Research article

Anxiety among the Sudanese university students during the initial stage of COVID-19 pandemic

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ARTICLE INFO	ABSTRACT
Keywords: Anxiety Public mental health Coronavirus Physical distancing	Since the emergence of the novel coronavirus disease 19 (COVID-19), many people were facing daily life changes that could predispose them to anxiety. For the Sudanese university students, the situation is even more complicated because of the limited availability of online learning and the difficult economic situation of the country. The **objective** of this study is to assess the students' anxiety levels. **The method** we used was a cross-section of the university students in Sudan using a proportionate stratified random sampling technique to assess their anxiety level using Beck Anxiety Inventory (BAI) during the COVID-19 pandemic through an online self-administered questionnaire. **Results** indicated that of the 478 participants, 75.1% had a low anxiety level, 15.5% had a moderate anxiety level and 9.4% had a potentially concerning level of anxiety. Experiencing no symptoms during the past 14 days was associated with a low level of anxiety. Moreover, experiencing fever, sore throat, and myalgia or fatigue were associated with low to moderate anxiety levels among the participants. While having a relative or a friend diagnosed or suspected with the disease or having headache were associated with a low anxiety level, Thus **the conclusion** was that not complying with the curfew measures, and the preventive etiquette of covering mouth while coughing or sneezing were associated with potentially concerning levels of anxiety while experiencing fever, sore throat and myalgia were associated with moderate anxiety levels. More research should be conducted to study the psychological influences of pandemics on students in developing countries.

1. Introduction

Coronavirus disease 19 (COVID-19) first emerged among several cases of respiratory illness in Wuhan city in China, it is caused by the novel virus 2 (SARS-Co-2) leading to severe acute respiratory syndrome. In a considerably short amount of time, the outbreak progressed to be announced as a pandemic on March 11, 2020 (Cennimo, 2020). Since then, almost the entire world was fiercely fighting the disease by applying strict measures to limit the spread, these measures had changed the daily life of people significantly.

In Sudan Since the start of the COVID-19 pandemic in mid-March and up to 3 July 2020, the Government has confirmed 9894 cases of COVID-19 and 616 deaths with a case fatality of 6.6%. The highest mortality was among those above 45 years and most of the deaths were among men. Khartoum State showed the highest number of cases (7214), River Nile State had 202 while Kassala State had 123 confirmed cases. Although Khartoum State accounts for most COVID-19-related cases, it has a low

case fatality rate (3.8%) compared to other states like Central Darfur where it reached 66%. There is a high probability of unrecognized cases which could be high in number, due to the limited number of tests and unwillingness to report or sometimes even denying the infection (Altayb et al., 2020).

Lockdown, which is applying physical distancing measures and restriction of movement, was adopted by many countries to slow down the spread of the disease, however, this had unfavorable consequences for the communities and individuals, not only that it has affected the social and economic aspects of life, but also the psychological health (WHO, 2020).

The current novel virus pandemic with all the changes it has brought can be a source of anxiety and fear for many people. Dealing with stress in a crisis can vary among different people, however, some groups can have a stronger response to stress including teens, people who lost their jobs or who had their working hours reduced, and those who had major employment changes (Centers for Disease Control and Prevention, 2020a).

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In the meantime, COVID-19 is an emerging disease that has no treatment yet, this may induce more anxiety and fear among the population. In Sudan, the situation is more complicated by the economic crisis of the country, and the fast spread of misleading information about COVID 19 through social media and elsewhere. University students comprise an important category of the society in Sudan, they are even more affected by the pandemic because of the shutdown of universities all across the country for unknown dates beside that the online educational process was only adopted by a few universities. An appropriate understanding of the anxiety related to the pandemic among university students is of great importance.

Currently, there is no known information regarding the anxiety related to the COVID-19 pandemic among university students in Sudan, so this study is an attempt to assess the anxiety levels among the students during the pandemic, to identify the risk factors of anxiety related to COVID-19 pandemic and to identify some protective measures to cope with the anxiety. Obtained information and results can help to make appropriate psychological interventions to improve the mental health of the students during pandemics.

2. Objective and methods

2.1. Study population and sampling technique

A facility-based descriptive Cross-sectional study was conducted to assess the level of anxiety among university students in Sudan during the first wave of the COVID-19 pandemic. The study was conducted in 30 days (May 2020). Proportionate stratified random sampling was used. Firstly, three states out of the 18 Sudanese states were randomly selected using the lottery method (first stratum) namely: Khartoum State, River Nile State, and Kassala State. Percentages of 80%, 12%, and 8% of the total number of university students were approximately taken from each state respectively (second stratum), based on the approximate number of students in each state. The Participation was through an online self-administered questionnaire since it was the most feasible method due to the curfew circumstances. About 21 universities were included in this survey of both public and private sectors and 478 students have completed the questionnaire.

2.2. Data collection tool

An online self-administered pre-tested questionnaire was formulated based on the literature (see Table 1) (Wang et al., 2020), (Cao et al., 2020). It consists of the following parts: the demographic data of the respondents, physical symptoms in the last 14 days, knowledge and beliefs about the pandemic, compliance with the precautionary measures of COVID-19, and anxiety levels of the participants. Anxiety level was assessed using Beck Anxiety Inventory (BAI). BAI is a self-reporting measure of anxiety and it consists of 21 items (Score of 0–21 = low anxiety; Score of 22–35 = moderate anxiety; Score of 36 and above = potentially concerning level of anxiety). It describes the psychological, emotional, and cognitive symptoms of anxiety in four aspects: subjective (e.g. "unable to relax"), neurophysiologic (e.g. "numbness or tingling"), panic-related (e.g. "fear of losing control"), and autonomic (e.g. "feeling hot") (Grant, 2011). The scale has a high internal consistency ($\alpha = 0.92$), regarding the validity of BAI, it was moderately correlated with the revised Hamilton Anxiety Rating Scale (0.51) and mildly correlated with Hamilton Depression Rating Scale (0.25) (Beck et al., 1988).

2.3. Data analysis

Data were analyzed using SPSS version 23.00. Descriptive analysis was carried out to illustrate demographic information and other selected characteristics of the participants. A Chi-square test was done to demonstrate the significance of the association between the anxiety level and the other variables. Then, the statistically significant variables were included in the logistic regression analysis. The strength of the association was illustrated using odd ratio (OR) and 95% confidence interval (CI).

2.4. Ethical issue

This study complied with the provisions of the Declaration of Helsinki concerning research on Human participants. Informed consent was taken from each participant and ethical approval was taken from The Department of Community Medicine, University of Khartoum.

3. Results

3.1. The demographic characteristics of the sample

The demographic characteristics of the participants are presented in Table 2. Most of the 478 participants were males (72%), the mean age of the participants was 21.55 years.

416 (87%) of the participants were studying in Khartoum State, 34 (7.1%) were studying in Kassala State, and 28 (5.9%) in River Nile State. Most of the participants were seniors 214 (44.6%) and the majority were

Table 1. The questionnaire.

Question	Answer
Gender	a) Male b) Female
Age	
Are you living in the capital city?	a) Yes b) No
University name	
Faculty name	
Educational year	a) First-year b) Second-year c) Third-year d) Fourth-year e) Fifth-year f) Sixth year
Do your family have a steady income?	a) Yes b) No
Do you have a friend or relative diagnosed or suspected with COVID-19?	a) Yes b) No
Physical health status during the past 14 days	a) Fever b) Headache c) Myalgia or fatigue d) Cough e) Breathing difficulty f) Diarrhea g) Runny nose or nasal congestion h) Sore throat i) Not complaining of any symptoms
Do you cover your mouth while coughing and sneezing?	a) Always b) Most of the time c) Sometimes d) Occasionally
Do you comply with the curfew measures?	a) Yes b) No
Do you need further information regarding COVID-19?	a) Yes b) No
If you answered yes in the previous question, which aspect do you need more information about?	a) Route of transmission. b) Availability and effectiveness of medicines/vaccines. c) the number of infected cases and locations in the local area. d) Information about the high-risk groups e) Symptoms of COVID 19. f) Advice on prevention of COVID-19

Table 2. The sociodemographic distribution of the respondents and its association with anxiety (N = 478).

Variables	Categories	n (%)	Chi- square	P-value
Gender	Male	344 (72%)	0.4	0.812
	Female	134 (28%)		
Age	Mean	21.55		
	Median	22		
	Standard Deviation	2.821		
	Maximum	39		
States	Khartoum State	416 (87%)	1.853	0.763
	Kassala State	34 (7.1%)		
	River Nile State	28 (5.9%)		
Educational year	Freshmen	91 (19%)	11	0.08
	Sophomores	65 (13.6%)		
	Juniors	109 (22.8%)		
	Seniors	213 (44.6%)		
Colleges	Medical colleges	290 (60.7%)	9.5	0.147
	Science colleges	117 (24.5%)		
	Literary colleges	60 (12.6%)		
	Did not respond	11 (2.3%)		
Residency	In the capital city	141 (29.5%)	2.6	0.26
	Outside the capital city	337 (70.5%)		
Stable family income	Yes	365 (76.4%)	6.3	0.178
	No	111 (23.2%)		
	Did not respond	2 (0.4%)		

studying medicine 290 (60.7%). 337 (70.5%) of the participants were living outside the capital city (Khartoum). 365 (76.4%) of respondents had a steady family income. No statistical association was found between demographic characteristics and anxiety levels among participants (P-value > 0.05).

3.2. The anxiety levels of the students during the pandemic

As shown in Figure 1, of our 478 participants 75.1% had low anxiety, 15.5% had moderate anxiety and 9.4% of the respondents had a potentially concerning level of anxiety.

65.3% of those with low anxiety were studying in Khartoum State.

3.3. Factors influenced the anxiety of the students

3.3.1. Symptoms related to COVID-19 during the past 14 days

Table 3 demonstrates that headache was experienced by 122 (25.5%) of the participants, myalgia or fatigue was experienced by 69 (14.4%), Runny nose or nasal congestion was experienced by 63 (13.2%), sore throat was experienced by 44 (9.2%), cough was experienced by 37 (7.7%), fever was experienced by 35 (7.3%), difficulty breathing was experienced by 20 (4.2%) and diarrhea was experienced by 17 (3.6%). 286 (59.8%) of the participants did not complain of any symptoms.

Experiencing fever (P-value of 0.0001), sore throat (P-value of 0.0001), myalgia or fatigue (P-value of 0.0001), headache (p-value of 0.008), and not experiencing any symptoms during the past 14 days (p-value of 0.001) were significantly associated with the anxiety level.

Of the 478 participants, 370 (77.4%) had no friend or relative diagnosed or suspected with COVID-19, having relatives or friends infected with COVID-19 was associated with anxiety (P-value = 0.002).

3.3.2. Demanding more information about COVID-19

As shown in Table 4, 327 (68.4%) of the respondents reported that they require further information regarding COVID-19, while 151 (31.6%) reported that they do not require further information. Regarding the aspects of information they need, 259 (79.2%) of the respondents reported that they need to know more about the availability and

effectiveness of medicines and vaccines against the virus, 179 (54.7%) stated that they need more information regarding the number of cases and their locations in the local area. 157 (48%) of the participants reported that they need more information concerning the high-risk groups to be infected with COVID-19, 98 (30%) required information regarding the route of transmission of COVID-19, 101 (30.9%) required more information regarding the symptoms of COVID-19 and 89 (27.2%) reported that they need more advice about the prevention of COVID-19 which was significantly associated with anxiety (P-value = 0.001).

3.4. Logistic regression analysis of the significant variables

Table 5 shows that having a relative or a friend diagnosed or suspected with COVID-19 was associated with a low level of anxiety (CI = 0.248–0.593 for moderate anxiety and CI = 0.044–0.208 for potentially concerning levels of anxiety). Headache during the past 14 days was also associated significantly with a low anxiety level (CI = 0.208–0.487 for moderate and 0.030–0.156 for potentially concerning levels of anxiety). Moreover, having fever, sore throat and myalgia or fatigue during the past 14 days were associated significantly with low to moderate anxiety (CI = 0.025–0.452, CI = 0.020–0.353 and CI = 0.023–0.242 for potentially concerning levels of anxiety respectively). Not complaining of any symptoms during the past 14 days was associated significantly with a low anxiety level (CI = 0.096–0.203 for moderate and CI = 0.103–0.214 for potentially concerning levels of anxiety). Needing advice about COVID-19 prevention was also associated significantly with low anxiety levels (CI = 0.288–0.744 for moderate anxiety and CI = 0.094–0.364 for potentially concerning levels of anxiety).

As shown in Table 6, Always or often covering mouth while coughing or sneezing was associated with a low level of anxiety (CI = 0.113–0.214 and CI = 0.187–0.661 for a moderate level of anxiety and CI = 0.77–0.162 and CI = 0.025–0.263 for potentially concerning levels of anxiety respectively).

Complying with the curfew measures and sometimes complying with it were both associated with a low level of anxiety (CI = 0.137–0.246 and CI = 0.168–0.494 for moderate CI = 0.084–0.169 and CI = 0.034, 0.211 for potentially concerning levels of anxiety respectively).
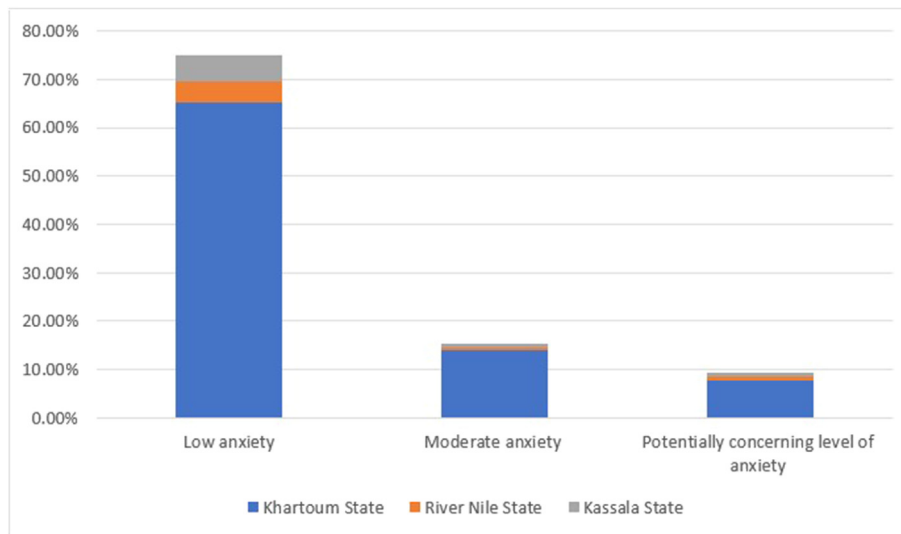
Figure 1. Anxiety levels among university students (N = 478).

Table 3. Shows the association between anxiety and experiencing COVID-19 related symptoms or having an acquaintance either suspected or infected with the disease (N = 478).

Variable	Category	n (%)	Chi-square	P-value
Symptoms during the past 14 days	Fever	35 (7.3%)	17	0.0001**
	Cough	37 (7.7%)	2.4	0.3
	Difficulty breathing	20 (4.2%)	4.6	0.1
	Sore throat	44 (9.2%)	24	0.0001**
	Runny nose or nasal congestion	63 (13.2%)	3	0.2
	Myalgia or fatigue	69 (14.4%)	31	0.0001**
	Headache	122 (25.5%)	9	0.008**
	Diarrhea	17 (3.6%)	5.3	0.07
	Not complaining of any symptoms	286 (59.8%)	13	0.001*
Having a friend or a relative suspected or infected with COVID-19	Yes	108 (22.3%)	12.1	0.002**
	No	370 (77.4%)		

while moderate and potentially concerning levels of anxiety were more detected on those who did not comply with the preventive measures (CI = 0.125–1.999 and CI = 0.254–2.731 respectively).

4. Discussion

Studies have shown that during virus provoked pandemics or epidemics over 50% of respondents report anxiety or worries (Jungmann and Witthöft, 2020). This study found that the majority of the respondents (about 75%) had a low anxiety level regarding the pandemic, and only one fourth experienced moderate anxiety and potentially concerning levels of anxiety. These results are anticipated to the fact that infectious diseases have induced a great amount of fear throughout

history compared to non-infectious diseases (Pappas et al., 2009). Besides, COVID-19 is an emerging disease that has no treatment or vaccine till now (World Health Organization, 2020b), and it has been indicated that the major psychological impact of the pandemic is the increasing levels of anxiety or stress (World Health Organization, 2020a). In a Nigerian study conducted among university students, it was found that more students experience moderate and severe anxiety during the pandemic (22%, 24% respectively) in comparison to our study (Rakhmanov and Dane, 2020). However, when comparing our findings with a similar study conducted in China, we have higher percentages of students with moderate and severe anxiety levels, this might be related to the economical difficulties and the weak health system in Sudan which might increase the public worry about the disease (Cao et al., 2020). Besides,

Table 4. Shows the need for further information regarding COVID-19 and the aspects of information required and their association with anxiety (N = 478).

Variable	Category	n (%)	Chi-square	P-value
Need for further information regarding COVID-19 pandemic	Yes	327 (68.4%)	0.6	0.7
	No	151 (31.6%)		
Aspects of the information required by the participants	Route of transmission of COVID-19	98 (30%)	2.9	0.260
	Availability and effectiveness of medicines and vaccines	259 (79.2%)	4.3	0.116
	The number of COVID-19 cases and their locations in the local area	179 (54.7%)	1.6	0.4
	Advice on prevention of COVID-19	89 (27.2%)	13	0.001**
	Information regarding the high-risk groups	157 (48%)	3	0.2
	Symptoms of COVID-19	101 (30.9%)	1.7	0.4

Table 5. Shows logistic regression analysis of the factors influencing university students' anxiety (N = 478).

	*Anxiety score	Significance	Odd ratio (OR)	95% Confidence Interval (CI)
A relative or a friend diagnosed or suspected with COVID-19	Moderate anxiety	0.000	0.384	(0.248, 0.593)
	Potentially concerning level of anxiety	0.000	0.096	(0.044, 0.208)
Fever during the past 14 days	Moderate anxiety	0.386	0.737	(0.369, 1.470)
	Potentially concerning level of anxiety	0.002	0.105	(0.025, 0.452)
Sore throat during the past 14 days	Moderate anxiety	0.356	0.750	(0.407, 1.382)
	Potentially concerning level of anxiety	0.001	0.083	(0.020, 0.353)
Myalgia or fatigue during the past 14 days	Moderate anxiety	0.087	0.650	(0.397, 1.065)
	Potentially concerning level of anxiety	0.000	0.075	(0.023, 0.242)
Headache during the past 14 days	Moderate anxiety	0.000	0.318	(0.208, 0.487)
	Potentially concerning level of anxiety	0.000	0.068	(0.030, 0.156)
Not complaining of any symptoms during the past 14 days	Moderate anxiety	0.000	0.140	(0.096, 0.203)
	Potentially concerning level of anxiety	0.000	0.149	(0.103, 0.214)
Needing advice regarding COVID-19 prevention	Moderate anxiety	0.001	0.463	(0.288, 0.744)
	Potentially concerning level of anxiety	0.000	0.185	(0.094, 0.364)

* The reference category is low anxiety.

Table 6. Shows logistic regression analysis of some of the preventive measures that influenced anxiety level among the students (N = 478).

	*Anxiety score	Answers	Significance	Odd ratio (OR)	95% Confidence Interval (CI)
Covering mouth while coughing or sneezing	Moderate anxiety	Always	0.000	0.155	(0.113, 0.214)
		Often	0.001	0.351	(0.187, 0.661)
		Sometimes	0.067	0.300	(0.083, 1.090)
		Rarely	0.003	0.382	(0.202, 0.724)
		Never	0.571	2.000	(0.181, 22.056)
	Potentially concerning level of anxiety	Always	0.000	0.112	(0.077, 0.162)
		Often	0.000	0.081	(0.025, 0.263)
		Sometimes	0.998	1.419E-9	(0.000, 0.0)
		Rarely	0.001	0.324	(0.164, 0.639)
		Never	0.0	3.839E-9	(3.839E-9, 3.839E-9)
Complying with the curfew measures	Moderate anxiety	No	0.327	0.500	(0.125, 1.999)
		Yes	0.000	0.184	(0.137, 0.246)
		Sometimes	0.000	0.288	(0.168, 0.494)
	Potentially concerning level of anxiety	No	0.763	0.833	(0.254, 2.731)
		Yes	0.000	0.119	(0.084, 0.169)
		Sometimes	0.000	0.085	(0.034, 0.211)

* The reference category is low anxiety.

shutting the universities for an unpredictable date in Sudan could be another stressful factor for the students especially since online education has been adopted by a few universities, unlike other countries. Moreover, due to the complete lockdown of Sudan and the economical crisis university students have lost their past academic year, which could be an additional psychological burden on them.

In a study from Israel, it was indicated that feeling subjectively older is positively correlated with anxiety, however, in our study age had no association with anxiety (Shrira et al., 2020). In another study conducted in India, they indicated that students were among the groups that suffered from increased levels of anxiety during the lockdown compared to the other groups that have participated in the study (Rehman et al., 2020). Also, it was demonstrated by an Argentinian study, that being a student exposed the participant to high psychological distress during the quarantine (Fernández et al., 2020). In contrast to this study, results from a study conducted in the United States indicated that being a sophomore, a senior or a junior was associated with higher anxiety levels compared to Freshmen (Kecojevic et al., 2020). Family income in our study has no association with anxiety (p = 0.178), however, in a study conducted among several Arab countries, income was a significant predictor of lower levels of anxiety in individuals from higher-income countries such as Kuwait and Saudi Arabia (Shuwiekh et al., 2020).

The majority of the students did not experience any symptoms related to COVID-19 disease in the past 14 days, and they had low anxiety levels. One of the most experienced symptoms was headache, which is a common neurological manifestation of COVID-19, it is estimated that of the hospitalized patients due to COVID-19, 10%–34% suffered from headache (Bolay et al., 2020). Also, headache due to migraine has a prevalence of 5.4% among adults in the rural areas in Sudan (Abdalla et al., 2019). since headache is a common symptom for many diseases in the community it was associated with low anxiety levels. In a similar study conducted in China, they found that coryza is the most common symptom followed by cough, sore throat, and headache (Wang et al., 2020). Experiencing fever, sore throat, or myalgia and fatigue were associated with low to moderate anxiety levels among the participants, findings might be explained by the fact that these symptoms resemble the symptoms of many tropical illnesses in Sudan, especially malaria. Sudan is considered both a high-burden and a high-risk country for malaria (World Health Organization, n.d.), coincidently both malaria and COVID-19 can present with similar symptoms like fever, acute onset headache, difficulty in breathing, and also fatigue. So some people who suffer from these symptoms might misinterpret their illness as malaria (Chanda-Kapata et al., 2020), and this lowers their anxiety level because it has readily available diagnostic kits and also well-known treatment

guidelines throughout the country, unlike the novel COVID-19 which has no specific treatment yet. However, In contrast to our findings, it was indicated in the Chinese study that experiencing sore throat and myalgia or fatigue during the past 14 days were significantly associated with high anxiety levels among the respondents (Wang et al., 2020).

Most of the students demanded more information regarding the availability and effectiveness of medicines and vaccines against COVID-19, our findings were similar to the study from China in which a large number of the respondents indicated that they desire more information regarding this aspect (Wang et al., 2020). This is expected as the pandemic is caused by a novel virus that has no specific treatment or vaccine yet (World Health Organization, 2020b). Moreover, needing advice on prevention against COVID-19 was associated with low anxiety levels among the participants. So far, vaccines and medicines against COVID-19 are not discovered yet, so prevention is regarded as the most effective way to limit the spread of the virus (World Health Organization, 2020b).

Behavioral changes have been adopted by many people to protect against the virus. It was indicated in a study from Israel, that all of the participants have changed minimally one behavior because of the pandemic (Grossman et al., 2020). Compliance with the curfew measures was hugely recommended by the media as one of the major preventive behaviors against COVID-19. In our study, complying with the curfew measures and sometimes complying with it were significantly associated with low anxiety levels. Always and often covering mouth while coughing or sneezing were strongly associated with low anxiety levels among the participants. Individuals who do not comply with these preventive measures might feel more anxious about transmitting the infection to others, as the main mode of transmission is through respiratory droplets (Centers for Disease Control and Prevention, 2020b).

Having a relative or a friend diagnosed or suspected with COVID-19 was associated with low anxiety levels among the participants. Although COVID-19 outcomes are variable among people (WebMed, 2020), the recovery rate is high in Sudan, so perhaps having an acquaintance diagnosed with the disease and then recovered could be reassuring and it might reduce the fear and the stress associated with the disease. Our result was consistent with a study conducted among the Israeli population in which exposure to COVID-19 related risk situations (e.g., knowing someone in isolation, self-isolation) were not linked to increased risk of anxiety symptoms (Palgi et al., 2020).

The limitations of this study include the inability of achieving the complete target sample proportion from the River Nile State and Kassala State, due to the low response rate to the online questionnaire. Also, we did not link to COVID-19 (i.e., we did not measure anxiety driven by COVID-19) as we do not have an adequate pre-COVID-19 anxiety measure for this sample it is difficult to ascertain that only COVID-19 factors were driving this anxiety. Besides, In the regression analyses, we did not control for variables such as, income, marital status, living with/proximity to older adults (relatives who may be more susceptible to COVID-19 complications), or loneliness (Palgi et al., 2020) (Grossman et al., 2020). Also, sampling was biased by having access to social media, moreover, the study was cross-sectional. More studies are recommended to be carried out about the psychological impact of the pandemic among the students in developing countries as well as the general population to give a more comprehensive image of the situation.

5. Conclusion

This study shows that 9.4% of the university students had potentially concerning levels of anxiety, 15.5% had moderate anxiety and 75.1% had low anxiety levels. Most of the respondents had no symptoms related to COVID-19 in the past 14 days which was associated with low anxiety. Moreover, experiencing fever, headache, sore throat, and myalgia or fatigue during the past 14 days were also associated with low anxiety levels among the participants. Having a relative or friend diagnosed or suspected with COVID-19 was associated with low anxiety. Additionally,

needing advice about the prevention of COVID-19 was associated with low anxiety levels among the students. Not complying with the curfew measures, and not complying with the preventive measures of covering mouth while coughing or sneezing were associated with potentially concerning levels of anxiety.

The psychological impact of any public health emergency, especially among students, should be given great importance by the public health policy-makers and the educational sector and appropriate actions should be taken accordingly. Psychological interventional programs should be formulated for university students during pandemics to provide them with appropriate psychological guidance against anxiety and stress. Also, educational programs that focus on spreading trusted and updated information about COVID-19 should be considered to answer questions that students might have regarding the different aspects of the novel disease. Moreover, health education should emphasize that COVID-19 symptoms should not be neglected due to their similarity to some endemic diseases in the country, especially malaria.

Declarations

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