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Depression, Anxiety and Stress of COVID-19 among Bachelor students in Health Science Colleges of Kathmandu.

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Abstract

Depression is a mood disorder which leads to persistent feelings of sadness and loss of interest whereas, anxiety is a feeling of unease. Stress is the feeling of being unable to cope with mental and emotional pressure. Coronavirus Disease 2019 is a highly contagious disease caused by severe acute respiratory syndrome coronavirus 2. This study aimed to determine depression, anxiety and stress of COVID-19 among graduating students of bachelor degree in public health colleges of Kathmandu valley. The institutional based descriptive cross-sectional study was carried out among 314 students of five Bachelor in Public Health colleges of Kathmandu valley under Purbanchal University through convenience sampling method. Data was collected by using DASS-21 items through self-administration technique. Data was analyzed with IBM SPSS 20 version. The study found that out of 314 respondents, 73.2% of the respondents were in the 20-25 years age group with 67% female. Out of them, 30% were infected by COVID-19 and around 10% were hospitalized due to infection. It revealed that the prevalence of depression, anxiety and stress among public health students were 45.5%, 60.7% and 29.6% respectively. There is significant association between depression, anxiety and stress with COVID-19 infected respondents, respondents hospitalized due to infection as well as to those respondents whose family members were infected by COVID-19.The prevalence of depression, anxiety and stress of COVID-19 among graduating public health students was relatively high and shows that mental health is affected by COVID-19 pandemic.

Keywords: Anxiety, COVID-19, Depression, Bachelors students, Health science, Stress

Introduction

COVID-19, caused by the novel coronavirus (SARS-CoV-2), is a highly contagious respiratory disease. It originated in Wuhan, China, in late 2019, quickly spreading globally, including Nepal. On March 11, 2020, the World Health Organization declared it a global pandemic. The virus primarily affects the respiratory system, leading to symptoms like cough, fever, sore throat, breathlessness, and fatigue (World Health Organization, 2020). The initial COVID-19 case in Nepal was confirmed on January 24, 2020, involving a student who

had recently returned to Kathmandu from China. In response to the sudden outbreak, the Nepalese government imposed a nationwide lockdown on March 24, 2020, which lasted until July 21, 2020, due to declining cases. However, this respite was short-lived, as Nepal experienced a second wave of COVID-19 starting in mid-April 2021, leading to a rapid surge in daily infections from around 300 to nearly 10,000 within one month. (Dangal & Bajracharya, 2020).

During the global pandemic, it was widely observed that almost everyone experienced its impact. Mental health issues are predicted to increase twofold in comparison to other emergencies. The COVID-19 pandemic not only posed a threat of infection-related fatalities but also inflicted overwhelming psychological stress (Yadav et al., 2021). Pandemic-induced isolation is known to trigger a range of psychological responses such as traumatic stress, depression, anxiety, bewilderment, anger, sleep disturbances, and suicidal thoughts (Bäuerle et al., 2020; Kontoangelos et al., 2020). Worldwide students have been especially susceptible to mental health challenges amid the COVID-19 pandemic, as they were compelled to remain at home when universities shut down, leading to significant alterations in their learning surroundings due to nationwide lockdowns and the pandemic's impact (Tahara et al., 2021).

The sudden onset of COVID-19 in Nepal led to university closures and the shift to online learning, which, along with rising infection rates, media coverage, and lockdowns, adversely affected the mental health of students (Dawadi et al., 2020; Lee et al., 2021). Graduating students faced additional challenges due to canceled exams and postponed events like graduation ceremonies (Lee et al., 2021). Research conducted in French universities revealed that health science students had a significantly lower mental health-related quality of life compared to their physical health ($p < 0.0001$) (Yadav et al., 2021).

Research conducted in Italy and Northwest Ethiopia found that graduating class students has anxiety and depression rates of 35.33% and 72.93% in Italy, and 39.6% and 40.2% respectively in Northwest Ethiopia (Mekonen et al., 2021; Villani et al., 2021). Similarly, studies conducted in India reported that the prevalence of depression, anxiety and stress during baseline surveys were 33.2%, 21.2% and 20.7% ; in follow-up surveys the prevalence was found to be 35.5%, 33.2% and 24.9% respectively (Saraswathi et al., 2020). The study conducted among students in Nepal reported that 18.1% were experiencing severe anxiety, 22.9% moderate anxiety and 25.7% mild anxiety (Dangal & Bajracharya, 2020). Another web based study conducted among Nepalese students revealed that the prevalence of stress, anxiety and depression were 28.6%, 28.6% and 30.4% respectively (Najjuka et al., 2021). The limited institutional based studies focusing on BPH students underscore the necessity to explore depression, anxiety and stress of COVID-19 within academic setting. Thus, the objective of this study was to determine the depression, anxiety and stress of COVID-19 among graduating students of bachelor degree in public health colleges of Kathmandu valley.

Methodology

An institutional based descriptive cross-sectional study was conducted to assess the prevalence of depression, anxiety, and stress in graduating students pursuing a bachelor's degree across five public health colleges in Kathmandu Valley affiliated with Purbanchal University. The study involved the random selection of 314 students from these colleges using convenience sampling. All willing BPH students present during data collection sessions were included. The research took place from January 2022 to June 2022, spanning six months. Data was collected via a semi-structured questionnaire, which gathered sociodemographic and COVID-19-related information. To assess depression, anxiety, and stress levels related to COVID-19, a validated DASS-21 questionnaire was utilized. The data was entered and analyzed using SPSS version 20.0. Significance was assessed through Pearson Chi-square tests with a significance threshold of 0.05 and a 95% confidence interval (Khatiwada et al., 2014; Pradhan, 2018). Descriptive analysis was performed, presenting data in terms of frequency and percentage.

Results

Table 1. Level of depression, anxiety and stress among students (n=314)

Characteristics	Frequency (%)		
	Depression	Anxiety	Stress
Normal	170(54.3)	123(39.3)	221(70.4)
Mild	51(16.2)	29(8.9)	38(12.1)
Moderate	73(23.2)	76(24.3)	53(16.9)
Severe	12(3.8)	31(9.9)	0(0.0)
Extremely severe	8(2.5)	55(17.6)	2(0.6)

Table 1 presents the level of depression, anxiety, and stress levels in bachelor students at Public Health colleges in Kathmandu Valley. Among the 314 respondents, the majority (54.3%) experienced normal depression levels, while 23.2% had moderate depression, 16.2% had mild depression, 3.8% had severe depression & 2.5% had extremely severe depression.

Similarly, among the 314 participants, the normal anxiety level was 39.3%, followed by those with moderate anxiety (24.3%), extremely severe anxiety (17.6%), mild anxiety (8.9%), and severe anxiety (9.9%).

Likewise, 70.4% of the respondents reported normal stress levels, while 16.9% experienced moderate stress, and 12.1% had mild stress. Only a very small percentage (0.6%) fell into the extremely severe stress category.

Table 2 presents an overview of the socio-demographic characteristics of the 314 participants. Among these respondents, a majority (63%) fell within the 20-25 age group, 67% were female, and only 7% were married. Moreover, the religious bonding of 91% of the respondents was Hindu, and approximately one-third (34.1%) were in their fourth semester of study. A small portion, 4%, were government employees. Notably, 74% of the participants came from nuclear families, and 7% came from families with a monthly income of less than 20,000.

Table 2. Socio-Demographic Characteristics of the respondents (n=314)

Characteristics	Frequency (%)
Age	
Below 20	63(20.1)
20-25	230(73.2)
Above 25	21(6.7)
Sex	
Male	102(33.0)
Female	212(67.0)
Marital Status	
Married	21(7.0)
Unmarried	293(93.0)
Religion	
Hinduism	288(91.0)
Buddhism	21(7.0)
Others	5(2.0)
Ethnicity	
Brahmin	78(25.0)
Chhetri	103(33.0)
Janajati	89(28.0)
Others	44(14.0)
Educational level	
Second semester	25(8.0)
Fourth semester	107(34.1)
Sixth semester	89(28.3)
Eighth semester	93(29.6)
Occupational Status	
Government employee	12(4.0)
Business	4(1.0)
Unemployed	298(95.0)
Family type	
Nuclear	232(74.0)
Joint	82(26.0)
Family Income Per Month (Rs.)	
Less than 20000	22(7.0)
20000-30000	67(21.33)
30000-50000	117(37.27)
Above 50000	108(34.4)

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Table 3. Information Related to COVID-19 of the respondents.

Statements	Freq (%)
Infected by COVID-19 (n=314)	
Yes	93(30.0)
No	221(70.0)
Knew infected (n=93)	
Test	65(70.0)
Assumption	28(30.0)
Infected gender (n=93)	
Male	33(35.0)
Female	60(65.0)
Symptoms experienced during COVID-19 infection (n=93)	
Fever	92(99.0)
Fatigue	68(73.0)
Headache	41(44.0)
Loss of smell	38(40.86)
Cough	34(36.55)
Throat pain	33(35.48)
Chest pain	9(9.67)
Shortness of breathing	8(8.60
Recovered within 14 days (n=93)	
Yes	80(86.0)
No	13(14.0)
Hospitalized (n=93)	
Yes	9(9.68)
No	84(90.32)
Family member get infected (n=314)	142(45.0)
Yes	172(55.0)
No	
Lockdown controlled COVID-19	
Yes	291(93.0)
No	23(7.0)
COVID-19 will finally be successfully controlled	
Yes	160(51.0)
No	154(49.0)

Table 3 provides a comprehensive picture of the prevalence, awareness, symptoms and perceptions of COVID-19 among the surveyed students, shedding light on the multifaceted impact of the pandemic on both individuals and their communities. The result indicates that, among the 314 surveyed students, 30% were infected by COVID-19, 70% became aware of their infection through testing, emphasizing the role of testing in identifying cases and within the 30% who were infected, 65% were female. The majority of those with COVID-19 experienced symptoms such as fever (99%), fatigue (73%), and headache (44%), loss of smell (40.86%), cough (36.55%), throat pain (35.48%). Of the 93 infected respondents, 80% recovered within two weeks, but 9.68% required hospitalization. Furthermore, out of the entire group of 314 respondents, 45% reported that their family members had also been infected by COVID-19. In terms of the respondents' perceptions and attitudes, 93% believed that lockdown measures effectively controlled COVID-19, and 51% were optimistic that COVID-19 would ultimately be successfully managed. This divergence in opinions underscores the complexity and uncertainties associated with the trajectory of the pandemic, reflecting the need for ongoing public health communication and education. Overall, these findings offer valuable insights into the multifaceted impact of COVID-19 on the surveyed student population and the broader community.

Table 4 presents an analysis of mental health characteristics, specially depression, anxiety, and stress, among individuals based on their education level and age groups. Individuals in the fourth semester have the highest prevalence of severe depression and stress followed by eight semester. In the same way eight semester has the highest prevalence of anxiety. Individuals aged 20-25 years shows the highest prevalence of extremely severe anxiety. It illustrates a noteworthy connection between depression and the educational level of the participants, indicated by a p-value of 0.001. It also reveals significant associations.

Table 4. Association between Depression, Anxiety and Stress and Socio-demographic variables

Characteristics	Total	Normal	Mild	Moderate	Severe	Extremely	P- value
Depression, n(%)							**0.001**
Educational level (in semester)							
Second	25(8.0)	13(4.1)	4(1.3)	7(2.2)	0(0.0)	1(0.3)	
Fourth	107(34.1)	60(19.1)	20(6.4)	22(7.0)	3(1.0)	2(0.6)	
Sixth	89(28.3)	59(18.8)	16(5.1)	14(4.5)	0(0.0)	0(0.0)	
Eighth	93(29.6)	38(12.1)	11(3.5)	30(9.6)	9(2.9)	5(1.6)	
Anxiety, n(%)							**0.027**
Age group(in years)							
Below 20	63(20.0)	22(7.0)	6(1.9)	17(5.4)	11(3.5)	7(2.2)	
20-25	230(73.4)	89(28.4)	18(5.8)	57(18.2)	20(6.4)	46(14.6)	
Above 25	21(6.6)	13(4.2)	4(1.2)	2(0.6)	0(0.0)	2(0.6)	
Educational level (in semester)							**0.001**
Second	25(7.8)	7(2.2)	1(0.3)	6(1.8)	8(2.6)	3(0.9)	
Fourth	107(34.2)	46(14.7)	13(4.2)	28(8.9)	8(2.6)	12(3.8)	
Sixth	89(28.4)	41(13.1)	8(2.6)	22(7.0)	6(1.9)	12(3.8)	
Eighth	93(29.7)	30(9.6)	6(1.9)	20(6.4)	9(2.9)	28(8.9)	
Stress, n(%)							**0.0001**
Educational level (in semester)							
Second	25(8.0)	16(5.1)	6(1.9)	3(1.0)	0(0.0)	0(0.0)	
Fourth	107(34.1)	83(26.4)	11(3.5)	12(3.8)	0(0.0)	1(0.3)	
Sixth	89(28.3)	72(22.9)	10(3.2)	7(2.2)	0(0.0)	0(0.0)	
Eighth	93(29.6)	50(15.9)	11(3.5)	31(9.9)	0(0.0)	1(0.3)	

between anxiety and both age group (p-value 0.027) and the educational level of the respondents (p-value 0.001) at a 95% confidence interval. It may be due to reduction of anxiety as grow older and assigned workload in fourth and eight semester. Likewise, a significant relationship is observed between stress and the educational level of the respondents, with a p-value of 0.0001 at a 95% confidence interval.

Table 5: Association between Depression, Anxiety and Stress and Socio-demographic variables

Characteristics	Total	Normal	Mild	Moderate	Severe	Extremely	P- value
Depression, n(%)							
COVID infected							0.0001
Yes	93(30.0)	46(15.0)	18(5.7)	15(4.8)	7(2.2)	7(2.2)	
No	221(70.0)	123(39.2)	33(10.5)	58(18.5)	5(1.6)	1(0.3)	
Hospitalized (n=93)							0.001
Yes	9(9.8)	0(0.0)	2(2.2)	2(2.2)	2(2.2)	3(3.2)	
No	84(90.2)	50(53.8)	16(17.2)	13(13.8)	2(2.2)	3(3.2)	
Family member infected (n=314)							0.025
Yes	142(45.2)	65(20.7)	23(7.3)	40(12.7)	8(2.5)	6(1.9)	
No	172(54.8)	105(33.4)	28(8.9)	33(10.5)	4(1.3)	2(0.6)	
Anxiety, n(%)							
COVID infected							0.002
Yes	93(30.0)	23(7.4)	11(3.6)	21(6.7)	15(4.8)	23(7.4)	
No	221(70.0)	100(31.8)	17(5.4)	56(17.8)	16(5.0)	32(10.1)	
Hospitalized (n=93)							0.002
Yes	9(9.8)	0(0.0)	1(1.1)	1(1.1)	0(0.0)	7(7.6)	
No	84(90.2)	23(24.7)	10(10.2)	20(21.5)	16(17.2)	15(16.1)	
Family member infected (n=314)							0.0001
Yes	142(45.2)	42(13.4)	12(3.8)	33(10.5)	16(5.1)	39(12.4)	
No	172(54.8)	81(25.9)	16(5.1)	43(13.7)	16(5.1)	16(5.1)	
Stress, n(%)							
COVID infected							0.001
Yes	93(30.0)	53(16.9)	16(5.0)	24(7.5)	0(0.0)	2(0.6)	
No	221(70.0)	169(53.8)	22(7.0)	29(9.2)	0(0.0)	0(0.0)	
Hospitalized (n=93)							0.003
Yes	9(9.8)	1(1.1)	1(1.1)	7(7.6)	0(0.0)	0(0.0)	
No	84(90.2)	50(53.7)	15(16.1)	18(5.7)	0(0.0)	1(1.1)	
Family member infected (n=314)							0.0001
Yes	142(45.2)	79(25.2)	26(8.3)	35(11.1)	0(0.0)	2(0.6)	
No	172(54.8)	142(45.2)	12(3.8)	18(5.7)	0(0.0)	0(0.0)	

Table 5 shows a notable connection between individuals who had COVID-19, those who were hospitalized due to COVID-19, and individuals with family members affected by COVID-19, in relation to their levels of depression, with respective p-values of 0.001, 0.001, and 0.025, all within a 95% confidence interval. Additionally, a significant relationship exists between COVID-19-infected individuals, those hospitalized due to COVID-19, those with affected family members, and their levels of anxiety, with respective p-values of 0.002, 0.002, and 0.0001, all within the same confidence interval. Likewise, a significant association can be observed between COVID-19-infected individuals, those hospitalized due to COVID-19, and those with affected family members, in terms of their stress levels, with respective p-values of 0.001, 0.003, and 0.0001, all within a 95% confidence interval.

Discussion

This research aimed to evaluate depression, anxiety, and stress levels due to COVID-19 among bachelor's students in public health colleges within the Kathmandu valley. A total of 314 BPH students participated, with 67% being female (212 students) and 33% being male (102 students). The average age of the participants was 21.74 years which nearly corresponded with (Adhikari et al., 2020) study. Approximately 30% of the students had contracted COVID-19, and out of the 93 infected individuals, 9.68% required hospitalization.

The present findings revealed that a majority of the students (54.3%) exhibited normal levels of depression, while 23.2% had a moderate level, 16.2% had a mild level, 3.8% had a severe level, and 2.5% experienced extremely severe depression. This indicates that 45.7% of the respondents exhibited symptoms of depression which corresponds with the study conducted in Bangladesh, showing that 81.5% reported experiencing depression, with 25%, 23.9%, and 12.5% demonstrating mild, moderate, and severe depression, respectively (Khan et al., 2021). A similar trend was observed in an Egyptian study, which also showed a relatively high prevalence of depression (Ghazawy et al., 2021). In contrast, a cross-sectional online survey carried out in Nepal revealed that just 30.4% of the respondents exhibited signs of depression (Karmacharya et al., 2020). Moreover, studies conducted in Egypt, the United States, and Bangladesh indicated a higher prevalence of depression compared to our study (Ghazawy et al., 2021; Lee et al., 2021; Khan et al., 2021).

In this study, the prevalence of anxiety levels among students varied: 39.3% had normal anxiety, 24.3% showed moderate anxiety, 8.9% had mild anxiety, 9.9% experienced severe anxiety, and 17.6% had extremely severe anxiety. These results parallel those of a web-based study in Nepal where 18.1% reported severe anxiety, 22.9% had moderate anxiety, and 25.7% had mild anxiety. Notably, the primary distinction is the higher prevalence of mild anxiety in the Nepal study (25.7%) compared to our study (Dangal & Bajracharya, 2020). While only 28.6% of the respondents reported experiencing anxiety in Karmacharya et al.(2020) study. There is evidence that there was a higher prevalence of anxiety in studies conducted in Egypt, the U.S., and Bangladesh (Ghazawy et al., 2021; Lee et al., 2021; Khan et al., 2021).

Regarding the prevalence of stress levels among BPH students in Kathmandu Valley, it was found that 70.4% of respondents experienced no significant stress, 12.1% reported mild stress, 16.9% indicated moderate stress, and merely 0.6% suffered from extreme, severe stress. This distribution closely resembles the findings of a previous study that looked into the mental well-being of health science undergraduate students during the COVID-19 pandemic in Nepal, which reported that 29% of the participants experienced stress (Mahotra et al., 2021) as well as consistent with Karmacharya et al.(2020) study, which showed that 28.6%, reported experiencing stress. The

main source of distress was the changes in daily life due to the ongoing pandemic (Salman et al., 2020).

Females showed more depression, anxiety and stress as compared to males in our study which is supported by previous study conducted in Egypt (Ghazawy et al., 2021) , Ethiopia (Hamaideh et al., 2022; Mekonen et al., 2021) , Italy (Villani et al., 2021) , China (Yang & Yang, 2022) , Bangladesh (Khan et al., 2021) , India (Saraswathi et al., 2020) and Nepal (Karmacharya et al., 2020; Shakya & Sharma, 2022; Thagunna et al., 2021; Yadav et al.,2021) Female gender, COVID-19 exposure, chronic illness, and limited support raise students' risk of depression, anxiety, and stress (Ghazawy et al., 2021). Many said their worries about loved ones' well-being and the duty of caring for their family greatly affected their mental health and life goals (Lee et al., 2021).

The probability of experiencing anxiety and depression among participants is notably associated with factors such as an unstable family income, living with parents, having relatives or acquaintances who contracted COVID-19, concerns about academic commitments, and disruptions in daily routine life (Khan et al., 2021). These rates are comparatively higher than the prevalence of depression (45.7%), anxiety (60.7%), and stress (29.6%) among BPH students in the same study. However, there is a similar likelihood of anxiety and stress among students who have relatives or acquaintances affected by COVID-19, are worried about their academic responsibilities, and face disruptions in their daily lives.

This study shows that there was significant positive association between depression, anxiety, and stress with COVID-19 infected respondents, respondents hospitalized due to COVID infection and respondents whose family member was infected by COVID-19. While study in Pakistan showed that those having the family member, friend or acquaintance infected with the disease had significantly higher anxiety scores. The main source of distress was the changes in daily life due to the ongoing pandemic (Salman et al., 2020). Anxiety and depression were rife within the graduating Chinese university students during the period of the COVID-19 pandemic and were both associated with monthly family income (Yang & Yang, 2022).

Thus, it was found that most students showed typical levels of depression (54.3%) and stress (70.4%). Nevertheless, the incidence of normal anxiety levels (39.3%) is lower in comparison to depression and stress. Among BPH students, 45.7% experienced depression, 60.7% had anxiety, and 29.6% faced stress. The potential causes for the elevated levels of depression, anxiety, and stress may include delays and rescheduling of final exams and graduation ceremonies, sensational media coverage of COVID-related infections and deaths, lockdown restrictions, and alterations in daily routines.

Conclusion

This study reveals a significant impact of the COVID-19 pandemic on the mental health of public health students, particularly those in the 20 to 25 age group who face stress, anxiety, and depression due to factors like postponed exams and career concerns. It was noted that a majority of students reported normal levels of depression and anxiety, but about one-third experienced stress, with females being more susceptible to both COVID-19 infection and extreme levels of mental health issues. The study found significant associations between depression, anxiety, and stress and educational levels, age groups, and COVID-19 infection status. It underscores the need for mental health counseling, emotional support, and guidance for students, with a focus on those experiencing severe mental health challenges, recommending medication and counseling as appropriate interventions to promote their well-being during a pandemic. So it is necessary to arrange proactive measure in educational institution to address mental health concerns, fostering a supporting environment for psychological well-being.

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