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RESEARCH ARTICLE

THE PREVALENCE OF DEPRESSION, ANXIETY AND STRESS AMONG ADOLESCENTS OF THE PRIMARY HEALTH CARE CENTERS OF NATIONAL GUARD HEALTH AFFAIRS IN JEDDAH, SAUDI ARABIA DURING COVID-19 PANDEMIC

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Abstract

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Introduction: The coronavirus disease -19 (COVID-19) brought a huge impact on all aspects of humankind. Adolescence plays a significant role in a person's development. Being at this stage during the pandemic had several challenges, such as developing mental illnesses like depression, anxiety, and stress.

Objectives: This study aimed to evaluate the psychological impact of the COVID-19 pandemic on adolescents, including depression, anxiety, and stress.

Methods: This descriptive cross-sectional study was conducted on eligible adolescents following in the primary health care (PHC) centers of National Guard Health Affairs, Jeddah, Kingdom of Saudi Arabia. It included adolescents aged 10 to 24 years old. Excluded in this study are those that have known psychiatric illness, mental retardation, and developmental disease.

Results: Depression was found to be significantly correlated to location, smoking, and having a family member diagnosed with mental illness at p-values of 0.024, 0.033, and 0.040, respectively. Anxiety was significantly correlated as well with location and friends diagnosed with mental illness at p-values of 0.045 and 0.024, respectively. The correlation between stress and the city where the patient lived, friends diagnosed with mental illness, and smoking were significant at p-values of 0.010, <0.001, and 0.003, respectively.

Conclusion: Prolonged lockdowns and restrictions brought about by the pandemic have caused negative impacts on adolescents. Thus, these post-pandemic effects must be addressed to provide appropriate actions by healthcare organizations and the government.

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Introduction:-

Coronavirus -19 disease (COVID-19) is a communicable disease caused by a newly discovered coronavirus, causing respiratory illness ranging from mild self-limited disease to severe acute respiratory distress syndrome (ARDS) and Death [1]. In December 2019, COVID-19 was first reported in Wuhan, China,as an outbreak of pneumonia from

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unknown sources related to seafood market exposure [2]. On March 11, 2020, the World Health Organization (WHO) declared the COVID-19 pandemic [3]. Worldwide, there have been 196,553,009 confirmed cases of COVID-19, including 4,200,412 deathsas of July 30, 2021[4].

On March 2, Saudi Arabia'sfirst confirmed case of COVID-19 was reported [5]. The confirmed cases in KSA reached 525,730, with 506,089 recovery cases and 8,237 death cases as of August 1, 2021[6].After the first case, the government has implemented protective measures against COVID-19, including social distancing, tight travel restrictions, school closure, quarantine of cities, and implementation of 24hr curfew starting May 23, 2020 [7].

The COVID-19 pandemic, given the situation above, has caused increased stress among children, adolescents, and all students in general, mainly due to school closure, social isolation, and separation from loved ones.

This study focused mainly on adolescents. Adolescents undergo three primary developmental stages – early adolescence (Ages 10-14), middle adolescence (Ages 15-17), and late adolescence (Ages 18-24) [8]. It is a transforming phase from childhood to adulthood, and in this period of life, an individual will undergo many physical, sexual, mental, and social changes [9,10]. It is also a critical period of life to develop and maintain social and emotional habits for mental health well-being, as depressionand anxiety are among the leading causes of illness and disability among adolescents worldwide [11]. The prevalence of anxiety and depression among youths in Saudi Arabia was 63.5% and 71%, respectively [12].In the context of COVID-19,the pandemic may have caused undesirable effects educationally, socially, and mentally. Exposure to these events can precipitate the development of anxiety, panic attacks, depression, mood disorder, and other mental health disorders [13].

A recent qualitative study conducted in the Republic of Ireland revealed increased anxiety and depression among adolescents during the pandemic [14]. Another cross-sectional study in Bangladesh showed a high prevalence of anxiety, depression, and stress among the young population amidst the pandemic [15]. Also, a multi-country study including Saudi Arabia revealed that the prevalence of depression, anxiety, and stress among youth during the pandemic was 47.9%, 33.1%, and 30.6%, respectively[16].

The objective of the present study was to assess the psychological impact of the COVID-19 pandemic on adolescents, with a specific focus on depression, anxiety, and stress. Additionally, the study aimed to explore the potential association between demographic factors and the incidence of depression, anxiety, or stress in adolescents during the pandemic, as well as to investigate the possible correlation between contracting COVID-19 and the development of these mental illnesses during the pandemic. Finally, the study sought to investigate the potential relationship between receiving the COVID-19 vaccine and the development of depression, anxiety, or stress among adolescents during the pandemic. The findings of this research may offer a better understanding of the effects of the COVID-19 pandemic on adolescent mental health and provide insight into potential interventions that can be implemented to support this vulnerable population.

Materials And Methods:-

This descriptive cross-sectional study was conducted on eligible adolescents following in the primary health care (PHC) centeres of National Guard Health Affairs, Jeddah, Kingdom of Saudi Arabia. Participants in this study included patients in early adolescence (Ages 10-14), middle adolescence (Ages 15-17), and late adolescence (Ages 18-24). This study excludedthose with known psychiatric illness, mental retardation, and developmental disease.

This study's sample size was calculated using the Raosoft website [17]. The calculation was done based on the population size of 379,004 adolescents aged from 15 to 19 years in the wholly Makkah Region found in a demography survey done in the year 2016 by the General Authority for Statistics in Saudi Arabia upon best-provided knowledge to our research team [18]. Other inputs needed to calculate the sample size in the Raosoft website were a 50% response distribution to get the largest sample size, a confidence interval of 95%, and a 5% margin of error. Assuming that the response rate would be 50%, the calculated sample size was estimated 384 adolescents.

A cross-sectional, descriptive design involving 378patients was done to explore the prevalence of depression, anxiety, and stress among adolescents and identify the effect of certain COVID-19 variables to predict depression, anxiety, and stress (DASS) among adolescents in Saudi Arabia. Data was collected using a structured questionnaire among adolescents visiting the PHC clinics. Written consent was also taken from their attending guardian.

Participants were given a structured linked questionnaire created by Google Forms that included sociodemographic data including age; gender; educational level and type presence of family members, friends, or colleagues with COVID-19; previous history of depression or anxiety; history of medication for depressive syndrome; frequency of watching news about COVID-19; and internet use; (2) depression; (3) anxiety; and (4) stress. Permission to use the survey described above was obtained from the primary investigator of a similar study [16]. To measure the prevalence of depression, anxiety, and stress scale (DASS) was used. Authors have chosen this scale because it was available in the public domain. The Arabic version had also been validated and demonstrated sensitivity to adolescents and measured multiple domains in one survey. The DASS scale reliability (Cronbach's alpha=0:88) and construct validity of the Arabic version were well-established [19].

Descriptive data were presented in various ways according to the type of data. For normally distributed, the continuous (quantitative) data were presented in means and standard deviations. However, skewed, continuous variables were presented in medians and interquartile. On the other hand, categorical (qualitative) data were organized in proportions.

Regarding the association between variables, Chi-square was used for measuring the association between categorical data, but T-test and One-Way ANOVA was used for measuring the association between categorical and continuous variables together. Multi-variant variables were analyzed using logistic regression for categorical data and multiple linear regression for continuous data.AP -value of less than 0.05 was considered significant. Lastly, data analysis was achieved using Statistical Package for the Social Science (SPSS) version 23 (IBM Corp., Armonk, NY).

A simple descriptive statistic was used to define the characteristics of the study variables through a form of counts and percentages for the categorical and nominal variables while continuous variables are presented by mean and standard deviations. This study used DASS-42, a 42-item self-report scale designed to measure the emotional states of depression, anxiety, and stress. Each of the 42 questions is scored on a 4-point scale ranging from 0 ("Does not apply to me at all") to 3 ("Applies to me very often or most of the time"). Scores for Depression, Anxiety, and Stress are calculated by summing the scores for the relevant items and interpreted as follows:

	Depression (D)	Anxiety (A)	Stress (S)
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Also, a Reliability Analysis was used with a model of Alpha (Cronbach) to study the properties of measurement scales and the items that compose the scales and the average inter-item correlation. To correlate variables which both represented by means, a Pearson's correlation coefficient was used. To establish a relationship between categorical variables, this study used a chi-square test. These tests were done with the assumption of normal distribution. Lastly, a conventional p-value <0.05 was the criteria to reject the null hypothesis.

Results:-

This study involved 378 adolescents residing in the Kingdom of Saudi Arabia. Most of the respondents live in Jeddah (76.7%), and Mecca (13.8%) while the rest lived in minor cities (2.4% in Bahrah, 2.9% in Al Madinah, and 4.0% in other cities) (Table 1). The majority of 292 adolescents were females (77.2%) while 22.8% were males.

Adolescents were grouped into three categories, early adolescents ranging from 10-14 years old (5.8%), middle adolescents ranging from 15-17 years old (19.6%), and late adolescents ranging from 18-24 years old (majority – 74.6%).

Participants were then asked personal questions such as how many members they are in the family. There were 6.9% or 26 patients with three persons in the family, while there were 10.6% or 40 patients with less than five people in the family. On the other hand, there were 38.9% or 147 people had less than seven people in the family, and 34.4% had less than ten people in the family. Lastly, there were 9.3% with ten people or more in the family.

Family income rates were also asked. There were 13.2% that lived less than 5 thousand riyals per month, There were 33.6% or 127 adolescents that lived 5-10 thousand per month, and 32.3% or 122 that lived 10-20 thousand per month. Lastly, there were 20.9% or 79 lived with more than 20 thousand per month.

Educational levels were also assessed. There were 2 or 0.5% that did not attend school, while there were 6 or 1.6% that went to primary school. There were 8.2% or 31 adolescents that went to intermediate school, while there were 339 or 89.7% that went to high school.

Adolescents' parents' educational levels were also determined. The majority of the participants' mothers were undergraduates (48.7%), then followed by going to high school (26.7%), Intermediate and primary school were reached by mothers of each adolescent7.7% and 7.9% respectively, while 9.0% were illiterate.The majority of the participants' fathers were undergraduates 49.5%, then followed by going to high school at 29.9%, Intermediate, and primary school were reached by fathers of each of adolescents11.9% and 5.8% respectively, while 2.9% were illiterate.

The academic average of the adolescents from the previous year was also determined. The majority or 65.1% (246 patients) had an average of more than 95%, followed by 21.7% or 82patients who had 85-95%. There were 9.0% (34), 2.2% (9), and 2.4% (9) that had 75 - 84%, less than 75% and failed average, respectively among the adolescents from the previous year.

In terms of previous diagnoses of mental illnesses, all have not been diagnosed.Participants who have been were excluded from the study given the criteria mentioned above.

In terms of diagnoses of mental illnesses among family members of adolescents, the majority or 88.4% said that their family members have not been diagnosed (334 patients), while 44, or 11.6% said that they have. In terms of diagnoses of mental illnesses among friends of adolescents, the majority or 82.8% said that their friends have not been diagnosed (313 patients), while 65, or 17.2% said that they have.

The adolescents were also asked if they suffered from any chronic disease. The majority or 90.7% do not have (343 patients) while 35 or 9.3% have been diagnosed with a chronic disease (Table 2).

The participants in this study were also asked if they were a smoker (Table 3). The majority (357) or 94.4% said they are not, 5 or 1.3% said they have quitted smoking due to the spread of the virus, while 16 or 4.2% said they smoke.

The other half part of the interview is where the situation of adolescents during the pandemic was also looked at. In terms of a history of contact or interaction with another person that had been infected by COVID-19, there were 64.3% or 243 adolescents had contact. Participants were also asked if they knew anyone that had been diagnosed with COVID-19. There were 80 participants that mentioned that their family members acquired the disease (21.2%), while there were 222 or 58.7% that have one of their first-degree relatives, such as mother, father, and brother. While there were 76 participants or 20.1% that have friends that have been diagnosed with COVID-19.Meanwhile, more than half or 55.6% of the adolescents believed that they were not susceptible to infection by COVID-19, while only 44.4% believed that they were.

Regarding financial support, 345 patients (91.3%) mentioned that they are not responsible for providing for their families.

In terms of quarantine history, more than half or 54.5% (206 patients) revealed that they had not been quarantined. There were 45.8% of the adolescents never followed the news regarding COVID-19, while 37.3% rarely followed it, 15.3% revealed they did it sometimes, and only 1.6% mentioned that they always followed the news. Furthermore, the adolescents' source of information about the pandemic was mainly social media platforms, of which 60.8% of them agreed, while 27.8% used the internet to obtain information. Television was the source of updates for adolescents at 6.3%, and friends at 2.1%. This study also determined the hours spent by adolescents online. As shown in Figure 1, Adolescents spend 12 hours or more per day at 18%, while there were 36.8% that spend six to eight hours per day, 28.3% that spend four to five hours, 14.0% that spend two to three hours, and only 2.4% that spend one hour daily. Lastly, there were 98% or 399 patients that have received the COVID-19 vaccine (Figure 2).

The applicability level of each depression, anxiety, and stress items for the studied population based on DASS-42 is shown in Table 4.1. Table 4.2. also shows the mean score for each depression, anxiety, and stress item of DASS-42. Considering these information, and according to the DASS-42 survey, the depression score had a mean of 12.71 (min=0, max=42 with SD=12.1), while the anxiety scores mean was 10.8 (min=0, max=41 with SD=9.9) and stress scores mean was 13.96 (min=0, max=42 with SD=11.8) (Table5). Adolescents were also assessed of the severity of their depression, anxiety, and stress. In terms of depression, 194 patients were normal (51.3%), 32 patients had mild depression (8.5%), 58 patients had moderate (15.3%), 40 patients had severe (10.6%), and 54 patients had extremely severe depression (14.3%). In terms of anxiety, 179 patients were normal (47.4%), 23 patients had mild depression (6.1%), 57 patients had moderate (15.1%), 51 patients had severe (13.5%), and68 patients had extremely severe anxiety (18.0%). Lastly, in terms of stress, 223 patients were normal (54.8%), 40 patients had mild stress (9.8%), 59 patients had moderate (14.5%), 39 patients had severe (9.6%), and 46 patients had extremely severe stress (11.3%). Figure 3 shows a graph of adolescents' levels of depression, stress, and anxiety.

To determine the survey's consistency, the reliability statistics tool Cronbach's alpha was calculated. Depression, anxiety, and stress had Cronbach's alpha of 0.960, 0.919, and 0.951, respectively, indicating high correlation and consistency.

Another correlation tool was used for the three domains, the r correlation coefficient and p-value were also determined in this study. The correlation of depression to anxiety gave an r of 0.843which was found to be significant at the 0.01 level of the two-tailed test, and a p-value of <0.001. On the other hand, the correlation of depression to stress was also found significant with r of 0.892 and a p-value of <0.001. In terms of anxiety, the correlation of it with stress was found significant and gave an r of 0.87 and a p-value of <0.001.

The second part determined the correlation of depression with the demographics. It was found that the location or city, where the patient lived, had a p-value of 0.024 and was significant using the Chi-square test at 0.05 level. In terms of gender, it was found to be insignificantly correlated with depression at a p-value of 0.597. Meanwhile, it was insignificantly correlated for having a family member diagnosed with mental illness at a p-value of 0.727. Smoking and having a friend diagnosed with mental illness were found to have a significant correlation giving a p-value of 0.033 and 0.040, respectively. The demographic variables gender, age, number of members of the family, family income rate, educational level, parent's educational level, and the academic average for the last year were all found insignificant using the p-value.

The third part determined the correlation of anxiety with the demographics. It was found that location and friends diagnosed with mental illness were found significant using the Chi-Square test at 0.05 level with p-values of 0.045and 0.024, respectively, while other criteria were found to be insignificant. Lastly, the correlation of stress with demographic information was also measured. It was found that the city where the patient lived, friends diagnosed with mental illness, and smoking were found significant using the Chi-Square test at 0.05 level with p-values of 0.010, <0.001, and 0.003, respectively, while other criteria were found to be insignificant.

The correlation between the situation of adolescents during the pandemic with the severity of depression and anxiety was also measured. The number of hours spent online was found to be significantly correlated to the severity of depression and anxiety with a p-value of 0.002 and 0.007, respectively. The correlation between the situation of adolescents during the pandemic with the severity of anxiety was also measured. Adolescents with contact or interaction with a person that acquired COVID-19 was found to be significantly correlated to the severity of anxiety with p-values of 0.031, respectively. The correlation between the situation of adolescents during the pandemic with the severity of stress was also measured. All criteria were found to be insignificantly correlated to the severity of stress. Lastly, depression, anxiety, and stress were found to be insignificantly correlated to receiving the COVID-19 vaccine at p-values of 0.895, 0.274, and 0.693, respectively.

Discussion:-

DAS or depression, anxiety, and stress are the most common psychiatric illnesses among youth and are the subjects of this study. During the pandemic, the restrictions and prolonged lockdowns were found to have a huge impact on the levels of DAS among youths and adolescents. One study by Al Omari in 2020 determined the prevalence of DAS in Middle Eastern countries and assessed its predictors. The prevalence of anxiety in Saudi Arabia was found to be 33.1%, while depression was at 47.9%. Although there has been an inconsistency in prevalence rates across different studies, it was due to the different survey methods and age groups involved. They also found that COVID-

19 did not significantly impact the DAS variables [16]. This study involved participants mainly from the second largest city in Saudi Arabia, Jeddah, which was well represented in identifying the rates of different severity of DAS. Since Jeddah is an urban area, it is more likely to be subjected to a fast-paced environment resulting in a significant correlation to extremely severe depression and stress. However, it was not significant in terms of anxiety.

Another demographic studied was gender and its effect on the DAS of adolescents during the pandemic. One study by Aldhmadi in 2021 revealed that female undergraduates tend to take protective measures from experiencing depression but there was also insufficient data to support their study [20]. In this study, however, the population is also composed of the majority of women and could support the study mentioned above. Different age groups of adolescents were also considered in this study. However, it was also shown that it did not play a significant role in the severity of depression, anxiety, and stress of young adults. One study by Alyoubi in 2021 determined the impact of the pandemic on students' mental health and sleep in Saudi Arabia[21]. They found that age and gender were considered as risk factors for developing poor mental health outcomes, particularly in young adult and adolescent females with a mean age of 22.5 years old, having a higher prevalence of depression, and more severe depressive symptoms [21].

On the other hand, Al Omari also found that socioeconomic status or income greatly causes higher rates of DAS among adolescents. It was observed in their study that Middle Eastern countries that are high-income generating, such as KSA, Oman, and UAE, had comparable results with the low-income countries in the likes of Jordan and Egypt [16]. Although in this study, family income rate was not significantly correlated among the three domains measured (depression, anxiety, and stress).

In terms of academic average from the previous year as a factor of developing DAS among adolescents, it was found insignificant for depression and stress, but significant for anxiety. One study by Atlam, et. al., in 2022 mentioned that COVID-19 brought problems in life sectors, particularly in the education sector, bringing significant challenges to students to join online classes, affecting their mental health as well. Increased pressure from schools and parents are factors affecting students' academic performances [22].

Previous diagnoses of a mental illness also affected the development of DAS in adolescents during COVID-19. After the pandemic, there was an increased fear of uncertainty, according to one study by Shatla, et.al., in 2020, associated with the development of negative mental health impacts on the general population of Saudi Arabia [23].

Adolescents that previously had COVID-19 or their family and friends having COVID-19 have a significant correlation in terms of developing depression, anxiety, and stress. One study by Alamri, et.al., in 2021 studied the mental health of COVID-19 patients in the general population of KSA. They found that 13% of COVID-19 patients and survivors developed borderline levels of anxiety, 26.8% with anxiety, and 60.2% were normal. It also revealed that 29.9% of the patients developed borderline depression, 18.4% were diagnosed with depression, and 51.7% as normal [24].

Smoking was reportedly significantly correlated to developing stress among adolescents in KSA. One study by Clendennen, et.al., in 2021 determined stress development of COVID-19-related changes in young adults resulting from the use of marijuana, electronic cigarette, and cigarette. It was noted that there was a significant increase in cigarette smoking brought on by COVID-19. There was higher perceived stress among adults who were past six-month cigarette smokers due to the pandemic. On the other hand, the younger population perceived moderate to high stress during this period [25].

Lastly. the hours spent online significantly correlated with developing depression, anxiety, and stress during COVID-19. One study by Gao, et.al., in 2020 determined mental health problems and social media exposure during the COVID-19 outbreak. They found that social media exposure was associated with high odds of anxiety because of disinformation and false reports that stoked unfounded fears among people that also harmed their mental health [26].

The limitation of this study is having a small sample size, so it is recommended to conduct another study with a bigger sample size. Furthermore, DASS is not a diagnostic tool for DAS. Thus, further studies with more robust methods that are able to screen adolescents for mental illness, such as psychiatric interviewing, are also suggested.

Conclusion:-

Adolescence is an important and critical stage for the youth; thus, efforts must be made to prevent and control conditions that affect their mental health and cause a major public health concern. These psychiatric disorders have affected every aspect of every adolescent, particularly during and post-pandemic era, from their academic performance to substance abuse and social interactions. If left undiagnosed and untreated, mental illness can negatively impact young people's development, social life, and even future careers.

There wasa significant correlation between the diagnosis of DAS in adolescents due to several factors such as previously acquiring COVID-19 of adolescents, their family members and friends,location, academic average, smoking, and hours spent online. This study could provide important information for the healthcare providers, and government in properly addressing mental and psychological problems that have arisen during, after the pandemic, and even up to this date. Proper management and prevention must be done to control these existing and developing cases in the future.

Conflicts of Interest

No authors of this paper have any conflicts of interest.

Ethical approval and consent to participate

The ethical approval was granted by the ethical board of [King Abdullah International Medical Research Center] [IRB/1748/22.]. Appropriate and informed consent was obtained from each subject and/or their guardian, after receiving approval for the experimental protocol.

Patient consent to participate

Not applicable.

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Disclosure statement

The authors report that there are no competing interests to declare.

Data availability statement

The data used in this study is available upon request from the corresponding author.

Author’s Contribution

KhuloodAlsiary, and Mahmoud Alzahraniconceptualized and designed the study. ReemAlgarni, AbdulazizAlharb, and EsraaFelimban prepared the methodology and executed the investigation. LoaiAlnouri, TuqaAlahmadi, and TurkiAlsaiari reviewed the data analysis, wrote and drafted the article. Layan Alahmadi, Afnan Alnouri, and MarwahBaabdullah wrote, edited and approved the final manuscript.All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Table 1:- Socio-demographic characteristics of the studied population (N = 378).

Demographics		**Count**	**%**
Total		378	100.0
Mention the city you live in?	Jeddah	290	76.7
	Bahrah	9	2.4
	Mecca	52	13.8
	Al Madinah	11	2.9
	Taif	1	0.3
	Other	15	4.0
Gender	Male	86	22.8
	Female	292	77.2
Age	Early Adolescent(10-14 years old)	22	5.8
	Middle Adolescent(15-17 years old)	74	19.6
	Late adolescent(18-24 years old)	282	74.6

How many members of your family?	3 persons	26	6.9
	Less than 5 people	40	10.6
	Less than 7 people	147	38.9
	Less than 10 people	130	34.4
	10 persons or more	35	9.3
Family income rate	Less than 5 thousand riyals per month	50	13.2
	5-10 thousand per month	127	33.6
	10-20 thousand per month	122	32.3
	More than 20 thousand per month	79	20.9
Educational level	I did not attend school	2	0.5
	Primary	6	1.6
	Intermediate	31	8.2
	High school	339	89.7
Mother's educational level	Illiterate	34	9.0
	Primary	30	7.9
	Intermediate	29	7.7
	High school	101	26.7
	Undergraduate	184	48.7
Father's educational level	Illiterate	11	2.9
	Primary	22	5.8
	Intermediate	45	11.9
	High school	113	29.9
	Undergraduate	187	49.5
Academic average for the last year	Did not pass the year	7	1.9
	Less than 75%	9	2.4
	75-84%	34	9.0
	85-95%	82	21.7
	More than 95%	246	65.1

Table 2:- Mental/chronic illness diagnosis of the studied population (N = 378).

Variables		**Count**	**%**
Total		378	100.0
Have you been diagnosed with a mental illness before?	No	378	100.0
Has anyone in your family been diagnosed with a mental illness?	Yes	44	11.6
	No	334	88.4
Has your friend been diagnosed with mental illness?	Yes	65	17.2
	No	313	82.8
Do you suffer from any chronic disease?	Yes	35	9.3
	No	343	90.7

Table 3:- Smoking and coronavirus infection history of the studied population (N = 378).

Variables		**Count**	**%**
Total		378	100.0
Are you a smoker at the moment?	Yes	16	4.2
	I quit smoking due to the spread of the virus	5	1.3
	No	357	94.4
Have you been in contact with or interacted with a person who was later discovered to be infected with the Corona?	Yes	243	64.3
	No	135	35.7
Has anyone you know been diagnosed with Corona?	Yes, a member of my family	80	21.2
	Yes, one of my first-degree relatives (mother, father, brothers)	222	58.7
	Yes, one of my friends	76	20.1

Do you think you are susceptible to infection with the Corona virus?	Yes	168	44.4
	No	210	55.6
Are you responsible for providing for your family?	Yes	33	8.7
	No	345	91.3
Have you been quarantined for 10-14 days?	Yes	172	45.5
	No	206	54.5
At the moment, are you following the news of the Coronavirus?	Never	173	45.8
	Rarely	141	37.3
	Sometimes	58	15.3
	Always	6	1.6
Your source of information about the Corona virus	Friends	11	2.9
	Social media platforms	230	60.8
	Internet	105	27.8
	Television	24	6.3
	Others	8	2.1
How many hours do you currently spend online?	One hour daily	9	2.4
	2-3 hours a day	53	14.0
	4-5 hours a day	107	28.3
	6-8 hours a day	139	36.8
	12 hours or more per day	68	18.0
	I don't have internet	2	0.5
Did you receive the Corona vaccine?	Yes	371	98.1
	No	7	1.9

Table 4.1:- Applicability level of each depression, anxiety, and stress items for the studied population based on DASS-42 (N = 378).

DASS-42	**Does not apply to me at all**	**Applies to me some or a few times**	**Applies to me to a significant degree or some of the time**	**Applies to me very often or most of the time**
Depression				
I didn't seem to be able to experience positive emotions at all	175(46.3)	113(29.9)	48(12.7)	42(11.1)
It never seemed to me that I could begin to do my business	161(42.6)	114(30.2)	68(18.0)	35(9.3)
I felt like I had nothing to look forward to	178(47.1)	92(24.3)	52(13.8)	56(14.8)
I felt sad and depressed	135(35.7)	95(25.1)	82(21.7)	66(17.5)
I felt like I had lost interest in almost everything	170(45.0)	99(26.2)	53(14.0)	56(14.8)
I felt of little value as a person	203(53.7)	82(21.7)	41(10.8)	52(13.8)
I felt that life was worthless	214(56.6)	80(21.2)	36(9.5)	48(12.7)
I didn't feel like enjoying anything I did	218(57.7)	80(21.2)	45(11.9)	35(9.3)
I felt sad and anguished	144(38.1)	103(27.2)	60(15.9)	71(18.8)
I lost enthusiasm for anything	184(48.7)	102(27.0)	40(10.6)	52(13.8)
I felt somewhat worthless	213(56.3)	78(20.6)	43(11.4)	44(11.6)

I saw nothing hopeful about the future	228(60.3)	65(17.2)	37(9.8)	48(12.7)
I felt that life had no meaning	232(61.4)	66(17.5)	29(7.7)	51(13.5)
I found it difficult to take initiative in doing things	170(45.0)	86(22.8)	54(14.3)	68(18.0)
Anxiety				
My throat felt dry	176(46.6)	122(32.3)	53(14.0)	27(7.1)
I felt difficulty breathing (extremely rapid breathing, panting without physical exertion, for example)	208(55.0)	91(24.1)	37(9.8)	42(11.1)
I felt shivering (my legs couldn't carry me, for example)	215(56.9)	87(23.0)	39(10.3)	37(9.8)
I found myself in situations that made me very anxious, and I was very relieved that they were over	106(28.0)	97(25.7)	68(18.0)	107(28.3)
I felt faint	264(69.8)	72(19.0)	23(6.1)	19(5.0)
I sweated significantly (profuse sweating from the hands, for example) without the weather being hot and without physical exertion	255(67.5)	72(19.0)	23(6.1)	28(7.4)
I got scared without any good reason	211(55.8)	75(19.8)	48(12.7)	44(11.6)
I had difficulty swallowing	282(74.6)	49(13.0)	25(6.6)	22(5.8)
I felt my heartbeat without physical exertion (an increased heart rate, or an absence of a heartbeat, for example)	202(53.4)	85(22.5)	42(11.1)	49(13.0)
I felt like I was about to fall into a sudden state of terror for no reason	239(63.2)	71(18.8)	25(6.6)	43(11.4)
I dreaded encountering an intuitive yet unfamiliar work	208(55.0)	90(23.8)	39(10.3)	41(10.8)
I was panicked and terrified	236(62.4)	69(18.3)	34(9.0)	39(10.3)
I was afraid of situations where I might lose control of my temper and embarrass myself	188(49.7)	77(20.4)	58(15.3)	55(14.6)
I felt a shiver (eg; with my hands)	193(51.1)	84(22.2)	48(12.7)	53(14.0)
Stress				
I found myself agitated and upset over very trivial matters	87(23.0)	137(36.2)	76(20.1)	78(20.6)
I tend to overreact to circumstances and events	175(46.3)	112(29.6)	60(15.9)	31(8.2)
I find it difficult to relax	163(43.1)	100(26.5)	66(17.5)	49(13.0)
I found myself getting agitated and easily upset	149(39.4)	104(27.5)	53(14.0)	72(19.0)
I felt like I was using up a lot of nervous energy (I felt like I was taking a lot out of my stress tolerance)	138(36.5)	97(25.7)	66(17.5)	77(20.4)
I found myself becoming impatient whenever something is causing delay (when waiting for an elevator, traffic lights, or whenever I was told to wait, for example)	184(48.7)	102(27.0)	46(12.2)	46(12.2)

I felt like I was getting pissed off quickly	199(52.6)	88(23.3)	38(10.1)	53(14.0)
I found it hard to relax and rest	169(44.7)	99(26.2)	56(14.8)	54(14.3)
I felt annoyed quickly	142(37.6)	96(25.4)	66(17.5)	74(19.6)
I find it difficult to calm down after being upset about something	184(48.7)	93(24.6)	53(14.0)	48(12.7)
I can no longer tolerate others interrupting my work	206(54.5)	93(24.6)	38(10.1)	41(10.8)
I was nervous	184(48.7)	97(25.7)	36(9.5)	61(16.1)
I couldn't tolerate anything that would stand between me and what I wanted to do	190(50.3)	96(25.4)	43(11.4)	49(13.0)
I felt restless and upset	175(46.3)	96(25.4)	48(12.7)	59(15.6)

Table 4.2:- Mean score for each depression, anxiety, and stress item of DASS-42 (N = 378).

DASS-42	Min	Max	Mean	SD
Depression				
I didn't seem to be able to experience positive emotions at all	0	3	0.89	1.0
It never seemed to me that I could begin to do my business	0	3	0.94	1.0
I felt like I had nothing to look forward to	0	3	0.96	1.1
I felt sad and depressed	0	3	1.21	1.1
I felt like I had lost interest in almost everything	0	3	0.99	1.1
I felt of little value as a person	0	3	0.85	1.1
I felt that life was worthless	0	3	0.78	1.1
I didn't feel like enjoying anything I did	0	3	0.73	1.0
I felt sad and anguished	0	3	1.15	1.1
I lost enthusiasm for anything	0	3	0.89	1.1
I felt somewhat worthless	0	3	0.78	1.0
I saw nothing hopeful about the future	0	3	0.75	1.1
I felt that life had no meaning	0	3	0.73	1.1
I found it difficult to take initiative in doing things	0	3	1.05	1.1
Anxiety				
My throat felt dry	0	3	0.82	0.9
I felt difficulty breathing (extremely rapid breathing, panting without physical exertion, for example)	0	3	0.77	1.0
I felt shivering (my legs couldn't carry me, for example)	0	3	0.73	1.0
I found myself in situations that made me very anxious, and I was very relieved that they were over	0	3	1.47	1.2
I felt faint	0	3	0.46	0.8
I sweated significantly (profuse sweating from the hands, for example) without the weather being hot and without physical exertion	0	3	0.53	0.9
I got scared without any good reason	0	3	0.80	1.1
I had difficulty swallowing	0	3	0.44	0.9
I felt my heartbeat without physical exertion (an increased heart rate, or an absence of a heartbeat, for example)	0	3	0.84	1.1
I felt like I was about to fall into a sudden state of terror for no reason	0	3	0.66	1.0
I dreaded encountering an intuitive yet unfamiliar work	0	3	0.77	1.0
I was panicked and terrified	0	3	0.67	1.0
I was afraid of situations where I might lose control of my temper and embarrass myself	0	3	0.95	1.1
I felt a shiver (eg with my hands)	0	3	0.90	1.1

Stress				
I found myself agitated and upset over very trivial matters	0	3	1.38	1.1
I tend to overreact to circumstances and events	0	3	0.86	1.0
I find it difficult to relax	0	3	1.00	1.1
I found myself getting agitated and easily upset	0	3	1.13	1.1
I felt like I was using up a lot of nervous energy (I felt like I was taking a lot out of my stress tolerance)	0	3	1.22	1.1
I found myself becoming impatient whenever something caused a delay (when waiting for an elevator, traffic lights, or whenever I was told to wait, for example)	0	3	0.88	1.0
I felt like I was getting pissed off quickly	0	3	0.85	1.1
I found it hard to relax and rest	0	3	0.99	1.1
I felt annoyed quickly	0	3	1.19	1.1
I find it difficult to calm down after being upset about something	0	3	0.91	1.1
I can no longer tolerate others interrupting my work	0	3	0.77	1.0
I was nervous	0	3	0.93	1.1
I couldn't tolerate anything that would stand between me and what I wanted to do	0	3	0.87	1.1
I felt restless and upset	0	3	0.98	1.1

Table 5:- Depression, Anxiety, and Stress scores of the studied population based on DASS-42 (N = 378).

DASS-42	**N**	**Min**	**Max**	**Mean**	**SD**
Depression	378	0	42	12.71	12.1
Anxiety	378	0	41	10.80	9.9
Stress	378	0	42	13.96	11.8
		Count		**%**	
Total		378		100.0	
Depression	Normal	194		51.3	
	Mild	32		8.5	
	Moderate	58		15.3	
	Severe	40		10.6	
	Extremely Severe	54		14.3	
Anxiety	Normal	179		47.4	
	Mild	23		6.1	
	Moderate	57		15.1	
	Severe	51		13.5	
	Extremely Severe	68		18.0	
Stress	Normal	223		54.8	
	Mild	40		9.8	
	Moderate	59		14.5	
	Severe	39		9.6	
	Extremely Severe	46		11.3	

Figures

Figure 1:- Graph of hours spent online by adolescents.

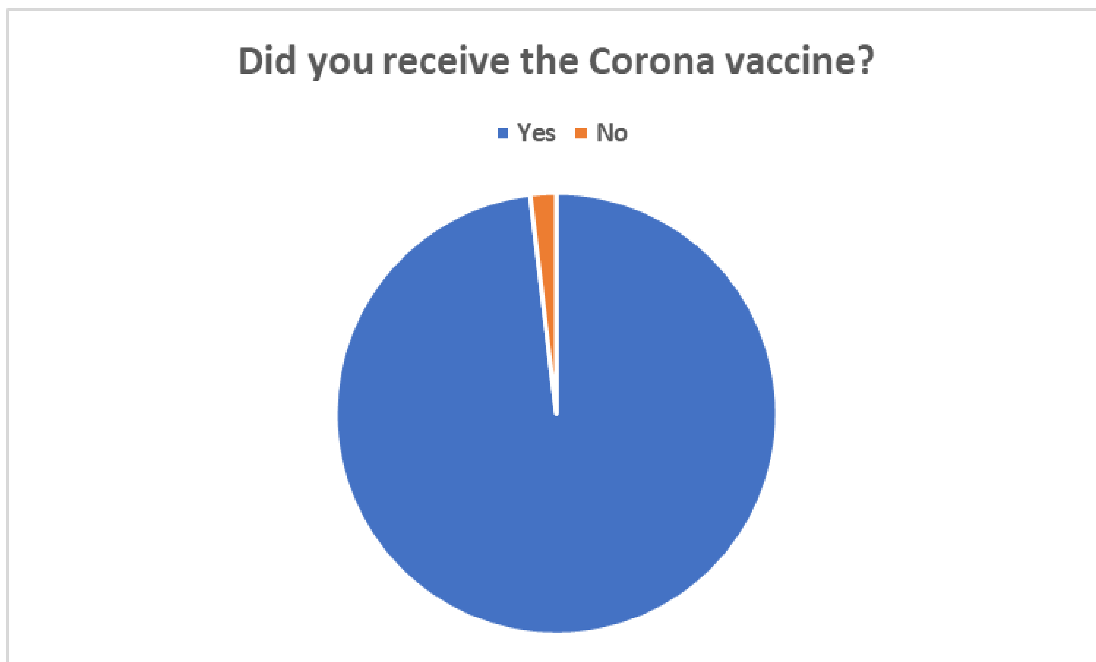

Figure 2:- Graph of adolescents that received Coronavirus vaccine.

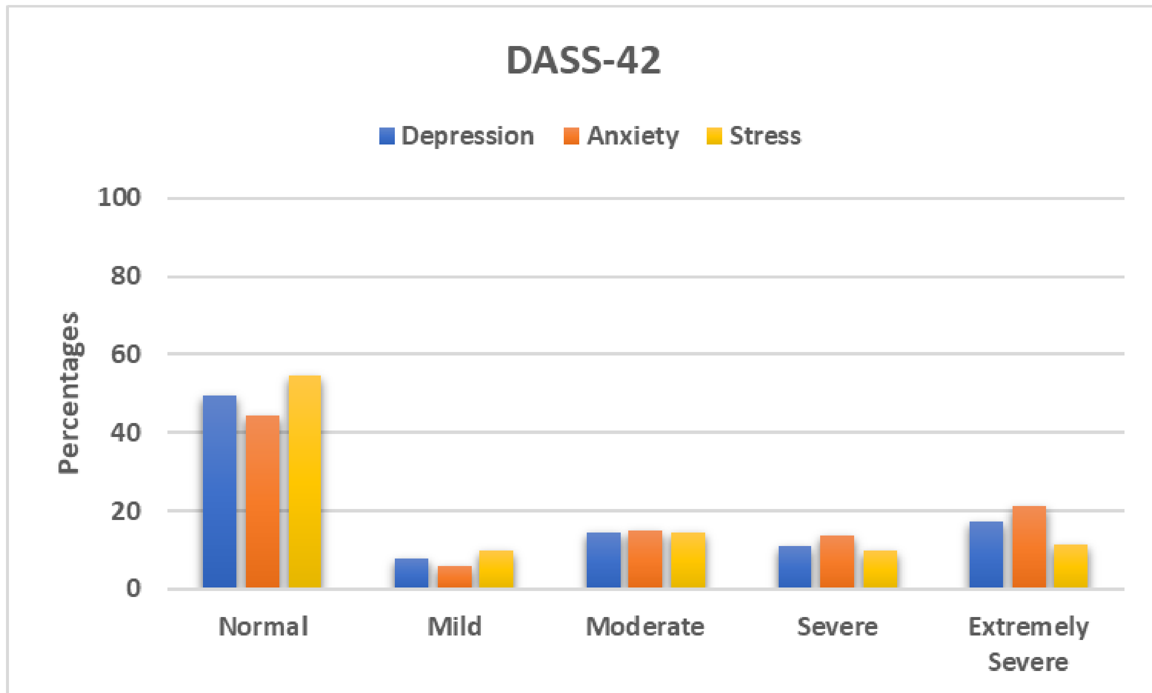

Figure 3:- Graph of adolescents' levels of depression, stress, and anxiety.

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