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An Impact Assessment of COVID-19 on the Mental Health of Graduate Students with reference to Sikkim

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ABSTRACT
There is abundant research work connected to the impact of COVID-19 on the mental health of graduate students. The COVID-19 pandemic has created a vital urge to address the mental health of graduate students. However, there seems a need of pragmatic studies that reliably assess the issues of graduate students during and following the occurrence of the pandemic. This study examines the stress experienced by graduate students in Sikkim, with a specific focus on stress, anxiety, and depression. A questionnaire was framed and the data were collected from graduate students in two phases. The data was analyzed using descriptive statistics and independent samples t-test. The outcome specifies mild to moderate levels of stress, anxiety, and depression among graduate students in Sikkim, with significant difference in stress, anxiety and depression levels between male and female graduate students in both 2020 and 2021. However, there is no significant difference in anxiety in 2020 and 2021.

Keywords: Covid-19 Pandemic, Mental Health, Graduate Students, Sikkim, DASS-21,

INTRODUCTION

The COVID-19 or corona virus pandemic has brought about noteworthy and rapid transformation in the lives of college students. The infected cases of COVID-19 arose in March 2020 and several educational institutions and universities underwent closure. Academic life along with the private life of students has been extremely affected due to the imposition of various pandemic restrictions like social distancing, movement restrictions, and quarantine facilities (Lennox et al., 2021). For safety reasons, schools, colleges, and universities took the initiative of an immediate alternate mode of teaching i.e. online classes (Li et al., 2023; Srivastava 2023).

Gradually, the pandemic has led to substantial alterations and interruptions to daily life. The lockdown had severe consequences on mental health, leading to psychological issues like frustration, stress, and depression. (Husky et al., 2020; Son et al., 2020; Patsali et al., 2020; Lopes and Nihei, 2021; Clabaugh et al., 2021). The influence of corona virus disease on mental health has been worsening due to multiple issues such as financial stress, lack of social support, and uncertainty about the future (Lau et al., 2020).

The pandemic has raised worries among the students about their well-being as the restrictions imposed were extraordinary and intensive which triggered psychological suffering among students. The coronavirus disease had a profound shock on the mental well-being of graduate students worldwide. Studies have discovered that graduate students have experienced increased level of stress, anxiety, and depression due to the pandemic (Huang[1]and Zhao, 2020). The unexpected shift to online learning, social isolation, and uncertainty about the future have all added to a decline in mental well-being (Gao et al., 2021). A study carried out by the American College Health Association (2020) revealed that 60% of graduate students reported feeling anxious or hopeless.

Institutional support and resources have been crucial in mitigating the negative impacts on mental health. Universities that provided clear communication, flexible policies, and access to mental health resources saw improved outcomes for graduate students (Lau et al., 2020). Overall, the literatures revealed that the coronavirus disease had a major influence on the mental health of students.

REVIEW OF LITERATURE

The COVID-19 pandemic has brought about unprecedented challenges to graduate students worldwide, disturbing their mental health and well-being. This literature review aims to synthesize existing research on the impact of COVID-19 on graduate students' mental health, investigating the occurrence and consequences of mental health concerns during this period.

The pandemic has intensified emotional stress among students in India, with studies revealing elevated stress, anxiety, and depression. An investigation conducted amongst 987 respondents in India by Chauhan et al. (2020) found that 28.5% respondents experienced minimal-to-moderate anxiety, 3.3% experienced marked-to-severe anxiety and 0.1% respondents experienced extreme anxiety owing to lockdown and COVID-19 virus. The score of anxiety had significant association with young age respondents, students, presently working, male gender, as well as respondents of lower income group.

Wang et al, 2020 assessed the impact of stress, anxiety, and depression using Depression, Anxiety, and Stress Scale (DASS-21) during the pandemic. The first survey, conducted at the onset of the pandemic, revealed that 8.1% of respondents experienced moderate-to-severe stress, 28.8% reported anxiety, and 16.5% reported depression. A follow-up investigation was carried out four weeks later, during the peak of the epidemic. The results revealed that there was no significant change in the occurrence of these mental health concerns amongst the respondents.

Huang[2] and Zhao 2020 conducted a cross-sectional web-based survey in China. The study examined the generalized anxiety disorder (GAD) and depressive symptoms amongst 7,236 respondents. The study revealed 35.1% of GAD, 20.1% of depressive symptoms, and 18.2% poor sleep quality. However, younger participants have reported a higher stage of GAD compared to older adults. The study used Chinese-language instruments, including the GAD-7, CES-D, and PSQI to collect data on the mental health impacts during the pandemic.

Qiu et al. 2020 examined the presence of psychological distress among a sample of 52,730 respondents from 36 provinces in China. The findings revealed that approximately 29.29% of the respondents experienced psychological distress. Further, the study concluded that females within the age group of 18-30 years and above 60 years have higher levels of mental and emotional distress compared to male respondents, respondents who were under 18 years and those respondents between 30-60 years old.

Ahmed et al. 2020 assessed the mental and emotional impact of corona virus pandemic during lockdown on 1,074 respondents in China. The findings revealed the existence of mental health issues with 37.1% depression, 29% anxiety, 29.1% hazardous drinking, 9.5% harmful drinking, 1.6% alcohol dependency, and 32.1% poor mental well-being. The results concluded that the lockdown had a major impact on the mental health and well-being of the respondents.

Lei et al. 2020 carried out a cross-sectional study in China amongst 1,593 adults within the age group of 18 years and above to judge the dominance of depression and anxiety amongst respondents affected and unaffected by the corona virus disease. The study concluded that there exist mental health issues with depression of 8.3% and anxiety of 14.6% amongst unaffected individuals. Further, the study revealed that depression of 12.9% and anxiety of 22.4% exist amongst those respondents whose family, friends, relatives, or neighbors were infected by the disease.

Verma and Mishra, 2020 conducted a research in India on the existence of depression, anxiety, and stress among 354 respondents using DASS-21. The findings concluded that a significant percentage of respondents were suffering from mental health issues with 11.6% of respondents having stress, 28% having anxiety, and 25% of respondents having moderate-to-severe depression. The study examined the occurrence of mental health issues in the Indian context, particularly during times of crisis.

Moghanibashi-Mansourieh (2020) carried out research in Iran to study the relationship between level of anxiety and demographic factors such as age, gender, and education level using the DASS-21. The findings revealed that women reported higher anxiety rates compared to men and individuals aged 21-40 years had the highest anxiety rates among all age groups. It was also concluded that the anxiety increased with the increase in the level of education.

Zhou et al. (2020) surveyed 12-29-year-olds and found a significant prevalence of insomnia, affecting 23.2% of respondents. Roy et al. (2020) conducted a study among the adult Indian population, collecting responses from 662 individuals using a semi-structured questionnaire. The results showed elevated anxiety levels among participants, highlighting a perceived need for mental healthcare support.

RESEARCH GAP

Numerous researches have been conducted worldwide to assess the impact of the pandemic on the lives of students of higher education. However, such a study has not been explored in Sikkim considering it an important part of Northeast India. Mental health concerns such as stress, anxiety, and depression caused by the corona virus disease are extraordinary. A research gap has been generated owing to the complexities and issues of the pandemic and its influence on graduate students. As such, it is vital to review students' experiences, thoughts, emotions, and mental health issues during and after the challenging pandemic period.

The current study makes an effort to satisfy this gap so that efficient mental health management can be developed by decision-makers. As such, the existing study has done a fresh survey into the bulk of knowledge on mental health issues experienced by graduate students in Sikkim.

OBJECTIVES OF THE STUDY

The study focuses on the following objectives:

(a) To examine the level of stress, anxiety, and depression experienced by graduate students in Sikkim during and following the occurrence of the pandemic.

(b) To compare the level of stress, anxiety, and depression experienced by graduate students in Sikkim during and following the occurrence of the pandemic.

(c) To explore the mechanisms and resilience strategies adopted by graduate students to manage their mental well-being

Hypotheses:

The following null hypotheses were formulated for the study

Ho(1): There is no significant difference in stress, anxiety and depression levels between male and female graduate students in 2020.

Ho(2): There is no significant difference in stress, anxiety and depression levels between male and female graduate students in 2021.

Ho(3): There is no significant difference in stress, anxiety and depression levels between 2020 and 2021.

RESEARCH METHODOLOGY

The present work used an exploratory and conclusive study to attain the stated objectives. The target population comprises students pursuing higher education in different institutions in the state of Sikkim. The study was conducted in two phases. The first phase was from the 1st of August 2020 to 20th of August 2020 and consequently from 1st of October 2021 to 20th of October 2021. To gather the primary data, a structured questionnaire was designed. A random sampling technique was used to select the sample.

A Google form comprising the questionnaire was framed and distributed in WhatsApp groups and sent through email. In the first phase of data collection, it was circulated to a random sample of 1000 students pursuing higher education, selected from an email database and various WhatsApp groups. However, the responses were received approximately from 50% of respondents, with just 502 forms received as filled questionnaires. Subsequently, on viewing, it was observed that 72 questionnaires were incomplete and hence were disqualified for analysis. Consequently, only 430 finished questionnaires were found appropriate for further analysis. In the second phase of data collection, it was circulated to the same number of graduate students. The response rate in the second phase was around 60%. However, through screening, it was observed that 516 completed questionnaires were found suitable for onward analysis.

The collected data was analyzed with the assistance of analysis software SPSS 22.0. The statistical test like the independent sample t-test was applied to confirm the significant differences in the DASS scale responses derived from demographic variable i.e. gender.

Tool for Determining Stress, Anxiety, and Depression

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is applied in the study. It is a self-report scale derived from the full DASS-42 scale. DASS-21 is structured to determine the three connected harmful emotional conditions of depression, anxiety, and stress. The three conditions in the scale comprise 7 items which are further parted into sub-scales with related matters (Lovibond and Lovibond, 1995). It is a four-point scale extending from 0 to 3 where 0 indicates 'Did not apply to me at all or never', 1 indicates 'Applied to me to some degree or sometimes', 2 indicates 'Applied to me to a considerable degree or good part of the times', and 3 indicates

'Applied to me very much or most of the time'. Table 1 depicts the scores for different levels of depression, anxiety, and stress.

Table 1: Scores for different levels of Depression, Anxiety, and Stress

Severity	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 +

ANALYSIS AND DISCUSSION

Demographic Summary of Students:

Demographic Summary of Students of the students is presented in Table 2. The first phase of data collection generated 430 responses, comprising 238 (55%) male graduates and 192 (45%) female graduates. Out of 516 responses collected during the second phase, 296 (57%) were male graduates and 220 (43%) were female graduates.

Table 2: Demographic Summary of Students

Demographic Variables	Levels	First Phase (2020)		Second Phase (2021)	
		Frequency	Frequency Percentage	Frequency	Frequency Percentage
Gender	Male	238	55%	296	57%
	Female	192	45%	220	43%

Ho(1): There is no significant difference in stress, anxiety and depression levels between male and female graduate students in 2020.

Table 3 exhibits the mean differences and independent samples t-tests in 2020. It was carried out to uncover the differences in the level of stress, anxiety, and depression between male and female graduates. The mean scores for male graduates in 2020 were found to be 14.7 (SD = 3.8) for stress, 9.5 (SD = 3.3) for anxiety and 9.1 (SD = 2.5) for depression. The mean scores for female graduates in 2020 were found to be 15.9 (SD = 4.5) for stress, 10.3 (SD = 3.5) for anxiety and 9.7 (SD = 3.2) for depression. The mean scores of female graduates were greater than males in 2020. Hence, no significant difference was observed. Both males and females have reported mild stress, moderate anxiety, and mild depression. Further, the t statistics (t) is 2.56 for stress, 3.27 for anxiety and 3.01 for depression. The p-values of the t-test for both males and females across all scales are less than 0.05 which means that there exists a significant difference in stress, anxiety and depression levels between male and female graduate students in 2020. Therefore, we may reject the null hypothesis with a 95% confidence level. Thus, it can be concluded that there is significant difference in stress, anxiety and depression levels between male and female graduate students in 2020.

Table 3: Level of Stress, Anxiety, and Depression among male and female graduates in 2020

Variable	Male (n = 238)		Level	Female (n = 192)		Level	t-test	p-value	Decision
	Mean	SD		Mean	SD				
Stress	14.7	3.8	Mild	15.9	4.5	Mild	2.56	0.011	Rejected
Anxiety	9.5	3.3	Moderate	10.3	3.5	Moderate	3.27	0.000	Rejected
Depression	9.1	2.5	Mild	9.7	3.2	Mild	3.01	0.027	Rejected

Ho(2): There is no significant difference in stress, anxiety and depression levels between male and female graduate students in 2021.

Table 4 exhibits the mean differences and independent samples t-tests in 2021. The mean scores for male graduates in 2021 were found to be 14.1 (SD = 4.6) for stress, 9.6 (SD = 3.7) for anxiety and 8.2 (SD = 3.1) for depression. The mean scores for female graduates in 2021 were found to be 15.5 (SD = 4.9) for stress, 11.1 (SD = 3.9) for anxiety and 9.3 (SD = 3.3) for depression. The mean scores of females graduates were greater than males in 2021. Hence, no significant difference was observed. Both males and females reported mild stress, moderate anxiety. However, males were reported to have normal depression and female with mild depression. The t statistics (t) is 3.44 for stress, 4.13 for anxiety and 2.96 for depression. The p-values of the t-test for both male and females across all scales are less than 0.05 which means that there exists a significant difference in stress, anxiety and

depression levels between male and female graduate students in 2021. Therefore, the null hypothesis is rejected with 95% confidence level. Thus, it can be concluded that there is a significant difference in stress, anxiety and depression levels between male and female graduate students in 2021.

Table 4: Level of Stress, Anxiety, and Depression among male and female graduates in 2021

Variable	Male (n = 296)		Level	Female (n = 220)		Level	t-test	p-value	Decision
	Mean	SD		Mean	SD				
Stress	14.1	4.6	Mild	15.5	4.9	Mild	3.44	0.000	Rejected
Anxiety	9.6	3.7	Moderate	11.1	3.9	Moderate	4.13	0.000	Rejected
Depression	8.2	3.1	Normal	9.3	3.3	Mild	2.96	0.000	Rejected

Ho(3): There is no significant difference in stress, anxiety and depression levels between 2020 and 2021.

Table 5 presents a comparison of the level of stress, anxiety, and depression between 2020 and 2021. The mean scores in 2020 were found to be 13.5 (SD = 4.2) for stress, 9.9 (SD = 3.4) for anxiety and 8.3 (SD = 2.6) for depression. The mean scores in 2021 were found to be 14.3 (SD = 4.4) for stress, 10.8 (SD = 3.7) for anxiety and 8.5 (SD = 3.2) for depression. The t statistics (t) is 1.85 for stress, 2.51 for anxiety and 1.93 for depression. The p-values of t-test in 2020 and 2021 for anxiety is less than 0.05 which means that there exists a significant difference in anxiety in 2020 and 2021. Therefore, the null hypothesis is rejected with 95% confidence level for anxiety. Thus, it can be concluded that there exist a significant difference in anxiety in 2020 and 2021. However, the p-values of the t-test in 2020 and 2021 for stress and depression are more than 0.05 which means that there is no significant difference in stress and depression levels in 2020 and 2021. Therefore, the null hypothesis is rejected with a 95% confidence level for stress and depression levels.

Table 5: Comparison of Level of Depression, Anxiety, and Stress between 2020 and 2021

Variable	2020 (n = 430)		2021 (n = 516)		t-test	p-value	Decision
	Mean	SD	Mean	SD			
Stress	13.5	4.2	14.3	4.4	1.85	0.066	Accepted
Anxiety	9.9	3.4	10.8	3.7	2.51	0.011	Rejected
Depression	8.3	2.6	8.5	3.2	1.93	0.057	Accepted

CONCLUSION

The present study is an effort to identify the levels of stress, anxiety, and depression experienced by graduate students during 2020 and 2021. The data was collected from students of Sikkim. The results show significant differences in stress, anxiety, and depression levels between male and female graduate students in both 2020 and 2021. Female students consistently reported higher levels of stress, anxiety, and depression than male students. However, there were no significant differences in stress and depression levels between 2020 and 2021, but anxiety levels increased significantly in 2021. The findings suggest that the COVID-19 pandemic has had a disproportionate impact on the mental health of female graduate students in Sikkim. The conclusion drawn from the current study is similar to other studies conducted during that period. (Verma et al, 2021; Sahu 2020; Rehman et al, 2021; Cao et al. 2020).

The study had two key limitations. Firstly, the sample size was small which may impact the reliability of the findings. Secondly, the use of online Google forms for data collection may have debarred a significant portion of the population who lack internet access. However, this study is one of its kind conducted in North East India to explore the levels of stress, anxiety, and depression among graduates in Sikkim. Future studies in this area can take up other demographic factors like education, occupation, income and also study the psychological effects in the post pandemic era.

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