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*RESEARCH ARTICLE*

# THE PSYCHOLOGICAL AND ACADEMIC IMPACT OF COVID-19 AMONG STUDENTS OF COLLEGE OF MEDICINE IN SAUDI ARABIA 2020-2021

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## Abstract

**Background:** The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an emerging infection causing a widely spread pandemic of Coronavirus disease 2019 (COVID-19). The continuous spread of COVID-19, strict isolation measure, delays in starting colleges, attending offline classes, facing challenges to conduct high school grades for medical students across the country is expected to influence the psychological health and academic yielding of the students of colleges of medicine in Saudi Arabia .

**Objectives :**This study aims to assess the psychological and academic impact of COVID-19 among the students of colleges of medicine in Saudi Arabia .

**Methodology:** This cross-sectional study conducted from October 2020-March 2021 in which a survey conducted among medical students from 10 colleges of medicine in Saudi Arabia. An online questionnaire was conducted using social media platforms, including WhatsApp and Twitter, as well as email. The survey requested demographic and socioeconomic information, in addition to 4-point Likert Scale to assess the psychological and academic impact .

**Results:** There were 661 responses in total. Most of the participants were female 51% (n=332), from Majmaah University 20.6% (n=134), and from the sixth year 26.3% (n=171). Majority of the participants were between the ages of 18 and 23 years 59.6% (n=388). The prevalence of COVID-19 among the participants was only 11.06% (n=72). During the height of the pandemic, 39.6% of the participants (n=258) stated that their GPA had risen. The extent of psychological distress was calculated using a 4-point Likert Scale, and the majority of the students (n=328) had moderate psychological distress. Similarly, most of the students had moderate academic impact 34.87% (n=227) due to COVID-19. There were a significant association between the degree of psychological distress and gender with male students reporting more mild 7.2% and moderate distress 23% while female students reported more moderately severe 20.1% and the severe distress 4.3%. In addition, there were an association between the level of stress and the academic performance .

**Conclusion:** The result suggest that the COVID-19 has a moderate psychological distress and also moderate academic impact among students of colleges of medicine in Saudi Arabia .

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## Introduction:-

Coronavirus Disease 2019 (COVID-19) is a zoonotic infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 strain of coronavirus (SARS-CoV-2). The coronaviruses are a broad family of viruses that can infect both people and animals.[1]

The new coronavirus strain is thought to have originated in bats or pangolins, according to many health specialists. The virus was initially transmitted to humans in the Chinese city of Wuhan towards the end of December 2019, and it has largely spread through person-to-person contact since then. Without protection, the virus propagated from one sick person to another by close contact within 6 feet. It can also spread through infected people's air droplets when they cough, sneeze, or talk. These droplets can also land on neighboring objects or surfaces. Other persons can contract the virus by contacting these surfaces or things, and then contract it if they touch their nose, eyes, or mouth. [2]

Fever, cough, shortness of breath, and pneumonia are among of the most prevalent symptoms of COVID-19. It has the potential to produce serious consequences in people with weakened immune system, the elderly, and those who have chronic conditions including cancer, diabetes, or lung disease.[1]

**Problem Statement:**

The overall number of confirmed cases worldwide until November 20th, 2020 is 57,385,576. The total number of recoveries is 39,864,209. (69.5 percent ). And the overall number of fatalities is 1,368,551. (2.4 percent ).

The total number of confirmed cases in Saudi Arabia is 354,813, while the total number of recoveries is 342,404 (96.5 percent). The total number of deaths is 5745 (1.6 percent). The active cases till November 20th, 2020 are 6664 (1.9 percent.) From these 793 (0.2 percent) are critical case that are treated in ICU. [1]

## Objectives:-

**General Objective:**

To study the psychological-Academic Impact of COVID-19 among students of college of medicine in Saudi Arabia 2020-2021.

**Specific objectives:**

1. To determine background information of students of college of medicine in Saudi Arabia 2020-2021.
2. To assess the psychological impact of COVID-19 among students of college of medicine in Saudi Arabia 2020-2021.
3. To assess academic impact ofCOVID-19 among students of college of medicine in Saudi Arabia 2020-2021.

## Methodology:-

**Study design:**

Descriptive cross-sectional institutional based study was used in this study.

**Study area:**

In Saudi Arabia, there were 24 public colleges of medicine for females and males located throughout the kingdom. There were four colleges of medicine in the Riyadh region, four in the middle region, two in the Eastern province, five in the western region, four in the northern region, and five in the southern region. The first college of medicine was a medical college of King Saud University, which opened in the Riyadh region in 1967. In Saudi Arabia, studying medicine takes seven years, including six years in college and one year in a hospital as an internship. Furthermore, students become general practitioners after graduation, and those who choose to pursue a specific speciality can apply to the Saudi board. [3]

**Study population:**
The study's target population was male and female college of medicine students in Saudi Arabia, with the goal of determining the psychological-academic impact of COVID-19 on them. In the academic year 2018/2019, there were about 20,000 college of medicine students in the Kingdom of Saudi Arabia. [4]

**Inclusion criteria:**
Males and Females students of Colleges of Medicine, Saudi Arabia.

**Exclusion criteria:**
Students of college of medicine who was not studying in the 10 colleges that has been mentioned.

**Sampling:**
**Sample size:**
Calculation of sample size using an equation.

The following formula was used to calculate the sample size:

$$n = \frac{Z^2 p(1-p)}{d^2} \rightarrow n = \frac{(1.96)^2 (0.5(1-0.5))}{(0.5)^2} = 384.16$$

n* deff which is equal 2
384.16 * 2 = 768.32

The sample size was calculated at 768.32 and was increased to 800.

Using the following formula, the number of clusters was calculated:

$$n = \frac{(NZ^2 P(1-P))}{(Nd^2+Z^2 P(1-P))}$$

$$n = \frac{24*(1.96)^2 * 0.5 (1-0.5)}{24 *(0.005)^2 + (1.96)^2 (0.5(1-0.5))}$$

n= 22.6
So, the study was conducted across 24 medical colleges, but due to budget and time constraints, only 10 of the 24 colleges were chosen, with each college representing a cluster.

**Sample design:**
Sample design: Cluster sampling.
In the study the selected number of 10 clusters:
1- Imam Abdulrahman Bin Faisal University, Dammam
2- Umm Al-Qura University College of Medicine and Medical Sciences, Makkah
3- College of Medicine, Shaqra University
4- University of Hail College of Medicine
5- King Saud bin Abdulaziz University for Health Sciences, Riyadh
6- King Saud University College of Medicine, Riyadh
7- Majmaah University College of medicine, Riyadh
8- Qassim University College of Medicine, Buraidah
9-King Abdulaziz University Faculty of Medicine, Jeddah
10- College of medicine, Al-Ahsa
The 10 clusters selected by a simple random sample from a list of all colleges

**Data Collection:**
Obtaining data Data was gathered using a pre-tested, pre-coded questionnaire. The questionnaire included socio-demographic information as well as information on the psychological and academic effects of COVID-19 on

students at a Saudi Arabian college of medicine. Female and male college of medicine students from all academic levels, including those in their internship year, filled out the questionnaire. It was decided to use the online version.

**Data management and analysis:**
The Statistical Package for the Social Sciences (SPSS) version 23 computerized program was used to analyze the data.

**Ethical consideration:**
All participants in the study gave their informed consent, and confidentiality, respect, and dignity were preserved throughout the research procedure. The university's ethical committee gave their approval.

## Results-Descriptive:-

**Table.1:-** Demographic characteristics of students of colleges of medicine in Saudi Arabia 2020-2021.

| Variables | n = 651 | Percent |
|---|---|---|
| Age | | |
| >23 | 263 | 40.4 |
| 18-23 | 388 | 59.6 |
| Gender | | |
| Male | 319 | 49 |
| Female | 332 | 51 |
| Marital Status | | |
| Married | 54 | 8.3 |
| Single | 597 | 91.7 |
| Place of residence | | |
| Central region | 179 | 27.5 |
| Eastern region | 119 | 18.3 |
| Northern region | 38 | 5.8 |
| Southern region | 137 | 21.0 |
| Western region | 178 | 27.3 |
| Family size | | |
| 2-4 | 83 | 12.7 |
| 4-8 | 360 | 55.3 |
| >8 | 208 | 32.0 |
| Father education | | |
| Bachelor | 247 | 37.9 |
| High school | 141 | 21.7 |
| Primary school | 67 | 10.3 |
| Secondary school | 84 | 12.9 |
| Mother education | | |
| Bachelor | 251 | 38.6 |
| High school | 141 | 21.7 |
| Primary school | 104 | 16.0 |
| Secondary school | 59 | 9.1 |
| Monthly Income (SAR) | | |
| 5000 – 10000 | 173 | 26.6 |
| <5000 | 104 | 16.0 |
| >10000 | 374 | 57.5 |

This study done among 651 participants. **Table 1** shows that most of the participants were in the age between 18-23 (n=388, 59.6%) while only 40% were in the age >23 (n=263) out of these 651 participants, there was a (319, 49%) male and (332, 51%) female. and (54, 8.3%) of them was married while (597, 91.7%) was single. In this study, there is (179,27.5) responses from the central region, (119, 18.3%) from eastern region, (38, 5.8%) northern region, (137, 21.0%) southern region and (178, 27.3%) from western region.

The family size for the participants of a 2-4 in (83, 12.7%), 4-8 in (360, 55.3%) and >8 in (208, 32.0%).

For the father education, (247, 37.9%) of them had bachelor's degree, (141, 21.7%) had of them finished the high school, (67, 10.3%) finished the primary school, (84, 12.9%) had finished secondary school.

For the mother education (251, 36.6%) of them had bachelor's degree, (141, 21.7%) had of them finished the high school, (104, 16.0%) finished the primary school, (59, 9.1%) had finished secondary school.

The monthly income for (173, 26.6%) of participants was between 5000-10000, (104, 16.0%) was <5000 and (374, 57.5%) was >10000.

**Table 2:-** University Nameof Students of Colleges of Medicine in KSA 2020-2021.

| Variables | N = 651 | Percent |
|---|---|---|
| College of medicine, Al-Ahsa | 50 | 7.7 |
| College of Medicine, Shaqra University | 6 | 0.9 |
| Imam Abdulrahman Bin Faisal University, Dammam | 32 | 4.9 |
| King Abdulaziz University Faculty of Medicine, Jeddah | 34 | 5.2 |
| King Saud bin Abdulaziz University for Health Sciences, Riyadh | 15 | 2.3 |
| King Saud University College of Medicine, Riyadh | 12 | 1.8 |
| Majmaah University College of medicine, Riyadh | 134 | 20.6 |
| Qassim University College of Medicine, Buraidah | 10 | 1.5 |
| Umm Al-Qura University College of Medicine and Medical Sciences, Makkah | 125 | 19.2 |
| University of Hail College of Medicine | 7 | 1.1 |
| Total | 651 | 100 |

**Table 2** and show the colleges of the participants where 20.6% (n=134) of them were from Majmaah University College of medicine, 19.2% (n=125) were from Umm Al-Qura University College of Medicine and Medical sciences, 7.7% (n=50) were from College of medicine, Al-Ahsa. Also, 5.2% (n=34) were from King Abdulaziz University Faculty of medicine, Jeddah, 4.9% (n=32) were from Imam Abdulrahman Bin Faisal University, Dammam. In addition, only 2.3% (n=15) were from King Saud Bin Abdulaziz University for Health Sciences, Riyadh and 1.8% (n=12) were from King Saud College of Medicine, Riyadh. The least number of the participants were from Qassim University College of Medicine, Buraidah 1.5% (n=10) followed by University of Hail College of medicine 1.1% (n=7) and College of Medicine, Shaqra 0.9 (n=6). Most of the participants were from other colleges account for 34.7% (n=226).

**Table 3:-** Level by Years of Students of Colleges of Medicine in KSA 2020-2021.

| Variables | n = 651 | Percent |
|---|---|---|
| First Year | 35 | 5.4 |
| Second Year | 44 | 6.8 |
| Third Year | 75 | 11.5 |
| Fourth Year | 158 | 24.3 |
| Fifth Year | 168 | 25.8 |
| Sixth Year | 171 | 26.3 |
| Total | 651 | 100.0 |

The level of the participants was determined in **Table 3**, showing that, most of the participants were in the sixth year (n=171, 26.3%) followed by the fifth year (n=168, 25.8), (n=158, 24.3) were in the fourth year. Also, the participants in the third year were (n=75, 11.5%) and only (n=44, 6.8%) were in the second year. The least number of participants were in their first year (n=35, 5.4%).

**Table 4:-** Current GPA of Students of Colleges of Medicine in KSA 2020-2021.

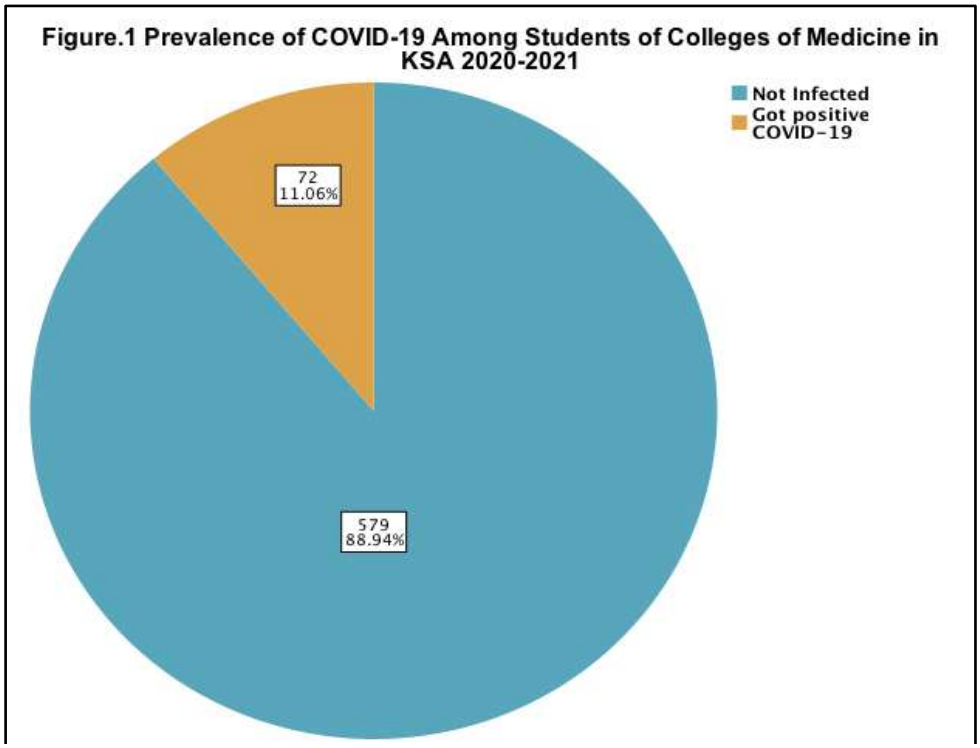
| Variables | n = 651 | Percent |
|---|---|---|
| <3.5 | 113 | 17.4 |
| 3.5-3.99 | 207 | 31.8 |
| 4.0-4.49 | 161 | 24.7 |
| 4.5-5.0 | 170 | 26.1 |
| Total | 651 | 100.0 |

The current GPA was asked. (**Table 4)** showing that, most of the participants 31.8% (n=207) have GPA=3.5-3.99. And the participants who have GPA= 4.5-5.0 were 26.1% (n=170). GPA=4.0-4.49, account for 24.7% (n=161) of the participants. Only 17.4% (n=113) have current GPA <3.5.

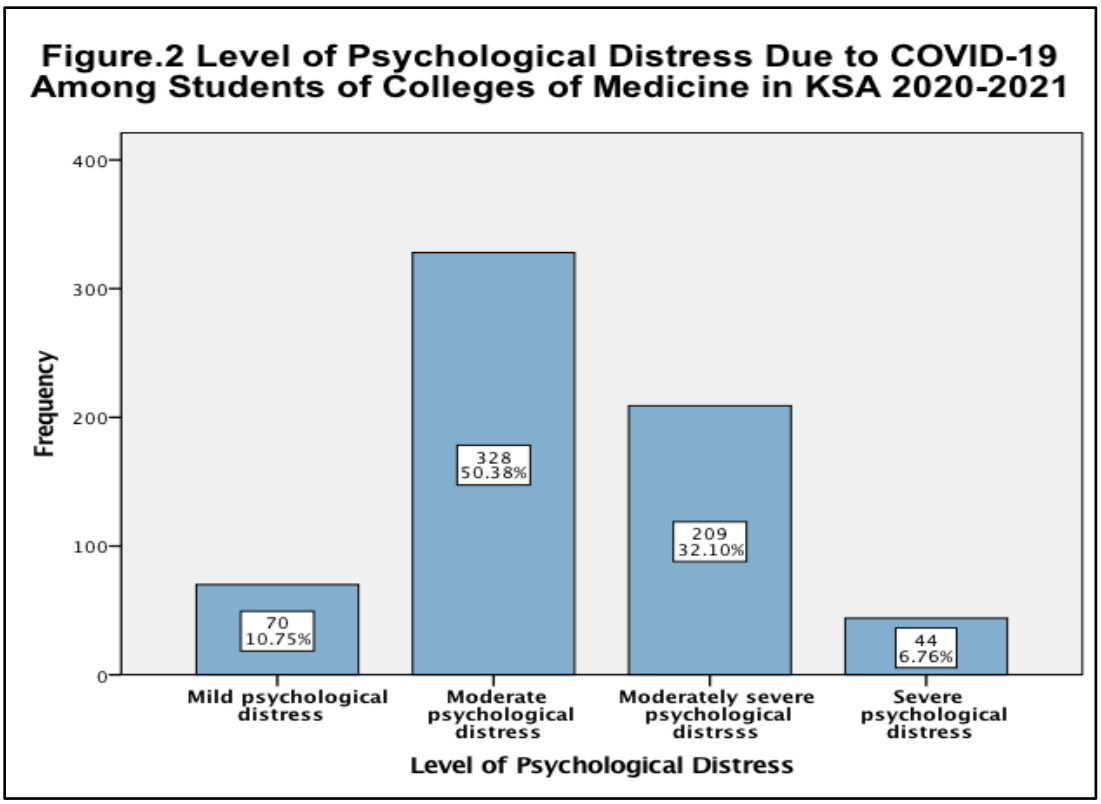
**Table 5:-** The effect of COVID-19 pandemic on GPA of Students of Colleges of Medicine in KSA 2020-2021.

| Variables | n = 651 | Percent |
|---|---|---|
| The GPA decreased | 161 | 24.7 |
| The GPA increased | 258 | 39.6 |
| No change in the GPA | 232 | 35.6 |
| Total | 651 | 100.0 |

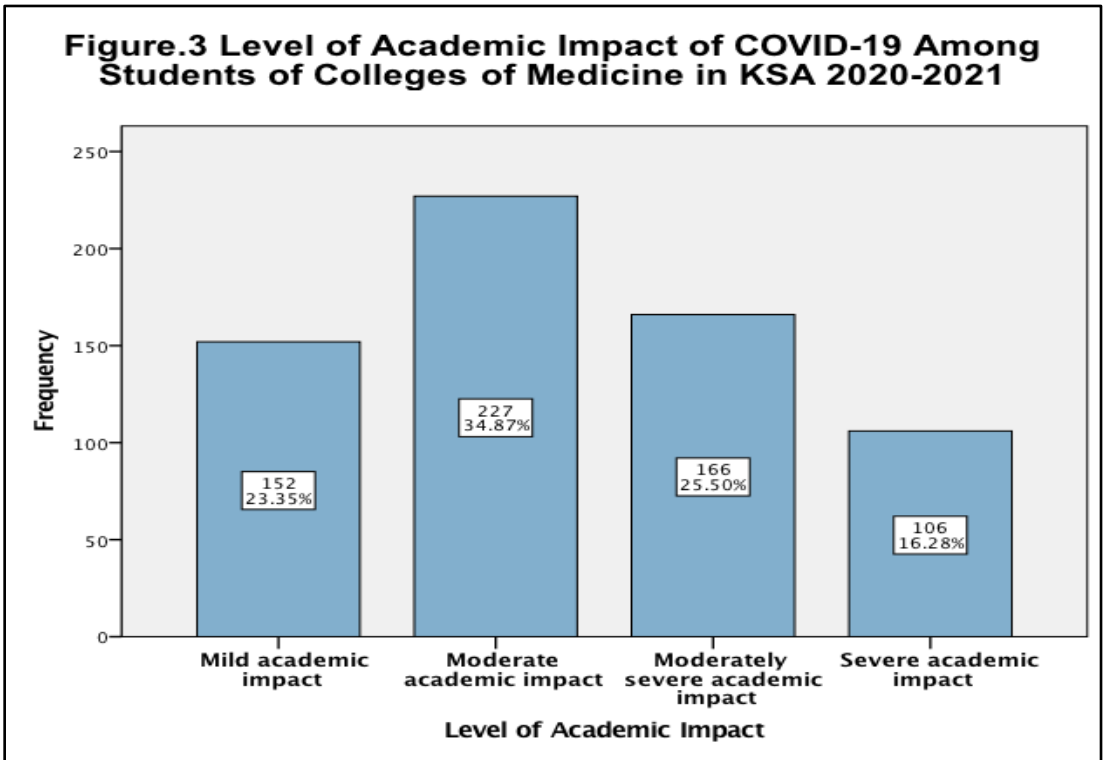
Another question was asked to determine whether the GPA affected by COVID-19 pandemic. **(Table 5)** showing that most of the participants 39.6% (n=258) said that their GPA has increased, whereas only 24.7% (n=161) said that their GPA has decreased and 35.6% (n=232) said there is no change in the GPA.




The prevalence of COVID-19 among students of colleges of medicine in Saudi Arabis is 11.1% (n=72). On the other hand, 88.9% (n=579) of students who did not infected with COVID-19 **Fig.1**.




The level of psychological distress was determined by 4-points Likert scale and **Fig.2** demonstrate that. Most of the participants 50.38% (n=328) had moderate psychological distress, 32.10% (n=209) had moderately severe psychological distress, followed by 10.75% (n=70) of the participants had mild psychological distress and only 6.4% (n=44) had severe psychological distress.



In addition, the level of academic impact was determined using 4-points Likert Scale and the result was, 120 (18.43%) of students has severely academic impact, 166 (25.5%) of students has moderately sever academic impact, 227 (34.87%) of students has moderate academic impact and 138 (21.20%) of students has mild academic impact **Fig.3**.

**Results-Inferential**

**Likert Scale**

**Table 6:-** 4-points Likert Scale of Psychological Distress Due To COVID-19 Among Students of Colleges of Medicine in KSA 2020-2021.

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| 1- Most afraid of COVID-19. | (160) 24.6% | (219) 33.6% | (199) 30.6% | (73) 11.2% |
| 2- It is uncomfortable to think about COVID-19. | (174) 26.7% | (242) 37.2% | (167) 25.7% | (68) 10.4% |
| 3- Afraid of losing my life because of COVID-19. | (223) 34.3% | (206) 31.6% | (134) 20.6% | (88) 13.5% |
| 4- Watching news and stories about COVID-19 on social media causes nervousness or anxiety. | (224) 34.4% | (202) 31.0% | (157) 24.1% | (68) 10.4% |
| 5- It is difficult to sleep because getting COVID-19 is worrisome. | (431) 66.2% | (136) 20.9% | (51) 7.8% | (33) 5.1% |
| 6- Thinking about COVID-19 increases the heart rate. | (414) 63.6% | (144) 22.1% | (58) 8.9% | (35) 5.4% |

The majority of participants strongly disagree that they are afraid of COVID-19, with 24.6% (n=160) strongly disagreeing and 11.2% (n=73) strongly agreeing. Only 10.4 % (n=68) of the participants strongly agree that thinking about COVID-19 makes them uncomfortable whereas 26.7% (n=174) of the participants disagree.34.3% (n=223) strongly disagree that they are afraid of losing their life because of COVID-19 and 20.6% (n=134) agree with that statement. Also, 34.4 percent (n=224) deny that watching COVID-19 news and stories on social media induces nervousness or anxiety, although 24.1% (n=157) agree.Most of the students deny that they had trouble falling asleep because getting COVID-19 is worrisome with 66.2% (n=431) disagreeing and5.1% (n=33) agreeing. Large number of the students strongly disagree that the thinking about COVID-19 increases their heart rate 63.6% (n=414) while only 5.4% (n=35) are strongly agree with that statement.

**Table. 7:-** 4-points Likert Scale of Academic Impact of COVID-19 Among Students of Colleges of Medicine in KSA 2020-202.

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| 1- I have noticed deterioration in my work performance/studying. | (215) 33% | (203) 31% | (146) 22.4% | (87) 13.4% |
| 2- I am appropriately concentrating on my studies | (115) 17.7% | (256) 39.3% | (187) 28.7% | (93) 14.3% |
| 3- My studying hours are increased. | (161) 24.7% | (246) 37.8% | (145) 22.3% | (99) 15.2% |
| 4- My studying hours are decreased. | (229) 35.2% | (222) 34.1% | (125) 19.2% | (75) 11.5% |
| 5- I always prepare for my online classes. | (198) 30.4% | (242) 37.2% | (155) 23.8% | (560 8.6% |
| 6- I always listen attentively to the online lecture. | (192) 29.5% | (241) 37% | (165) 25.3% | (53) 8.1% |
| 7- I always participate actively during online classes/ discussions. | (202) 31% | (233) 35.8% | (169) 26% | (47) 7.2% |
| 8- I am always able to access to reliable internet connection. | (128) 19.7% | (206) 31.6% | (197) 30.3% | (120) 18.4% |

13.4% of students noticed deterioration in the work performance/studying while 33% of students did not noticed deterioration in the work performance/studying. 14.3% did not face any difficulty in concentration while 17% of students were facing difficulties in concentration during their studies. 15.2% of students noticed that their studying hours was increased while 24.7% of students noticed that their studying hours was not increased. 11.5% of students noticed that their studying hours was decreased while 35.2% of students noticed that their studying hours did not decreased. 8.6% were prepare for online classes while 30.4% of students were not prepare for online classes. 8.1% were listen attentively to the online lecture while 29.5% were not listen attentively to the online lecture. 7.2% of students were participate actively during online classes/ discussions while 31% of students were not participate actively during online classes/ discussions. 18.4% of students were able to access to reliable internet connection while 19.7% of students were not able to access to reliable internet connection.

**Chi Square Tests**

Significant association was observed between the level of psychological distress and gender, p<0.001. showing that mild psychological distress was prevalent the most among male students 47 (7.2%). Moderate psychological distress was more prevalent among male 150 (23.0%). In contrast, moderately severe psychological distress was more prevalent among female students. 131(20.1%) and also the severe psychological distress was prevalent the most among female students 28 (4.3%).

**Table 8:-** Association Between the Level of Psychological Distress and The Gender of Students of Collages of Medicine in KSA 2020-2021.

| | | | Level of Psychological Distress | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | Mild psychological distress | Moderate psychological distress | Moderately severe psychological distress | Severe psychological distress | P value | |
| Gender | Female | Count | 23 | 150 | 131 | 28 | P<0.001 | 332 |
| | | Expected Count | 35.7 | 167.3 | 106.6 | 22.4 | | 332.0 |
| | | % of Total | 3.5% | 23.0% | 20.1% | 4.3% | | 51.0% |
| | Male | Count | 47 | 178 | 78 | 16 | | 319 |
| | | Expected Count | 34.3 | 160.7 | 102.4 | 21.6 | | 319.0 |
| | | % of Total | 7.2% | 27.3% | 12.0% | 2.5% | | 49.0% |
| Total | | Count | 70 | 328 | 209 | 44 | | 651 |
| | | Expected Count | 70.0 | 328.0 | 209.0 | 44.0 | | 651.0 |
| | | % of Total | 10.8% | 50.4% | 32.1% | 6.8% | | 100.0 % |

**Table 9:-** Association between Age and Stress Among Students of Collages of Medicine in KSA 2020-2021.

| | | | Do you have stress | | | Total |
|---|---|---|---|---|---|---|
| | | | Yes | No | P value | |
| Age | 18-23 | Count | 161 | 227 | P=0.094 | 388 |
| | | % within Do you have stress | 63.6% | 57.0% | | 59.6% |
| | >23 | Count | 92 | 171 | | 263 |
| | | % within Do you have | 36.4% | 43.0% | | 40.4% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | stress | | | | |
| Total | | Count | 253 | 398 | | 651 |
| | | % within Do you have stress | 100% | 100% | | 100% |

In this statistical results, p-value is more than 0.05. So, the null hypothesis can be accepted and conclude there is no relationship between age and level of stress.

**Table 10:-** Association between Stress and Academic Performance Among Students of Colleges of Medicine in KSA 2020-2021.

| | | | Is the academic performance affected | | | Total |
|---|---|---|---|---|---|---|
| | | | Yes | No | P value | |
| Stress | Mild | Count | 153 | 241 | P=0.012 | 394 |
| | | % within Is the academic performance affected | 56.3% | 66.0% | | 61.9% |
| | Severe | Count | 119 | 124 | | 243 |
| | | % within Is the academic performance affected | 43.8% | 34.0% | | 38.1% |
| Total | | Count | 272 | 365 | | 637 |
| | | % within Is the academic performance affected | 100.0% | 100.0% | | 100.0% |

In this statistical results, p-value is less than 0.05. So, the null hypothesis can be rejected and conclude there is a relationship between and level of stress and academic performance.

**Table 11:-** Association between Stress and UniversityAmong Students of Colleges of Medicine in KSA 2020-2021.

| University | | Stress | | | | | |
|---|---|---|---|---|---|---|---|
| | | Mild | Moderate | Moderately sever | Sever | P value | Total |
| Collage of medicine , Al-Ahsa | Count | 5 | 26 | 16 | 3 | P=0.051 | 50 |
| | Expected Count | 5.4 | 25.2 | 16.1 | 3.4 | | 50.0 |
| Collage of medicine , Shaqra University | Count | 1 | 1 | 4 | 0 | | 6 |
| | Expected Count | 0.6 | 3.0 | 1.9 | 0.4 | | 6.0 |
| Imam Abdulrahman Bin Faisal University, Dammam | Count | 8 | 13 | 8 | 3 | | 32 |
| | Expected Count | 3.4 | 16.1 | 10.3 | 2.2 | | 32.0 |
| King Abdulaziz University Faculty of Medicine, Jeddah | Count | 1 | 16 | 17 | 0 | | 34 |
| | Expected Count | 3.7 | 17.1 | 10.9 | 2.3 | | 34.0 |
| King Saud Bin Abdulaziz University for | Count | 0 | 11 | 4 | 0 | | 15 |
| | Expected Count | 1.6 | 7.6 | 4.8 | 1.0 | | 15.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| health science , Riyadh | | | | | | | |
| King Saud University College of Medicine, Riyadh | Count | 2 | 4 | 6 | 0 | | 12 |
| | Expected Count | 1.3 | 6.0 | 3.9 | 0.8 | | 12.0 |
| Majmaah University College of Medicine, Riyadh | Count | 17 | 61 | 44 | 12 | | 134 |
| | Expected Count | 14.4 | 67.5 | 43.0 | 9.1 | | 134.0 |
| Qassim University College of Medicine, Buraidah | Count | 2 | 5 | 2 | 1 | | 10 |
| | Expected Count | 1.1 | 5.0 | 3.2 | 0.7 | | 10.0 |
| Umm Al-Qura University College of Medicine and Medical Sciences, Makkah | Count | 4 | 60 | 53 | 8 | | 25 |
| | Expected Count | 13.4 | 63.0 | 40.1 | 8.4 | | 125.0 |
| University of Hail College of Medicine | Count | 0 | 4 | 3 | 0 | | 7 |
| | Expected Count | 0.8 | 3.5 | 2.2 | 0.5 | | 7.0 |
| Total | Count | 70 | 328 | 209 | 44 | | 651 |
| | Expected Count | 70.0 | 328.0 | 209.0 | 44.0 | | 651.0 |

In the above statistical results of the association between the stress and university during the COVID-19 pandemic, the P-Value is more than 5 which means that there is no significant association between the stress and the university during the COVID-19 pandemic

**Table 12:-** Association between stress and regions among students of colleges of medicine in KSA 2020-2021.

| Regions | | Stress | | | |
|---|---|---|---|---|---|
| | | mild | severe | P value | total |
| Eastern region | count | 12 | 9 | P=0.182 | 21 |
| Northern region | count | 5 | 2 | | 7 |
| Southern region | count | 17 | 2 | | 19 |
| Western region | count | 15 | 11 | | 26 |
| Central region | count | 21 | 14 | | 35 |

In this statistical results p value is more than 0.05.So, there is no association between stress and region.

## Discussion:-

The total number of participants was 651 and most of them were in the age between 18-23 (n=388, 59.6%) while only 40% were in the age >23 (n=263) out of these 651 participants, there was a (n=319, 49%) male and (n=332, 51%) female. The least number of participants were in their first year (n=35, 5.4%).

Also, 20.6% (n=134) of participants were from Majmaah University College of medicine, 19.2% (n=125) were from Umm Al-Qura University College of Medicine and Medical sciences, 7.7% (n=50) were from College of medicine, Al-Ahsa. Also, 5.2% (n=34) were from King Abdulaziz University Faculty of medicine, Jeddah, 4.9% (n=32) were

from Imam Abdulrahman Bin Faisal University, Dammam. In addition, only 2.3% (n=15) were from King Saud Bin Abdulaziz University for Health Sciences, Riyadh and 1.8% (n=12) were from King Saud College of Medicine, Riyadh. The least number of the participants were from Qassim University College of Medicine, Buraidah 1.5% (n=10) followed by University of Hail College of medicine 1.1% (n=7) and College of Medicine, Shaqra 0.9 (n=6).

In this study, the GPA of the most of participants 39.6% (n=258) was increased while 24.7% (n=161) of participants their GPA was decreased and only 35.6% (n=232) their GPA didn't change.

In addition, the level of psychological distress was determined by 4-points Likert scale. Most of the participants 50.38% (n=328) had moderate psychological distress, 32.10% (n=209) had moderately severe psychological distress, followed by 10.75% (n=70) of the participants had mild psychological distress and only 6.4% (n=44) had severe psychological distress. The majority of participants strongly disagree that they are afraid of COVID-19, with 24.6% (n=160) strongly disagreeing and 11.2% (n=73) strongly agreeing. Only 10.4 % (n=68) of the participants strongly agree that thinking about COVID-19 makes them uncomfortable whereas 26.7% (n=174) of the participants disagree. 34.3% (n=223) strongly disagree that they are afraid of losing their life because of COVID-19 and 20.6% (n=134) agree with that statement. Also, 34.4 percent (n=224) deny that watching COVID-19 news and stories on social media induces nervousness or anxiety, although 24.1% (n=157) agree. Most of the students deny that they had trouble falling asleep because getting COVID-19 is worrisome with 66.2% (n=431) disagreeing and 5.1% (n=33) agreeing. Large number of the students strongly disagree that the thinking about COVID-19 increases their heart rate 63.6% (n=414) while only 5.4% (n=35) are strongly agree with that statement.

From April 13, 2020 to April 28, 2020, a similar study was conducted in the United States to assess the prevalence of anxiety and depression among medical students during the COVID-19 pandemic. There were 1,428 students who took part in the survey, and the prevalence of anxiety and depression among students was 30.60 percent and 24.3 percent, respectively. Females and preclinical students had higher GAD SCORE..[5].

The results were consistent with those of a study conducted in Saudi Arabia to analyze the general public's psychological impact on the COVID-19 pandemic during curfew and lockdown. The Impact of Event Scale-Revised (IES-R) and the Depression, Anxiety, and Stress Scale were used to assess the psychological impact and mental health condition (DASS-21). A total of 1160 Saudi Arabian citizens took part in the survey. 23.6 percent of participants reported moderate or severe psychological effects from the outbreak, and 22.3 percent reported moderate to severe depressed, anxiety, and stress symptoms.[6]

Regarding to the academic impact, it was determined using 4-points Likert Scale and the result was, 120 (18.43%) of students has severely academic impact, 166 (25.5%) of students has moderately sever academic impact, 227 (34.87%) of students has moderate academic impact and 138 (21.20%) of students has mild academic impact. Furthermore, there is 13.4% of students reported that their study performance was deteriorated and 33% of students did not notice deterioration in their study performance. 14.3% did not face any difficulty in concentration while 17% of students were facing difficulties in concentration during their studies. 15.2% of students noticed that their studying hours was increased while 24.7% of students noticed that their studying hours was not increased. 11.5% of students noticed that their studying hours was decreased while 35.2% of students noticed that their studying hours did not decreased. 8.6% were prepare for online classes while 30.4% of students were not prepare for online classes. 8.1% were listen attentively to the online lecture while 29.5% were not listen attentively to the online lecture. 7.2% of students were participate actively during online classes/ discussions while 31% of students were not participate actively during online classes/ discussions. 18.4% of students were able to access to reliable internet connection while 19.7% of students were not able to access to reliable internet connection.
Another cross-sectional study was undertaken in Japan to learn more about how the pandemic has influenced medical students. A total of 717 medical students took part in the web-based study, which included questions regarding how their mental states had altered before and during Japan's nationwide state of emergency (SOE). A total of 473 medical students (66.0 percent) took part in the study. Concerns about the shift to online education were expressed by 29.8% (141/473) of the students. After the SOE was lifted, the individuals' subjective mental health state significantly deteriorated (P.001). [7]

In contrast with other study done in Riyadh, Saudi Arabia at the College of Medicine (COM) of Alfaisal University aimed to analyze the impact of the COVID-19 pandemic on online education. Total respondents is 208, 66.8% were medical students. 41.8% of the respondents reported having little or no online teaching/learning experience before

the pandemic. In addition, 62.5% of the participants preferred integration of both online and face-to-face instructions. There were many challenges reported that are related to communication with (59%), student assessment (57.5%), use of technology tools (56.5%), online experience (55%), pandemic-related anxiety or stress (48%), time management (35%), and technophobia (17%). Despite these challenges, most of the respondents (70.7%) believed that the COVID-19 pandemic has increased their level of confidence in the effectiveness of online medical education.[8]

In this study showed that moderate psychological distress was more prevalent among male (23.0%). In contrast, moderately severe psychological distress was more prevalent among female students. (20.1%). In addition, this study showed that there is an association between the stress and the academic performance of the students. Lastly, the study showed no relationship between stress and the university or the region.

## Conclusion:-

1. In this study, the results of the psychological and academic impact of COVID-19 among students of colleges of medicine in Saudi Arabia and showedthat50.38% of participants had moderate psychological distress and 6.4% had severe psychological distress.
2. Furthermore, majority of participants strongly disagree that they are afraid of COVID-19 and only 10.4% of participants strongly agree that thinking about COVID-19 make them uncomfortable.
3. Regarding to the academic impact 34.87% of students has moderate academic impact and 21.20% of students has mild academic impact . In addition, 33% of students did not noticed deterioration in the work performance while 13.4% of students noticed deterioration in the work performance.
4. Also, this study showed that moderate psychological distress was more prevalent among male (23.0%). In contrast, moderately severe psychological distress was more prevalent among female students(20.1%). There is no relationship between stress and university or region.

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