

Psychological impact of COVID-19 pandemic on University Students: A cross-sectional study

To Cite:

Eid MM, Alsufiany MB, Alshehri FH, Wazna NI, Alzahrani H, Ahmed RM, Faizo NL, El-Gendy AM, Abdelbasset WK, Eladl HM. Psychological impact of COVID-19 pandemic on University Students: A cross-sectional study. *Medical Science*, 2021, 25(110), 964-972

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Peer-Review History

Received: 22 March 2021

Reviewed & Revised: 23/March/2021 to 16/April/2021

Accepted: 17 April 2021

Published: April 2021

Peer-review Method

External peer-review was done through double-blind method.

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ABSTRACT

Objectives: This study is an attempt to detect the psychological impact of (COVID-19) among Taif University students. **Methods:** A cross-sectional survey was conducted among Taif University students using Google Forms questionnaire in the period from May to December 2020. The questionnaire was designed to assess psychological impact of the COVID-19 pandemic at the time of the lockdown and curfew. 619 participants age ranged from 18-30 years were eligible to participate in this study. This study was carried out using well-structured electronic questionnaire contain socio-demographic characteristics and psychological health parameters (Depression, Anxiety and Stress Scale-21 (DASS-21)). **Results:** This study revealed a significant correlation between age and depression; age 18-21 years old showed higher frequency of mild to moderate and severe to very severe depression than age 22-30 years old ($p > 0.003$). Similarly, there was a significant correlation between age and stress among participants; age 18-21 years old, showed higher frequency of severe to very severe stress and anxiety compared to aged 22-30 years ($p > 0.05$). On the other hand, there was no significant correlation between gender, nationality and marital status. Regarding the type of education, there was a significant correlation between medical students and depression ($p > 0.06$). **Conclusion:** According to the obtained results, it can be concluded that there was a significant association between age, depression and stress and non-significant relation between gender, nationality and marital status, while there was a significant correlation between medical students and depression.

Keywords: Coronavirus, Anxiety, Depression, Psychological impact, University students



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1. INTRODUCTION

In late December 2019, novel severe respiratory distress syndrome started to be evaluated in China, then swiftly spread worldwide known as Novel Coronavirus 2 (COVID-19) (Rivas et al., 2020; Magomedova et al., 2020). On 11 March 2020, the World Health Organization (WHO) announced it as a pandemic (Siyal et al., 2020). As of 17 April 2020, 213 countries were involved and 2,078,605 people were infected with a mortality rate of 1395155 (6.71 %). Saudi Arabia was among these countries, as there were 5862 confirmed cases with a mortality rate of 799 on April 16, 2020 (1.34% %) (World Health Organization, 2020). As a consequence of the spread of this pandemic, the government of Saudi Arabia took several swift and immediate measures to control the spread of the virus, including launching a social media campaign encouraging people for self-isolation, social distancing, and quarantine; strengthening the efficacy and quantity of health facilities, asking people to work at home. Strong efforts were taken to limit the spread of the COVID-19 as lockdown of the places that include many gatherings among which was the educational institutions (Wang et al., 2020).

The rapid-spread of COVID-19 all over the world and the quick changes in people's daily living made them frightened and alarmed. Besides, the lockdown state influenced the natural atmosphere resulting in depression and anxiety among general populations. In a Chinese study on the psychological impact of COVID-19, 53.8% of respondents showed mild to severe psychological impact, 16.5% and 28.8% showed moderate to high depression or anxiety symptoms, and 8.1% reported moderate to high stress levels. These symptoms did not decrease for four weeks after COVID-19 pandemic (Wang et al., 2020). University students are particularly vulnerable to mental disorders due to the challenges of transfer to adulthood and the economic difficulties they face (Auerbach et al., 2018). At COVID 19, the symptoms may be exaggerated due to travel restriction, social distancing, and confinement at residence. In addition, college students with relatives diseased by COVID-19 are at risk of increasing anxiety, worried about the economic impacts of COVID-19, or the educational interruptions also definitely correlated with anxiety symptoms (Cao et al., 2020).

Due to the obvious importance of COVID 19, previous pandemics are the most available evidence on the psychological effects of the pandemic, as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), depressive disorders and Post-traumatic stress disorder (PTSD) were the most common lasting psychological disorders (Mak et al., 2009; Lee et al., 2018). Based on recent studies, it is assumed that the psychological state during the outbreak of COVID-19 may be affected (Abdelbasset, 2020; Ajwa et al. 2020; Rathore et al. 2020; Abdelbasset et al., 2021).

There are minimal data concerning home confinement or social isolation on psychological wellbeing imposed by societal threats, recent studies indicate that home confinement has an initial impact on mental health that weakens four weeks later (Le et al., 2019). This research was an attempt to detect the psychological impact of novel coronavirus disease (COVID-19) depression, anxiety, and stress among the students at Taif University.

2. MATERIALS AND METHODS

Study design

This study was a cross-sectional electronic questionnaire-based study distributed through social media, to assess the psychological impact of the COVID-19 pandemic among Taif University students during lockdown and prohibition in Taif. The study was approved by the Ethical Committee of Taif University (NO: 42-0063).

Participants

The Saudi Government guidelines during the outbreak concentrated on limiting face-to-face interaction and home isolations, so an online snowball sampling procedure was conducted for data collection from 619 Taif University students, KSA aging between 18-30 years, between May to December 2020.

Procedures

All participants decided to participate in a well-structured online questionnaire using Google forms, shared the questionnaire connection with groups of students from various specialties at Taif University, 2020. The questionnaire consisted of two sections. The first section concerned; participants' socio-demographic features, including age (18–21, 22-30 years), gender, nationality (Saudi or non-Saudi), Marital status (single, married, divorced), academic specialty (medical or non-medical).

The second section of the questionnaire, scored psychological impact, using, Depression, Anxiety and Stress Scale (DASS-21). Depression subscale was described in questions 3, 5, 10, 13, 16, 17, and 21. The total subscale score for depression divided into normal (0-9), mild (10-12), moderate (13-20), severe (21-27), and extremely severe (28-42). Anxiety subscale was generated by

questions 2, 4, 7, 9, 15, 19, and 20. The total subscale score for anxiety was divided into normal (0-6), mild (7-9), moderate (10-14), severe (15-19), and extremely severe (20-42). Questions 1, 6, 8, 11, 12, 14, and 18 produced the stress subscale. The total stress subscale score was divided into normal (0-10), mild (11-18), moderate (19-26), severe (27-34), and extremely severe (35-42). In the assessment of mental wellbeing, the DASS has been shown to be a reliable and valid tool. DASS has previously been used in SARS-related research (Quek, 2018; McAlonan, 2007; Ho, 2019).

Statements represented participants' condition on a four-point scale between zero and three during the previous week with higher scores suggesting worse psychological status. Hopelessness, dysphoria, self-deprecation, withdrawal of life, loss of interest, anhedonia, and inertia were assessed in the depression statement. Skeletal muscle impacts, autonomic arousal, situational anxiety, and subjective perception of anxious impact were measured in the anxiety statements. Nervous arousal, relaxation problems, and being easily irritated or over-reactive were measured by the stress scale. Scores of statements (seven statements each) in the same emotional group were summed up and multiplied by two. Out of 42, the cut-off values were 10, 8, and 15 for mild to moderate depression, anxiety, and stress, and 22, 16, and 26, for severe to very severe, respectively (Lovibond & Lovibond, 1995). For the Arabic edition of DASS-21, Cronbach's alpha was 0888 (Ho, 2019). Depression, anxiety, and stress were viewed as outcomes in this research.

Statistical analyses

Data analyses were conducted in November 2020 using the Statistical Package for Social Science (SPSS) version 25 for windows. To evaluate the prevalence of depression, anxiety, and stress among students during COVID-19, frequency measures were used. Associations between depression, anxiety, and stress with participants' socio-demographic were investigated using Chi-square statistics. The significance level was set at $p < 0.05$ for all statistical tests.

3. RESULTS

Participant's characteristics

This study included 619 participants. 58.3% aged 18-21 years, 85.1% were female, 97.3% were Saudi, 94.2% were single, and 54.3% were medical students. Table 1 shows participants' demographic data.

Table 1 Socio-demographic characteristics of the participants

Characteristics	<i>n</i> = 619
Age	
18-21	361 (58.3)
22-30	258 (41.7)
Gender	
Females	527 (85.1)
Males	92 (14.9)
Nationality	
Saudi	602 (97.3)
Non-Saudi	17 (2.7)
Marital status	
Single	583 (94.2)
Married	31 (5.0)
Divorced	5 (0.8)
Academic specialization	
Medical	336 (54.3)
Non-medical	283 (45.7)

All data are presented as n(%)

The findings showed a high prevalence of depression (55.7%: 30.0% were mild to moderate and 25.7% were severe to very severe). Anxiety (48.6%: 25.7% were mild to moderate and 22.9% were severe to very severe). Stress (57.5%: 34.2% were mild to moderate and 23.3 were severe to very severe) as demonstrated in Table 2 and Figure 1.

Table 2 Prevalence of depression, anxiety, and stress among the participants during the COVID-19 pandemic

Psychological features	<i>n</i> = 619
Depression, n(%)	
Normal	274 (44.3)
Mild to moderate	186 (30.0)
Severe to very severe	159 (25.7)
Anxiety, n(%)	
Normal	318 (51.4)
Mild to moderate	159 (25.7)
Severe to very severe	142 (22.9)
Stress, n(%)	
Normal	263 (42.5)
Mild to moderate	212 (34.2)
Severe to very severe	144 (23.3)

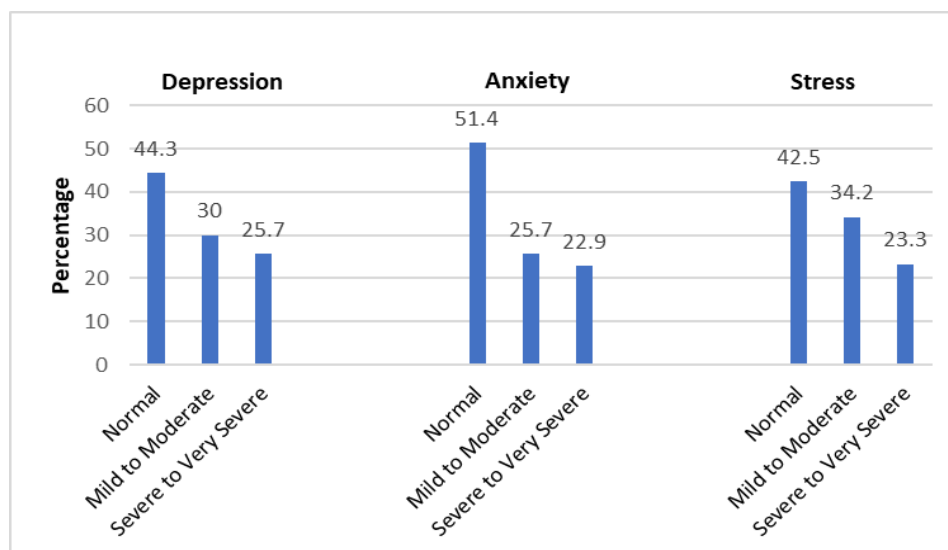


Figure 1 The severity of depression, anxiety, and stress among participants

Associations between depression, anxiety, and stress with subjects' characteristics

There were no significant associations between gender, nationality and academic specialization, and depression, anxiety, and stress ($p > 0.05$). However, there was a significant association between age and depression whereas participants aged 18-21 years had a higher frequency of mild to moderate and severe to very severe depression than those aged 22-30 years. Similarly, there was a significant association between age and stress whereas participants aged 18-21 years had a higher frequency of severe to severe stress compared to those aged 22-30 years. Tables 3, 4, and 5 show the associations between participants' characteristics and depression, anxiety, and stress, respectively.

Table 3 Sociodemographic associations with depression

Characteristics	Normal depression <i>n</i> (%)	Mild to moderate <i>n</i> (%)	Severe to very severe <i>n</i> (%)	χ^2 value	<i>p</i> -value
Age					
18-21	139 (38.5)	118 (32.7)	104 (28.8)	11.78	0.003
22-30	135 (52.3)	68 (26.4)	55 (21.3)		
Gender					
Females	240 (45.5)	152 (28.8)	135 (25.6)	3.03	0.220
Males	34 (37.0)	34 (37.0)	24 (26.1)		

Nationality					
Saudi	269 (44.7)	180 (29.9)	153 (25.4)	1.66	0.436
Non-Saudi	5 (29.4)	6 (35.3)	6 (35.3)		
Marital status					
Single	257 (44.1)	173 (29.7)	153 (26.2)	2.49	0.646
Married	14 (45.2)	12 (38.7)	5 (16.1)		
Divorced	3 (60.0)	1 (20.0)	1 (20.0)		
Academic specialization					
Medical	143 (42.6)	114 (33.9)	79 (23.5)	5.52	0.063
Non-medical	131 (46.3)	72 (25.4)	80 (28.3)		

χ^2 , Chi-square value; p-value, level of significance.

Table 4 Sociodemographic associations with anxiety

Characteristics	Normal anxiety <i>n</i> (%)	Mild to moderate <i>n</i> (%)	Severe to very severe <i>n</i> (%)	χ^2 value	<i>p</i> -value
Age					
18-21	171 (47.4)	98 (27.1)	92 (25.5)	5.87	0.053
22-30	147 (57.0)	61 (23.6)	50 (19.4)		
Gender					
Females	263 (49.9)	142 (26.9)	122 (23.1)	3.74	0.154
Males	55 (59.8)	17 (18.5)	20 (21.7)		
Nationality					
Saudi	310 (51.5)	155 (25.7)	137 (22.8)	0.41	0.813
Non-Saudi	8 (47.1)	4 (23.5)	5 (29.4)		
Marital status					
Single	300 (51.5)	146 (25.0)	137 (23.5)	3.24	0.519
Married	16 (51.6)	11 (35.5)	4 (12.9)		
Divorced	2 (40.0)	2 (40.0)	1 (20.0)		
Academic specialization					
Medical	175 (52.1)	89 (26.5)	72 (21.4)	0.988	0.610
Non-medical	143 (50.5)	70 (24.7)	70 (24.7)		

χ^2 , Chi-square value; p-value, level of significance.

Table 5 Socio-demographic associations with stress

Characteristics	Normal stress <i>n</i> (%)	Mild to moderate <i>n</i> (%)	Severe to very severe <i>n</i> (%)	χ^2 value	<i>p</i> -value
Age					
18-21	140 (38.8)	123 (34.1)	98 (27.1)	8.42	0.015
22-30	123 (47.7)	89 (34.5)	46 (17.8)		
Gender					
Females	222 (42.1)	183 (34.7)	122 (23.1)	0.36	0.834
Males	41 (44.6)	29 (31.5)	22 (23.9)		
Nationality					
Saudi	256 (42.5)	206 (34.2)	140 (23.3)	0.013	0.993
Non-Saudi	7 (41.2)	6 (35.3)	4 (23.5)		
Marital status					
Single	243 (41.7)	203 (34.8)	137 (23.5)	4.87	0.301
Married	17 (54.8)	9 (29.0)	5 (16.1)		
Divorced	3 (60.0)	0 (0.0)	2 (40.0)		
Academic specialization					

Medical	134 (39.9)	117 (34.8)	85 (25.3)	2.55	0.279
Non-medical	129 (45.6)	95 (33.6)	59 (20.8)		

χ^2 , Chi-square value; p-value, level of significance.

4. DISCUSSION

The purpose of this study was to evaluate the psychological impact of the COVID-19 pandemic during the lockdown period between May to December 2020 on Taif University students, KSA. Covid-19 may cause direct or indirect psychological and social complications not only during the pandemic but also in the future (Holmes et al., 2020). The finding of the current study revealed that students are concerned within widespread fears that the outbreak will adversely affect their exam performance (Sahu, 2020), this comes alongside the findings of a Chinese study, that reported approximately 40.4% of the youth community affected psychologically (Liang et al., 2020). An Italian study showed that the prevalence of depression, anxiety, sleep disorders, and moderate/severe insomnia were 24.7%, 23.2%, 42.2%, and 17.4%, respectively (Gualano et al., 2020).

Bangladesh study revealed that nearly 97% of university students suffered from anxiety because of the pandemic. 48.41% suffer from moderate anxiety, and 44.59% have severe anxiety. In contrast, the ratio of having mild anxiety was (3.82%) and feeling no anxiety was (3.18%), which is very low (Dhar et al, 2020). The current study reported an alternative scenario to a study conducted by (Cao et al., 2020), which indicated only 9% of Chinese students, reported severe anxiety and 21.3% experienced mild anxiety.

This study finding revealed that depression, anxiety, and stress were significantly associated with the age of 18-21 years than the age of 22-30 years. These findings are in accordance with a Malaysian study that reported age 17-18, were anxious than older students (Sundarasan et al., 2020). Young people are continuously on social media that considered a key part of enhancing anxiety among students (Xiang et al., 2020). In a study that evaluated the pandemic psychological impact on Saudi students at the virtual classes, university students scored higher levels of stress than intermediate or secondary classes (AlAteeq et al., 2020). The anxiety of university learners toward COVID-19 may be connected to the impact of the pandemic on their educations and upcoming occupation (Cornine, 2020; Wang et al., 2020). In contrast, the student’s anxiety may be triggered by progressive isolation between individuals; anxiety disorders arise and become worse due to the absence of interpersonal contact (Xiao, 2020). However, other researches have shown that senior students are experiencing extra stress than junior students (Hakami et al., 2020). In addition, the current study revealed that female students were further influenced, which illustrates the results of other Saudi studies (AlAteeq et al., 2020; Abdulghani et al., 2020).

On contrary, a Chinese study included 600 participants of males (44.5%) and females (55.5%) reported mild (14.33%), moderate (2.5%) and severe (0.33%) depression. They found a higher anxiety ratio in females than males ($p = 0.011$) (Wang et al., 2020). The effect of COVID-19 on medical education required an adequate preparedness plan. This finding goes in parallel with that of the study done by (Alkhamees et al., 2020). Saudi study on the general population reported that medical participant or who had a family medical member showed a higher score of stress, anxiety, and depression (Saddik et al., 2020). The outbreak of COVID-19 is suspected to increase the level of anxiety especially for medical students as they are already considered a psychologically vulnerable group (Alsaqri et al., 2020). On the other hand, a study in the KSA reported mild to moderate anxiety in general population (Zawadzki et al., 2013).

This study finding showed that single students reported greater anxiety, depression, and stress, being parallel with an American study of university students, anxiety increased amongst lonely students with depressed mood and poor sleep quality (Jacob et al., 2019). Loneliness-related anxiety and depression are triggered amongst students who live alone (Halboub et al., 2018). In contrary to our findings stated that single dental students showed less stress than their peers (Bai et al., 2005). Noticeably, married students and those in a stable relationship showed extra stress than single students. Another Saudi Arabian study reported a significant relationship between anxiety and marital status ($p=0.000$), in which married people had a higher level of anxiety ($p<0.05$) than unmarried (Zawadzki et al., 2013).

A Chinese study using the DASS-21 scale reported that higher psychological influence and stress were associated with student status, female gender, definite physical symptoms, and reduced health condition, depression, and anxiety ($p < 0.05$). On the other hand, they found non-significant relation ($p > 0.05$) between gender, age, and academic specialization with depression, anxiety, and stress. Concerning the marital status, no association was found between it and DASS subscale scores (Wang et al., 2020). Compared to our results, we notice a significant association between marital status and depression ($p = 0.04$) and anxiety ($p = 0.03$).

The main limitation of the study is the small sample size. This study was limited to lack of clinical diagnoses, the self-reported measures; however, the methods chosen were validated and commonly used. In addition, no data on individuals who declined to participate was obtained and no refusal rate was reported with respect to online distribution. Just as the subjects were from one

area of Saudi Arabia, this research had limitations on the data collection environment. It is recommended that further research should be carried out on a larger sample size in relation to sleeping hours, media communication hours, academic specialization education, and including large sample sizes from various regions of Saudi Arabia.

5. CONCLUSION

According to the obtained results of the current study, it can be concluded that there is a significant association between age and depression, anxiety and stress, and non-significant relation between gender, nationality, marital status, and type of education (medical or non-medical student). These findings can also be used to create a psychological intervention directly to the general population and to implement strategies for public mental health in the Taif region.

Funding

This study has not received any external funding.

Acknowledgements

The authors would like to thank all participants who were included in the study. This publication was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University.

Author Contributions

MME, MBA, FHA, HA, RMA, NLF, HME, AME, and WKA have conceptualized and designed the study. MME, MBA, FHA, NIW, AME, and HA have supervised the study procedures. MME, MBA, FHA, NIW, HA, RMA, NLF, and AME have performed, collected the data of the study. MME, MBA, HME, and WKA have analyzed data. MME, MBA, FHA, NIW, HA, RMA, NLF, and AME have written the manuscript. MME, HME, AME, and WKA have reviewed the manuscript. All authors have agreed to submit the final form of the manuscript.

Conflict of interest

The authors declare that there are no conflicts of interests.

Ethical approval

The study was approved by the Medical Ethics Committee of Taif University (NO: 42-0063).

Data and materials availability

All data associated with this study are present in the paper.

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