	Private work	17	2.9
	Retired	9	1.5
Residence	Urban	498	84.6
	Rural	91	15.4
Governorate region	Greater Cairo	167	28.4
	Suez Canal region	257	43.6
	Delta region	93	15.8
	Alexandria region	34	5.8
	Upper Egypt region	34	5.8
	Did not mention	4	0.7
Chronic diseases	Yes	119	20.2
	No	470	79.8
Did you go out during lock down period	Yes	390	66.2
	No	199	33.8

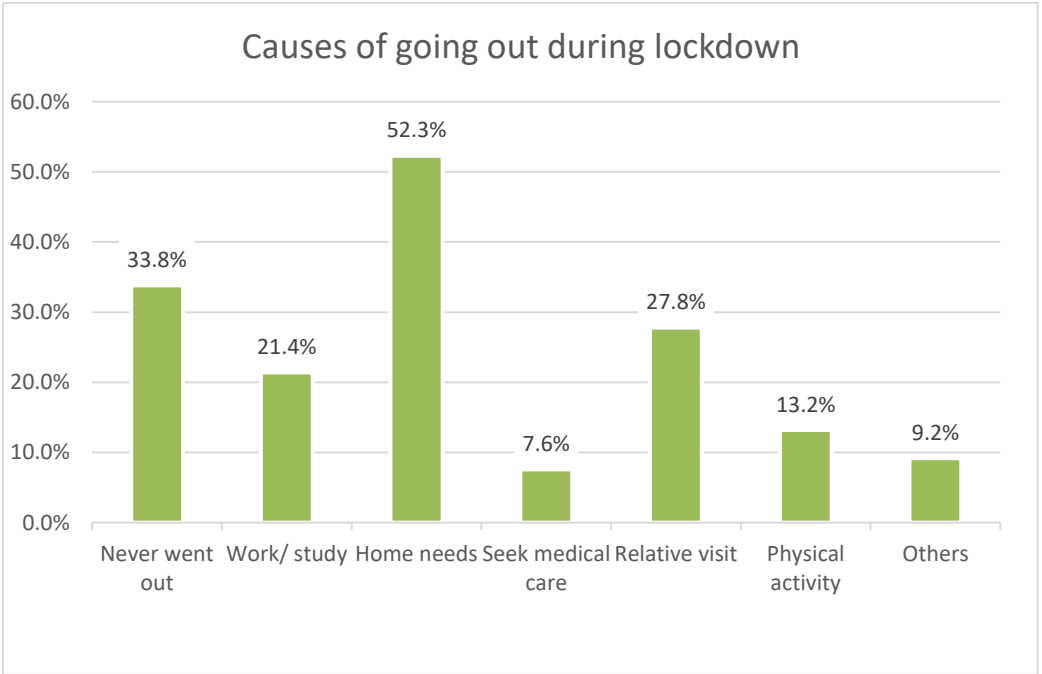

Figure 1: Frequency of reasons for going out during the lockdown period among adult Egyptians (n = 589)

Table 2. Depression and anxiety among adult Egyptians

	Adult Egyptians (n = 589)	
	No.	**%**
Depression		
No or minimal depression (<5)	72	12.2
Mild depression (5:9)	126	21.4
Moderate depression (10:14)	142	24.1
Moderately severe (15:19)	118	20
Severe need consultation (≥20)	131	22.2
Anxiety		
No anxiety (<5)	150	25.5
Mild anxiety (5:9)	165	28
Moderate anxiety (10:14)	141	23.9
Severe anxiety (≥15)	133	22.6

Factors linked to perceived psychological symptoms using bivariate analysis

The association between anxiety and depression and different socio-demographic risk factors was evaluated. The cut-off values used were anxiety score (≥5) and depression score (≥5). Table 3 shows their association with depression, and Table 4 with anxiety. None of the studied risk factors showed significant differences between participants with depression or anxiety and those without.

Table 3: Association between depression and different socio-demographic risk factors among adult Egyptians

Socio-demographic characteristic	Adult Egyptians (n = 589) Depression with different degrees (PHQ 9 score ≥ 5) **No.** (%)	No or minimal depression (PHQ 9 score < 5) **No.** (%)	Odds ratio (95% CI)	p- value[1]
Age				
• < 30	312 (86.4%)	49 (13.6%)	0.71 (0.42 – 1.21)	0.208
• ≥ 30	205 (89.9%)	23 (10.1%)		
Sex				
• Male	290 (89.8%)	33 (10.2%)	1.51 (0.92 – 2.48)	0.101
• Female	227 (85.3%)	39 (14.7%)		
Educational degree				
• Student (secondary school or university	298 (86.4%)	47 (13.6%)	0.723 (0.43 – 1.21)	0.218
• Graduate or postgraduate	219 (89.7%)	25 (10.3%)		
Residence				
• Urban	436 (87.6%)	62 (12.4%)	0.87 (0.43– 1.76)	0.696
• Rural	81 (89%)	10 (11%)		
Occupation				
• Student / No work (ref.)	309 (86.6%)	48 (13.4%)	1	1
• Healthcare workers	50 (92.6%)	4 (7.4%)	1.94 (0.67 – 5.62)	0.221
• Employee	134 (88.2%)	18 (11.8%)	1.16 (0.65 – 2.06)	0.622
• Private work	16 (94.1%)	1 (5.9%)	2.49 (0.32 – 19.17)	0.382
• Retired	8 (88.9%)	1 (5.9%)	1.23 (0.15 – 10.16	0.839
Chronic illness				
• Yes	107 (89.9%)	12 (10.1%)	0.77 (0.39 – 1.48)	0.425
• No	410(87.2%)	60 (12.8%)		
Go out during lockdown.				
• Yes	347 (89%)	43 (11%)	1.38 (0.83 – 2.28)	0.214
• No	170 (85.4%)	29 (14.6%)		

1: Chi square test

Table 4. association between anxiety and socio demographic characteristics among adult Egyptians

Socio-demographic characteristic	Anxiety with different degrees (GAD score ≥5) No. (%)	No anxiety (GAD score < 5) No. (%)	Odds ratio (95% CI)	p- value
Age				
• < 30	263 (72.9%)	98 (27.1%)	0.79 (0.54 – 1.17)	0.239
• ≥ 30	176 (77.2%)	52 (22.8%)		
Sex				
• Male	195 (73.3%)	71 (26.7%)	0.89 (0.61 – 1.29)	0.536
• female	244 (75.5%)	79 (24.5%)		
Educational degree				
• Student (secondary school or university	250 (72.55)	95 (27.5%)	0.77 (0.52 – 1.12)	0.170
• Graduate or postgraduate	189 (77.5%)	55 (22.5%)		
Residence				
• Urban	375 (75.3%)	123 (24.7%)	1.29 (0.79 – 2.11)	0.317
• Rural	64 (70.3%)	27 (29.7%)		
Occupation				
• Student/ No work (ref.)	258 (72.3%)	99 (27.7 %)	1	1
• Healthcare workers	44 (81.5%)	10 (18.5%)	1.69 (0.82 – 3.48)	0.157
• Employee	116 (76.3%)	36 (23.7%)	1.23 (0.79 – 1.92)	0.344
• Private work	13 (76.5%)	4 (23.5%)	1.25 (0.39 – 3.92)	0.705
• Retired	8 (88.9%)	1 (11.1%)	3.07 (0.38 – 24.86)	0.293
Chronic illness				
• Yes	86 (72.3%)	33 (27.7%)	0.86 (0.55 – 1.36)	0.526
• No	353 (75.1%)	117 (24.9%)		
Go out during lockdown.				
• Yes	300 (76.9%)	90 (23.1%)	1.44 (0.98 – 2.11)	0.062
• No	139 (69.8%)	60 (30.2%)		

1: Chi square test

DISCUSSION

Our e-survey analyzed 589 responses from different participants. It was built to investigate the impact of lockdown on mental health among Egyptians during the COVID-19 pandemic. Our study was one of the leading studies to discuss this issue in Egypt. The study was conducted in the middle of the first wave of the pandemic in Egypt, from the beginning of May 2020 until the end of June 2020.

Adverse psychological symptoms

Focusing on mental health is of major importance when all nations are facing catastrophic events, such as the recent one caused by COVID-19, which can compromise mental health. However, it is not the first time that all nations have faced a catastrophic situation due to an uncontrollable medical condition, with repercussions on the economic, political, social, and individual systems.

The 2003 epidemic was caused by severe acute respiratory syndrome (SARS) or even the more recent swine flu of 2009 [16]. In these cases, the literature had mainly focused on the psychological implications for patients directly involved and for medical and healthcare personnel working on the front line. The emotional reactions experienced by those who, during the SARS epidemic, worked closely with the disease were extremely intense and included fear of contagion, feelings of stigma, loneliness, boredom, anger, anxiety, stress, and a sense of uncertainty [17, 18].

Also, it was found that during the 2003 outbreak, stress levels were high in both patients and healthy participants, indicating that the whole community had been affected regardless of other socio-demographic factors [17]. Patients also reported feelings of loneliness and boredom caused by prolonged quarantine and a high prevalence of psychological distress [19, 20].

This study found a high frequency of the studied mental health problems; anxiety and depression: 74.5% and 87.8%, respectively with prevalence of moderate to severe anxiety 46.5%, and moderate to severe depression 66.3%. These findings are consistent with another study conducted in Egypt before our study in April, and it also revealed a high prevalence of mental health problems: anxiety and depression 76.4% and 77.2%, respectively, among healthcare workers [20].

Also, the findings were in agreement with a previous study done in Egypt at the beginning of the lockdown from March to May 2020, which found the prevalence of anxiety was 61.7%, whereas depression was 54.1%. All these rates in the early phases of the pandemic were much higher than those reported in National Mental Health Survey conducted by Ghanem et al. in 2009 who found the prevalence of mood

disorders and anxiety disorders among Egyptians (6.4% and 4.8% respectively) [21]. This could be explained by the extra effect of epidemics on mental health, this is also confirmed by Chinese, Indian, and British studies, where 35.1, 25.3, and 23.8%, respectively, of adults, developed anxiety related to epidemics [22-24].

The reasons behind the high prevalence of anxiety during the pandemic, as suggested by Paul and Chowdhury are fear for one's health or the loss of a beloved person, unemployment, social isolation, disruption to daily life, and the unknown aspect of disease [25]. People may experience social isolation, an inability to tolerate this stress, fear of being trapped, loss of control, and the spread of rumors.

As uncertainty increases feelings of fear, it results in behaviors that regain control of situations that people fear for two reasons; the first is that COVID-19 is perceived as a true threat expected to last no one knows when or how to regain control [26]. The second reason, as stated by Rubin and Wessely is that the current state of the COVID‐19 illness already paints a picture of inevitable and large‐scale quarantine [27].

Depression was detected among 87.8% of the participants in this study, which is also much more than the results of the studies conducted in Africa and Australia by Jalloh et al. [27] and Taylor et al. [28], who reported that 48 and 34% of the participants showed depressive symptoms owing to Ebola and Influenza epidemics in Africa and Australia, respectively. Also, this result was higher than the prevalence of depressive symptoms owing to COVID‐19 in a Chinese study by Huanga and Zhao [22].

As the situation became critical in Egypt due to the rise in the number of confirmed and suspected cases. Therefore, greater attention should be paid to mental health by providing them with psychological support and counseling. These were taken into consideration by the Egyptian Ministry of Health, which allocated two hotlines: 0808880700 and 0220816831 at the end of March 2020, to provide psychological support for citizens in home confinement as part of the precautionary measures taken by the state to counter the spread of the deadly coronavirus [29].

Associated factors

We assessed the association between age, sex, education degree, occupation, residence, chronic illness, going out during the lockdown period, and depression and anxiety. Our study showed that none of the studied factors was associated with having either depression or anxiety, which means that all subgroups of the population had high levels of depression and anxiety symptoms during the pandemic regardless of their variation.

Concerning age, the difference between participants older than 30 years compared to participants younger than 30 years did not show statistical significance. Although it was suggested that older people may have worse mental health due to the increased risk of contracting and dying from the infection and their lower immunity. This confirms the conclusion of Wilson and his colleagues (2020) who stated that being old may buffer against the negative impact of the COVID-19 pandemic on mental health whereas being older might act as an effective buffer against adverse psychological effects of living in stressful circumstances [30]. Previous studies have also acknowledged that older age indicated better-coping mechanisms for anxiety [31], while younger age was indicative of higher levels of psychological morbidity [32]. Accordingly, this may explain the insignificant difference between different age groups.

Regarding sex, our study did not show any significant difference between males and females in the prevalence of anxiety and depression. This is consistent with Huanga and Zhao [22] Cao et al. [33] who did not reveal any significant relation between anxiety and depressive symptoms and sex. A previous study reported in Turkey by Özdin and Özdin showed that females have more depressive symptoms but also did not reach statistical significance [34].

About 58.6% of our study participants were university students. The prevalence of anxiety and depression among undergraduate students compared to graduated and postgraduate participants did not show statistical significance. This pandemic is attributed to the fact that the COVID-19 pandemic affected the mental well-being of all participants, regardless of their education level.

On the other hand, studies reported by Gualano et al. [35] and Palgi et al. [36], showed that university students are at greater risk for developing psychological symptoms. Evidence from a previous study documented that those 18-20 years old individuals are vulnerable to mental illnesses and 75% of mental illnesses, have a first-time onset during the youth years [37]. For many students, starting university is associated with leaving home for the first time, and increasing independence, pressure, and responsibility [38].

Among the healthcare workers studied, 92.6% had depression and 81.5% had anxiety. On the other hand, all other occupations had 87.3% depression and 73.8% anxiety. Although healthcare workers had higher frequencies, this did not reach statistical significance. There are controversies in previous studies regarding mental health problems among healthcare workers and the general population. a web-based cross-sectional survey from China showed that healthcare workers were more likely to suffer from mental health problems than the general population during the COVID-19 pandemic [23] . This may be attributed to their being on the frontlines of the pandemic and their

increased risk of catching an infection.

On the contrary, a meta-analysis assessing the psychological conditions among healthcare workers during the COVID-19 pandemic showed that the prevalence of depression and anxiety was 5.1% and 25.5% and that was lower than two large Chinese studies conducted on the general population [39, 40]. This could be partially explained by the possible better knowledge and more positive attitude towards the pandemic among healthcare workers compared with other occupations. Therefore, they would be more able to develop coping strategies with the pandemic.

Astonishingly, there was no significant association between having a chronic illness and developing depression or anxiety. It is inconsistent with some recent studies, which revealed an association between medical history and increased anxiety and depression caused by the COVID-19 spread [41]. Previous studies showed that medical history and chronic illnesses are associated with increased psychiatric distress levels [10]. People with a history of medical problems and poor health may be exposed to a new disease [42].

In the end, our study concluded that all subgroups of the population have high frequencies of depression and anxiety related to the pandemic and the lockdown period despite their variations in age, sex, education, occupation, and residence.

Strengths and limitations

As far as we know, this study was one of the first studies to discuss depression and anxiety among Egyptians during a pandemic. The current study had several limitations; the main challenge we faced was how to collect data in such circumstances, and this was the main reason to use social media. Also, cross-sectional self-reported data might be susceptible to over or underestimation by participants, and an inability to develop a causal relationship between the studied variables, but luckily, we could gather a representative sample for adult Egyptians.

CONCLUSION AND RECOMMENDATIONS

The Coronavirus pandemic and its socioeconomic outcomes affected the psychological well-being of Egyptians, and this could increase the demand for help from mental health services. Results of similar studies strongly recommended investing additional resources in public preventive psychological support. This could prevent or minimize the aggravation of difficulties, which might subsequently lead to the need for exhaustive and costly interventions.

STATEMENTS AND DECLARATIONS

FUNDING

This research received no external funding.

INFORMED CONSENT STATEMENT

Informed consent was displayed at the beginning of the Google form, and participants were free to refuse to participate with no need to declare the reason why.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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