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# Depression, Anxiety and Stress among University Students during the Covid-19 Pandemic in Trinidad and Tobago: A Web-Based Cross-Sectional Survey

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### ABSTRACT

**Background & Aim:** The COVID-19 pandemic has the potential to significantly affect the mental health of Nursing students, as they care for patients during the Covid-19 pandemic. The aim of this study was to assess the mental health of undergraduate nursing students particularly in relation to the depression, anxiety and stress in a Nursing School of Trinidad and Tobago during the pandemic.

**Methods:** This study was a descriptive, quantitative, cross-sectional web-based study in which participants (n=65) were selected via random sampling. The DASS-21 item self-administered questionnaire consisting of questions that assessed the desired variables. Multivariable statistical methods were applied to identify independent predictors for Depression, Anxiety and Stress among the participants.

**Results:** The data showed that a majority of nursing students exhibited extremely severe levels of anxiety during the Covid-19 pandemic. There was a significantly higher proportion of nursing students with normal depression (n = 65; p < 0.05). There was a significantly higher proportion of nursing students with extremely severe anxiety (n = 65; p < 0.05). There was a significantly higher proportion of nursing students with normal stress levels (n = 65; p < 0.05). There was no significant association between age and depression (p = 0.52).

**Conclusions:** This study aimed to show the psychological impact of COVID-19 such as depression, anxiety and stress during the COVID 19 Pandemic among university students at the selected University. The finding of this study will help serve as baseline data for policy makers and programmers to develop comprehensive mental health programs to assist individuals to manage the psychological impact of the pandemic on University nursing students.

Keywords: Depression, anxiety, stress, university students, COVID-19.



**Running head:** Depression, Anxiety and Stress among University Students during the Covid-19 Pandemic.

#### Introduction

Global pandemic COVID-19 is now a significant public health burden on a global scale [1]. Trinidad and Tobago confirmed its first case of Coronavirus case on 12 March, 2020. The victim had returned from Switzerland [2]. On 21 January, 2021, T & T conformed first case of UK Covid-19 variant, in a national who had returned from the UK [3].

The COVID-19 coronavirus epidemic has had a significant impact on people's lives all around the world, especially since the World Health Organization declared it a worldwide pandemic, in the second week of March 2020 [4].

Around 6.91 million persons had been infected with the covid 19 infection/virus, as of June 7, 2020, and 0.4 million deaths from the disease had been officially confirmed worldwide. In order to stop the spread of the extremely contagious illnesses from person to person, numerous Nations undertook a variety of anti-epidemic measures, including limiting travel for foreign nationals, closing down public spaces, and shutting down the entire transit system [5].

Following the discovery of the first COVID-19 case on March 12, 2020, Trinidad and Tobago, like many other nations, implemented the lockdown strategy on March 18, 2020, in order to ensure "social distance" through "home quarantine" to prevent the "spread" among its population. The global health community had not yet developed a specific treatment or vaccine for those who were infected and for those who were at risk. However, all educational institutions were initially shut down nationwide from March 18 to March 31, 2020, and then the closures were gradually extended through to the middle of June 2020. The delivery of education was now online. Students had to get used to taking classes online rather than in person. This was continued until 2021 and has becoming the norm [6].

# "On stress, anxiety and depression experienced by university students during the Covid 19 pandemic"

Among the unparalleled hazards of the COVID-19 pandemic is its impact on mental health globally. Evidence from a 2020 umbrella review of systematic reviews of mental health outcomes associated with issues as quarantine and isolation showed a prevalence of 33% of overall global population having poor mental health status [7]. Global prevalence estimates from 32 countries reported that though effects varied across countries and regions amid the pandemic, mental health outcomes were higher than pre-COVID-19. Pooled population prevalence by mid-2020 estimated prevalence rates for depression, anxiety and stress as 28.0%, 26.9%, and 36.5%, respectively [8]

Having the status of student is recorded as one of the risk factors in most of the population studies. Among others, predictors of high strengths were being female, being of young age (40 years or less than) and having frequent exposure to social media/news regarding COVID-19. Lockdown, which promoted online classes and self-study, severely impacted student's health increasing physical and psychosocial problems such as limiting good sleep habits, decreasing fitness activity, weight gain, and lack of socialising, all resulting in increased anxiety, stress, frustration, and depression [9,10,11,12].

#### Stress



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Stress in the vulnerable population of college or university students has been synthesised as global studies, by jurisdictions, and in combined regions. A 2021 systematic review for the issue among Bangladeshi students found that stress prevalence rates ranged from mild to severe symptoms 28.5% to 70.1% with university students assessed as principally more stressed [9]. By comparison, a meta-analysis in Bangladesh [7], reported a pooled population stress prevalence as 44%. When sub-group analyses were conducted the Bangladesh's general population had a stress prevalence of 38% and the student population was reported as higher than pooled and general population rates at 52% concluding that students were having a higher rate of stress overall [7]. Both Bangladeshi studies reported the significant risks to be associated with socio-demographic, e.g., age and gender, behavior, and health, such as social media exposure, and COVID-19 perceived threats. Economic distress and financial pressures were also significant predictors.

Among the syntheses of global studies on student health, stress symptoms were reported as 31% and 23%, respectively [12 & 13]. Using a meta-analysis of 104 cross-sectional studies on psychological stress done from the beginning of the pandemic, [12] it was reported that globally gender stress was higher among female students (19%) than males. This they say is in keeping with pre-pandemic patterns. Stress levels also varied for students at different educational levels, but colleges and universities were at similar levels to middle school students, and geographically, stress was lower in the Eastern Asian regions than anywhere else in the world. Pooled prevalence of stress symptom in the global student population had high heterogeneity, which may be attributed to the differences in study design and assessment tools used in the 104 studies analysed. Sub-group analyses also indicated that gender, major, and educational stage of study presented as main predictors with greater effects.

#### Depression

Psychological stress of the pandemic also saw depression as a health outcome in the global population with pooled prevalence of 28% [8]. In comparison, the WHO global depression prevalence at 2015 was 4.4% [14]. And by example, Fang, et al. also pointed out that in the SARS epidemic of 2003, a population survey for prevalence of anxiety and depressive symptoms in Chinese student ranged from 25.4 to 29.6% as compared to prevalence in the general population of 7.6–16.3% at that time.

Among students globally [15], meta-analysed depression and anxiety in a global review of 27 studies and reported depression prevalence rate of 39% but found vast differences in the prevalence among different nations.

When the data was sub pooled into Chinese and non-Chinese students, in the former, depression was reported as 26% while non-Chinese had a 60% prevalence. Li surmised that nationality and the time of the survey were the greater predictors for these results. The researchers noted this study covered December 2019 to October 2020 and that the proportion of depression was higher after March 1 - the month the WHO announced the global pandemic – than before it [15].

Other global systematic reviews and meta-analyses reported depressive symptoms prevalence at 32% [12], 34% [11], and 37% [13]. And while similar socio-demographic predictors were reported for these as for stress, prevalence also differed by the stage of the epidemic and geographical region.

#### Anxiety

Meta-analysis on anxiety in university students which reviewed studies done globally in the period September 2020 to February 2021 concluded that university students had a high prevalence of anxiety



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(41%) and an increasing burden of mental health conditions [16]. A total of 36 studies were included and the researchers reported on a subgroup analysis which showed Asia's anxiety prevalence at 33%, while Europe was 51%, and the USA, representing the highest levels of anxiety at 56%. A gender sub-group analysis also showed women with higher rates of anxiety prevalence, 43%, than men at 39%. Between studies heterogeneity were statistically significant.

Li et al. reported anxiety slightly lower that Liyanage at 36% in the overall student population. They further reported subgroup prevalence was 60% in non-Chinese college students and like depression, was also higher than in Chinese college students. The proportion of anxiety, in their analysis, was higher in the period after March 1, 2021, than before, 37% to19%, respectively [15].

Other anxiety prevalence rates were reported 28% and 29% [12 & 13].

Not many of the synthesized data accounted separately for the Americas and even less for South America, but one systematic review measuring anxiety in students in 62 countries explored the impact of transitioning to online learning during the early phase of COVID-19 in 2020. South America was reported as having the highest prevalence rate of 65.7% while Asia and Africa had the lowest at 32.7% and 38.1%, respectively. Aristovnik, et al also reported Oceania at 62.4% prevalence, North America at 55.8% and European students at 48.7% [17].

Another systematic review reported on 12 studies in the COVID-19 second-wave covering the period September 2020 and April 2021, involving university students, as well as high school, primary and middle school. In addition to anxiety and depression, the studies also measured psychological distress and sense of loneliness/isolation. While intermixtures did not allow for pooling of prevalence, the researchers concluded there was sufficient evidence to suggest that these mental health conditions were worsened by the prolonging of the school closures and national lockdowns in all countries included. Fang et al. also reported that even after returning to a more normal phase later in the pandemic, psychological stress increased rather than lessened among college students.

Added to the predictors given by each synthesis, issues of family size, marital status, fear of COVID-19 or being infected, comorbidities, and over exposure to COVID-19-related news and social media usage were all noted as predictors having varying levels of impact [12, 17].

It is anticipated that the nationwide slowdown in putting schools, colleges, and universities on face-toface mode as well as the ongoing spread of the novel coronavirus COVID-19 will have an impact on college students' mental health [18]. Despite its effects on mental health, a thorough examination of the epidemic's psychological effects on university students has not been done. High levels of DAS can have a negative impact on nursing students' academic and clinical performance, psychological well-being, and physical health. There are no statistics on the frequency of DAS in Trinidad and Tobago, especially among nursing students who have access to little psychotherapy treatments. Therefore, the purpose of this study is to demonstrate the psychological effects of the COVID-19 epidemic among university students at St Augustine Campus, The UWI. The finding of this study will help serve as baseline data for policy makers and programmers to develop comprehensive mental health programs for individuals during the outbreak.

### **Objectives of the study:**

1. To access the prevalence of depression, anxiety and stress among respondents during the COVID-19 pandemic.



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2. To find a correlation between depression, anxiety, stress and selected demographic variables of respondents during the COVID-19 pandemic.

This study was carried out for the selected period of July 1, 2021- July 30, 2021.

## Instrument:

The instrument consisted of two sections: (1) demographic data of the participants (9 items) and (2) the shorter version of the validated DASS-21. It is a psychological screening instrument capable of measuring negative emotional states of depression, anxiety and stress. The depression subscale assesses hopelessness, self-deprecation, devaluation of life and lack of interest. The anxiety subscale assesses autonomic arousal, skeletal muscle effect and subjective experience of anxious effect. The stress subscale assesses relaxing difficulty, nervous arousal, and being easily agitated, impatient and overreactive. The DASS-21 has demonstrated adequate reliability (ranging from 0.81 to 0.97) and construct validity. Each of the three domains comprises seven items scored on a Likert scale from 0 to 3 (0: did not apply to me at all, 1: applied to me to some degree, 2: applied to me to a considerable degree, 3: applied to me very much). The final score for each subscale was multiplied by 2 and was used to evaluate the negative emotional status.

#### **Study population:**

The study population consisted of undergraduate students (Nursing) in the Faculty of Medical Sciences of the University of the West Indies, St Augustine campus, Trinidad and Tobago.

#### Study Sample and size:

The population for this research study were the undergraduate students. The sample were selected based on purposive sampling which consisted of a population size of 310. All students were invited to participate in the study. However only 65 students volunteered to participate in the study.

Data was obtained online, using google form This study was based at the University of the West Indies School of Nursing located at the Eldorado campus.

#### **Inclusion Criteria:**

- 1. All undergraduate students (Nursing) in the Faculty of Medical Sciences.
- 2. Students who gave consent and were willing to participate in the study.
- 3. Students who were over 18 years of age
- 4. Both male and female Students.
- 5. Students of any ethnic background
- 6. Students who were coherent and could answer questions appropriately
- 7. Students with access to Wi-Fi or Mobile Data

#### **Exclusion Criteria:**

- 1. Students who did not give consent to participate.
- 2. Students with some cognitive disability and could not understand the questions or answer correctly
- 3. Students with no access to Wi-Fi or Mobile Data
- 4. students who were not nursing students of the UWI.

#### **Data Analysis:**



The data collected for the study was analysed. The software used for analysis was JASP 0.16.4 and Jamovi 2.3.21.

#### **Results:**

<u>NB</u> Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

	Depression	Anxiety	Stress
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+

#### **Discussion:**

While the majority of participants in the current study exhibited extremely severe levels of anxiety during the Covid-19 pandemic. There was a significantly higher proportion of nursing students with normal depression (n = 65; p < 0.05). There was a significantly higher proportion of nursing students with extremely severe anxiety (n = 65; p < 0.05). There was a significantly higher proportion of nursing students with normal stress levels (n = 65; p < 0.05). There was no significant association between age and depression (p = 0.52).

# Discussions related to depression, anxiety and stress among respondents during the COVID-19 pandemic.

In a study conducted among University Students in Bench-Sheko Zone, South- west Ethiopia [19], revealed 21.2%, 27.7%, and 32.5% of students reported having depression, anxiety, and stress, respectively. The results obtained in this study were almost double the proportions with 50.8%, 36.9% and 52.3% of students reported having depression, anxiety, and stress, respectively. The stress levels reported by this study was a significantly higher proportion of nursing students with extremely severe anxiety which matched the levels of stress experienced by Bangladeshi students [9, 7].

Discussions related to correlation between depression, anxiety, stress and selected demographic variables of respondents.

There was no significant association between age and depression (p = 0.52), between age and Anxiety (p = 0.85), and between age and Stress (p = 0.26), this contrasted with study done in Bangladesh [7, 9] which reported a significant association of stress with age, gender, behavior and exposure to social media.

This study has some limitations; mainly, it focused on the geographical region of Trinidad and Tobago, which may not necessarily apply to other Caribbean territories.



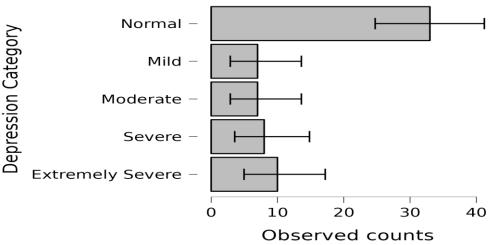
Conclusions: The data showed that a majority of nursing students exhibited extremely severe levels of anxiety during the Covid-19 pandemic.

The Strengths and Limitation of the study:

This study's methodological Strengths and Limitations are outlined below.

- The prevalence of depression, anxiety, and stress among student nurses during the COVID-19 pandemic are described in this novel study from Trinidad and Tobago.
- The results demonstrated the need for further investigation into the psychological effects of the COVID-19 pandemic on student nurses in Trinidad and Tobago, who are the future Healthcare workers to the efficient operation of healthcare facilities.
- The study is replicable and practical, making it useful for determining the psychological well-being and effects of the unprecedented epidemic on its student nurses throughout the world.
- This study did not account for variables that might have affected anxiety, depression, or stress levels, including as anxiety or depression that existed prior to the pandemic, the work environment and amenities for student nurses.
- The small sample size of 65 has limit generalization of the results as it related to the student population of Trinidad and Tobago.
- The data, collected in one School, cannot necessarily be generalized to Trinidad and Tobago to make a generalized assumption to assess mental health of undergraduate nursing students and particularly in relation to the depression, anxiety and stress in a Nursing School of Trinidad and Tobago during the pandemic.
- Because the sample was limited to 65 and although purposive sampling technique was utilized, it is also possible that it was not representative of the population as a whole.

Proportion of nursing students with Depression. **Descriptives Plot** 



Graph 1: Depicting distribution of Depression among the respondents

Multinomial Test			
	$\chi^2$	df	р
Multinomial	38.923	4	< .001

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Multinomial Test			
	$\chi^2$	df	р

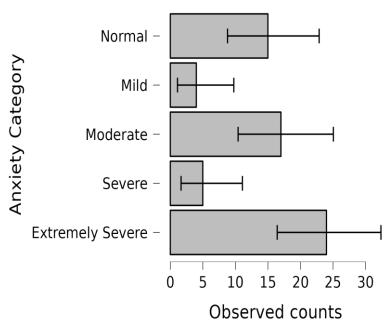
**Binomial Test** 

						95% CI for	r Proportio
Variable	Level	Counts	Tota	l Proportion	n p	Lower	Upper
Depression Category	Normal	33	65	0.508	< .001	0.381	0.634
	Mild	7	65	0.108	0.063	0.044	0.209
	Moderate	7	65	0.108	0.063	0.044	0.209
	Severe	8	65	0.123	0.161	0.055	0.228
	Extremely Severe	10	65	0.154	0.438	0.076	0.265
			•				
	Note. Pro	portions	tested	against value:	0.2.		

#### The above table 1 and Graph 1 show there was normal depression levels amongst

Multinomial Test							
		$\chi^2$	df		р		
Multinomial		22.000	4		< .001		

**Descriptives Plot** 



Graph 2: Depicting distribution of Anxiety among the respondents



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**Binomial Test** 

Anxiety Category Normal 15	_	Proportion	р	Lower	Upper
<u> </u>	65		_		Opper
	65	0.231	0.535	0.135	0.352
Mild 4	65	0.062	0.003	0.017	0.150
Moderate 17	65	0.262	0.216	0.160	0.385
Severe 5	65	0.077	0.012	0.025	0.170
Extremely Severe 24	65	0.369	0.002	0.253	0.498

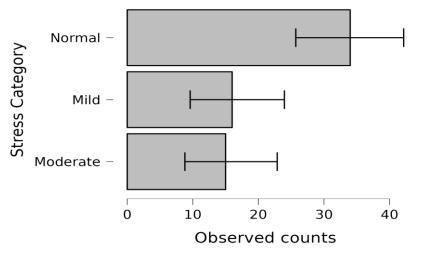
The above table 2 and graph 2 show there was significant high levels of anxiety amongst the participants (n = 65; p < 0.05).

Proportion Of Nursing Students with Street Levels

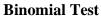
#### **Multinomial Test**

Multinomial Test						
	$\chi^2$	df	р			
Multinomial	10.554	2	0.005			

#### **Descriptives Plot**



Graph 3: Depicting distribution of Stress among the respondents



Tabl	e 3: Binomia	al Test on j	proport	ion of nursing	student	s with Anxiety	
						95% CI for	Proportion
Variable	Level	Counts	Total	Proportion	р	Lower	Upper
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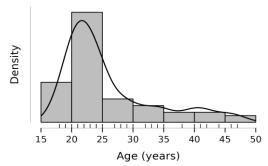
						95% CI for	r Proportio
Variable	Level	Counts	Total	Proportion	р	Lower	Upper
Stress Category	Normal	34	65	0.523	<.001	0.395	0.649
	Mild	16	65	0.246	0.417	0.148	0.369
	Moderate	15	65	0.231	0.279	0.135	0.352
	No	ote. Propo	rtions te	ested against va	alue: 0.3.		

#### **Age Analysis**

Descriptive Statistics for Age	
	Age (years)
Ν	65
Mode	21.000
Median	24.000
Mean	25.892
Std. Error of Mean	0.923
Std. Deviation	7.444
Coefficient of variation	0.287
Variance	55.410
Minimum	18.000
Maximum	47.000
25th percentile	21.000
50th percentile	24.000
75th percentile	28.000
25th percentile	21.000
50th percentile	24.000
75th percentile	28.000

## **Distribution Plots**

Age (years)



Graph 4: Age distribution among the respondent



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Association between age and depression

Age Categories Counts		% of Total	<b>Cumulative %</b>		
18 to 24	1	1.5 %	1.5 %		
18 to 25	41	63.1 %	64.6 %		
25 to 30	10	15.4 %	80.0 %		
31 to 40	8	12.3 %	92.3 %		
41 and above	5	7.7 %	100.0 %		

Depression Category							
Age Categories	<b>Extremely Severe</b>	Mild	Moderate	Normal	Severe	Total	
18 to 24	1	0	0	0	0	1	
18 to 25	6	6	6	18	5	41	
25 to 30	2	0	1	7	0	10	
31 to 40	0	1	0	5	2	8	
41 and above	1	0	0	3	1	5	
Total	10	7	7	33	8	65	

 $\chi^2$  Tests

	Value	,	р	
Fisher's exact test			0.52	
Ν	65			

There was no significant association between age and depression (p = 0.52).

#### Association between age and Anxiety

	Anxiety Category					
Age Categories	Extremely Severe	Mild	Moderate	Normal	Severe	Total
18 to 24	1	0	0	0	0	1
18 to 25	14	3	12	7	5	41
25 to 30	4	1	3	2	0	10
31 to 40	3	0	2	3	0	8
41 and above	2	0	0	3	0	5
Total	24	4	17	15	5	65



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χ <sup>2</sup> τ	Tests	
	Value	р
Fisher's exact test		0.859
Ν	65	
		·

Association between age and Stress

Age Categories		Stress Category				
	Mild	Moderate	Normal	Total		
18 to 24	0	1	0	1		
18 to 25	14	7	20	41		
25 to 30	1	3	6	10		
31 to 40	0	3	5	8		
41 and above	1	1	3	5		
Total	16	15	34	65		

Fests			
	Value	р	
		0.261	
	65		
			Value p

There was no significant association between age and Stress (p = 0.26).

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