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Factors Associated with Perceived Stress, Anxiety, Depression, Insomnia during COVID-19 Outbreak among Nursing Students

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Abstract: ***COVID -19 is a new strain of SARS disease. It is showing the devastating effects globally. The disease not only affects physical health but has emerged many psychological and mental problems in general public as well as nursing students. The objective of this study was to assess the factors associated with perceived stress, anxiety, depression and insomnia during COVID-19 outbreak among nursing students. The research was conducted at Nobel College, Sinamangal, Kathmandu. The cross sectional descriptive study design was adopted by using digitalization structured self administered questionnaire. In total, 184 nursing students had participated in the online survey by using total enumerative sampling technique. The survey questionnaire consists of 45 items. Structured standard tool, DASS (Depression, anxiety, stress scale) and ISI (Insomnia Index Scale) was used. The obtained data were coded, entered and analyzed by using IBM SPSS (Statistical package for Social Science) 21 version for the descriptive and inferential statistics were used for data analysis. The findings of the study revealed that the majority of the respondents had normal level of depression 77.71% and normal level of Anxiety 71.73%. Similarly, 93.47% had normal level of stress respectively. Likewise, 47.28% had no clinically significant level of insomnia. This study also found that 58.7% of respondents become stressed while reading and hearing news on increasing COVID -19 cases. Similarly, 44.4% of respondents said that a long duty hour makes them stressful. Other factors of stress in nursing students during COVID-19 pandemic were spending a lot of money on recharge for mobile data 36.4% for the online classes. And fear of delay in graduation 29.9%. There was a statistical difference between the score of depression with age (p=.016), marital status (p=.015) and residence (p=.005) and score of insomnia with age (p=.013), marital status (p =.009), residence (p=.015), score of anxiety with age (p=.047), marital status (p=.005) at the 5% level of significance by using the Kruskal–Wallis and Mann–Whitney U test. In conclusion, the nurse educator should plan and organize educational program for nursing students periodically, in order to prepare them to cope up with any stressful situations.***

Keywords: perceived stress, anxiety, depression, insomnia, COVID-19, nursing student

1. Introduction

The coronavirus disease 2019 (COVID-19) emerged in Wuhan, China at the end of 2019. Since then, it has spread to 200 countries and has been declared a global pandemic by the World Health Organisation (WHO). To date, there are more than 2.3 million positive COVID-19 cases recorded with at least 150, 000 deaths globally. Depression may become a serious health condition when it long last with moderate or severe intensity. During the epidemic, people go through the different stress level, but the mitigation activities overlook the need for management of this mental chaos which later may results to the post-traumatic stress disorder. Its intensity varies from one person to the next. Stress, anxiety and depression reactions can appear in a variety of physical, psychological, emotional and behavioural ways for any given individual. Date, the concern is still mounting over the continuing spread of COVID-19 in China despite a decrease in confirmed cases having recently been observed. [1]

In Nepal during the COVID-19 pandemic, a state-wide mandatory closure of all institutions of learning, universities, colleges and schools was imposed from the 22nd of March 2020 and an isolation policy was introduced by the government. During an epidemic/pandemic state, nursing students are exposed to additional stressful factors, such as fear of being infected. Only few workers in both public and private sectors were allowed to continue to work. The staff of all academic institutions faced a new reality had to turn to online teaching with the aim of continuing the academic year. Staff members started to practice and use remote teaching strategies almost immediately with the college lockdown.

Infectious disease outbreaks, such as COVID-19, take a tremendous toll on the general population encompassing various spheres of their life. It is also likely to impact the psychological health of people, including healthcare workers (HCWs) who are in the frontline caring for people with the infection [2]

Nurses are the front line health care provider who directly involved in the screening, diagnosis, treatment, and care of patients with COVID-19 are at risk of developing psychological distress such as anxiety, depression, insomnia related symptoms and other mental health symptoms. [3]

The ever-increasing number of confirmed and suspected cases, overwhelming workload, depletion of personal protection equipment, widespread media coverage, lack of specific drugs, and feeling of being inadequately supported may all contribute to the mental burden in the nursing personnel. Especially nursing students those who are working in hospital as well as those who are taking the classes by online faced many problems which causes stress,

depression, anxiety and insomnia during an outbreak of COVID-19. [4]

Specific objectives

- To find out the factors associated with perceived stress, anxiety, depression and insomnia during COVID-19.
- To identify the level of perceived stress, level of anxiety.
- To find out the level of depression and level of insomnia.
- To measure the difference between score of stress, anxiety, depression, insomnia and selected demographic variable.

2. Method

Study design, respondents, settings and data collection

A web-based cross-sectional-survey was conducted from June 20th to July 15th, 2020, among nursing students. Respondents were nursing students those who are currently studying BSC 1st, 2nd, 3rd and 4th year and BNS 1st and 2nd year. The total sample size was 184.Non-probability total enumerative sampling technique was used. Data were collected at Nobel college sinamangal, Kathmandu, province 3. The questionnaire was developed in Google forms. Pretested and Structured self administered questionnaire was used to collect the data. The online survey took approximately 10 to 15 min to complete.

Survey instrument and variables

A digitalized structured computerized questionnaire was developed by reviewing the relevant available literature. The resulting self-administered questionnaire contained a total of 45 questions and was divided into four parts. First part related to the respondents' socio-demographic characteristics, Second part related to associative factors, Third part related to depression, anxiety, stress and Fourth part related to insomnia. Validated tool DASS Scale [5] and Insomnia Index severity scale [6] was used to assess the level of anxiety, depression, stress and insomnia. In DASS scale each items was rated on a 4-point scale (0–3), which indicates (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) and the total items were 21. In insomnia index scale, each item was rated on a 5 points scale (0-4) and the total items were 7.

Statistical Analysis

Respondents' responses, in Google form, were exported to Microsoft Excel and then imported in IBM Statistical Package for Social Sciences (SPSS) Statistics for Windows Version 21.0 (IBM Corp. Armonk, NY, USA) for data analysis. Descriptive statistics such as frequency, percentage, described respondents' demographic characteristics. In inferential statistics Kruskal–Wallis test (variables with more than two categories) and Mann–Whitney U test (variables with two categories), were used to test differences in stress score, depression score, anxiety score, insomnia score and selected demographic variables. The data was presented in tabular form.

Ethical Consideration

The Institutional Review Committee at Nobel College, Sinamangal affiliated under Pokhara University, Nepal, approved this study. And permission was taken from the author for use of validated tool. The link was circulated through the viber, instant messenger. The first page of the web-based survey had an informed consent page that provided details of the study and required respondents to consent (or decline) to participation to continue the survey. Participation in the survey was voluntary, and no incentive was provided to respondents. Respondents were assured about confidentiality.

3. Result

Table 1: Socio Demographic Characteristics of the Respondents, n=184

Variables	Frequency	Percentage
Age (years)		
17-19	33	17.9
20-22	101	54.9
23-25	42	22.8
Above 25	8	4.3
Religion		
Hindu	177	96.2
Buddhist	7	3.8
Education level		
BSc 1st year	40	21.7
BSc 2nd year	36	19.6
BSc 3rd year	31	16.8
BSc 4th year	30	16.3
BNS 1st year	24	13
BNS 2nd year	23	12.5
Marital status		
Married	19	10.3
Unmarried	165	89.7
Residence		
Valley	90	48.9
Out of valley	94	51.1
Types of family		
Nuclear	143	77.7
Joint	38	20.7
Extended	3	1.6

Table 1 reveals that the majority of the respondents 101 (54.9%) were in the age group of 20 -22years. Almost all of the respondents 177 (96.2%) were Hindu religion. likewise respondents in this study from BSc nursing 1st year 40 (21.7%) followed by 36 (19.6%) BSc 2nd year, 31 (16.8%) BSc 3rd year 30 (16.3%) BSc 4th year, 24 (13%) BNS 1st year and 23 (12.5%) BNS 2nd year respectively. Majority of the respondents 165 (89.7%) were unmarried. More than half of the respondents 94 (51.1%) were from out of the valley. Majority of the respondents 143 (77.7%) were nuclear family.

Table 2: Socio Demographic Characteristics of the Respondents, n=184

Variables	Frequency	Percentage
Number of siblings		
One	95	51.6
Two	46	25
Three	29	15.8
Four	3	1.6
Five	11	6.0
Educational status of the mother		
Primary level	31	16.8
Secondary level	59	32.1
Higher secondary level	52	28.3
Bachelor level and above	31	16.8
Illiterate	11	6
Educational status of the Father		
Primary level	14	7.6
Secondary level	35	19
Higher secondary level	51	27.7
Bachelor level and above	81	44
Illiterate	3	1.6
Exposure to endemic crisis		
Exposed	50	27.2
Not exposed	134	72.8

Table 2 reveals that more than of the respondents 95 (51.6%) were one siblings. And respondents education of mother 59 (32.1%) were secondary level, similarly education of father 81 (44%) were Bachelor level and above. Majority of the respondents 134 (72.8%) were not exposed to the endemic crisis.

Table 3: Associative Factors of Stress and Anxiety, n= 184

Variables	Frequency (%)
Academic factor	
Fear of delay in graduation	55 (29.9)
Difficulty to access the online classes	32 (17.4)
Fear of failure because unable to understand the online classes	28 (15.2)
Difficulty in concentration on online classes	54 (29.3)
Costly by using mobile data	15 (8.2)
COVID-19 factor	
Feeling scared when someone becoming sick in their social circle	21 (11.4)
Stressed when reading/hearing news about the increasing COVID-19 patients	108 (58.7)
I think if COVID19 spreads in own community, I will die for sure	15 (8.2)
Family members being more alert in relation to COVID-19	17 (9.2)
Excessively worried about necessity of following the preventive measures of COVID-19	23 (12.5)
Family factor	
Family members are not being able to work/earn	57 (31)
Parents might not being able to afford studies	26 (14.1)
Necessity of spending a lot of money on recharge for mobile internet data during online class.	67 (36.4)
Lack of communication with family members with the problem	34 (18.4)
Environmental factor	
Recently working at the hospital	
Yes (n=18)	
Lack of PPE	6 (33.3)
Long term duty hours	8 (44.4)
Heavy workload	3 (16.7)
Forceful leave	1 (5.6)
Personal factor (n=18)	
Long staying in hospital	9 (50)
Low salary	1 (5.6)
Job insecurity	2 (11.1)
Fear of being a victim	6 (33.3)

Table 3 reveals that In academic factor, most of the respondents, 55 (29.9%) said that “delay in graduation” Similarly In COVID -19 factor more than half of the respondents 108 (58.7%) said that get stressed when reading and hearing news about the increasing COVID patients. In the family factor, most of the respondents 67 (36.4%) said that necessity of spending a lot of money on recharge for mobile internet data during online class causes significant stress and anxiety. out of 184 respondents only 18 (9.7%) were working at the hospital. Similarly, in environmental factor, Out of 18 respondents 8 (44.4%) said that long term duty hours, respectively in personal factor, fifty percent

respondents 9 (50%) said that long staying in hospital causes stress and anxiety.

Table 4: Level of Depression, Anxiety, Stress and Insomnia, n=184

Level	Frequency (%)
Level of Depression	
Normal (0-9)	143 (77.71)
Mild (10-13)	22 (11.95)
Moderate (14-20)	19 (10.32)
Level of Anxiety	
Normal (0-7)	132 (71.73)
Mild (8-9)	26 (14.13)
Moderate (10-14)	19 (10.32)
Severe (15-19)	6 (3.26)
Extremely severe (20+)	1 (0.54)
Level of Stress	
Normal (0-14)	172 (93.47)
Mild (15-18)	9 (4.89)
Moderate (19-25)	3 (1.63)
Level of insomnia	
No clinically significant insomnia (0-7)	87 (47.28)
Subthreshold insomnia (8-14)	52 (28.26)
Moderate severity (15-21)	33 (17.93)
Severe (22-28)	12 (6.52)

Table 4 reveals that Majority of the respondents 143 (77.71%) had normal level of depression. Similarly majority of the respondents 132 (71.73) had normal level of Anxiety. Majority of the respondents 172 (93.47%) had normal level of stress. Respectively most of the respondents 87 (47.28%) had no clinically significant insomnia.

Table 5: Difference between Score of Depression with Selected Demographic Variables, n=184

Variable	Frequency	Mean Rank	P value
Age (years)			
17-19	33	83.24	
20-22	101	100.78	.016S
23-25	42	81.32	
Above 25	8	84.88	
Religion			
Hindu	177	93.31	
Buddhist	7	72	.153
Education level			
BSc 1st year	40	89	
BSc 2nd year	36	98.35	
BSc 3rd year	31	100.60	.604
BSc 4th year	30	90.55	
BNS 1st year	24	88.31	
BNS 2nd year	23	85.43	
Types of family			
Nuclear	143	93.91	
Joint	38	83.93	.065
Extended	3	133.83	
Marital status			
Married	19	72	.015S
Unmarried	165	94.86	
Residence			
Valley	90	100.63	.005S
Out of valley	94	84.72	
Exposure to an endemic crisis			
Exposed	50	88.90	.441
Not exposed	134	93.84	

S- Significant

Table 6 reveals that there was significant statistical difference between depression and respondents marital status (p=.015), residence (p=.005), age (p=.016) at 5% level of significance. There was no any significant difference with the religion, educational level, types of family and respondents exposure to an endemic crisis.

Table 6: Difference between Score of Anxiety with Selected Demographic Variables, n=184

Variable	Frequency	Mean Rank	P value
Age			
Age (years)			
17-19	33	78.50	
20-22	101	99.88	.047S
23-25	42	88.29	
Above 25	8	79.19	
Religion			
Hindu	177	93.08	.347
Buddhist	7	77.79	
Education level			
BSc 1st year	40	76.65	
BSc 2nd year	36	97.28	
BSc 3rd year	31	104.18	.093
BSc 4th year	30	97.75	
BNS 1st year	24	95.23	
BNS 2nd year	23	87.15	
Types of family			
Nuclear	143	90.94	
Joint	38	95.66	.305
Extended	3	126.67	
Marital status			
Married	19	66.50	.005S
Unmarried	165	95.49	
Residence			
Valley	90	94.52	.526
Out of valley	94	90.57	
Exposure to an endemic crisis			
Exposed	50	94.19	.740
Not exposed	134	91.87	

S- Significant

Table 7 reveals that there was significant statistical difference between anxiety and respondents age (p=.047), marital status (p=.005) at the 5% level of significance. There was no any difference between anxiety with respondents

Table 7: Difference between Score of Stress with Selected Demographic Variables, n=184

Variable	Frequency	Mean Rank	P value
Age			
Age (years)			
17-19	33	89.42	
20-22	101	92.89	.781
23-25	42	92.96	
Above 25	8	97.81	
Religion			
Hindu	177	92.74	.478
Buddhist	7	86.50	
Education level			
BSc 1st year	40	93.44	
BSc 2nd year	36	86.50	
BSc 3rd year	31	98.37	.120
BSc 4th year	30	98.77	
BNS 1st year	24	86.50	
BNS 2nd year	23	90.43	
Types of family			
Nuclear	143	92.95	
Joint	38	88.88	.111
Extended	3	116.67	
Marital status			
Married	19	86.50	.226
Unmarried	165	93.19	
Residence			
Valley	90	93.61	.520
Out of valley	94	91.44	
Exposure to an endemic crisis			
Exposed	50	91.93	.836
Not exposed	134	92.71	

Table 7 reveals that there was no any significant statistical difference between stress and respondents age, religion, educational level, types of family, marital status, residence and respondents exposure to the endemic crisis that the 'p' value is less than 0.05.

Table 8: Difference between Score of Insomnia with Selected Demographic Variables, n=184

Variable	Frequency	Mean Rank	P value
Age			
Age (years)			
17-19	33	79.45	
20-22	101	101.18	.013S
23-25	42	89.46	
Above 25	8	52.69	
Religion			
Hindu	177	91.85	.369
Buddhist	7	109	
Education level			
BSc 1st year	40	82.21	
BSc 2nd year	36	103.82	
BSc 3rd year	31	98.15	.315
BSc 4th year	30	99.43	
BNS 1st year	24	86.40	
BNS 2nd year	23	82.39	
Types of family			
Nuclear	143	96.08	
Joint	38	79.92	.188
Extended	3	81.33	
Marital status			
Married	19	64.53	.009S
Unmarried	165	95.72	
Residence			
Valley	90	101.54	.015S
Out of the valley	94	83.85	
Exposure to an endemic crisis			
Exposed	50	103.66	.062
Not exposed	134	88.34	

S- Significant

Table 7 reveals that there was significant statistical difference between insomnia and respondents age (p=.013), marital status (p=.009), residence (p=.015) at the 5% level of significance and no any difference between the insomnia and respondents religion educational level, types of family and exposure to the endemic crisis that the 'p' value is less than 0.05.

4. Discussion

The discussion section presents all findings of the study and findings were compared with those of other studies identified from the Literature review. This study was conducted to assess the Factors associated with perceived stress, anxiety, depression, insomnia during COVID-19 outbreak among nursing students at Nobel college sinamangal, Kathmandu.

Sociodemographic variables

Characteristics of the sociodemographic variables described in terms of their frequency and percentage distribution of the respondents by age, religion, education level, marital status, residence, types of family, number of siblings, educational status of mother and father, exposure to endemic crisis, source of information. In the presents study majority of the respondents 101 (54.9%) were in the age group of 20 - 22years. Almost all of the respondents 177 (96.2%) were Hindu religion. likewise respondents in this study from BSc nursing 1st year 40 (21.7%) followed by 36 (19.6%) BSc 2nd year, 31 (16.8%) BSc 3rd year 30 (16.3%) BSc 4th year, 24 (13%) BNS 1st year and 23 (12.5%) BNS 2nd year respectively. Majority of the respondents 165 (89.7%) were unmarried. More than of the respondents 94 (51.1%) were from out of the valley. Majority of the respondents 143 (77.7%) were nuclear. More than of the respondents 95 (51.6%) were one siblings. And respondents education of mother 59 (32.1%) were secondary level, similarly education of father 81 (44%) were Bachelor level and above. Majority of the respondents 134 (72.8%) were not expose to the endemic crisis.

Associative factors

Concerning associated factors, In academic factor, In academic factor, most of the respondents, 55 (29.9%) said that "delay in graduation" Similarly In COVID -19 factor more than half of the respondents 108 (58.7%) said that get stressed when reading and hearing news about the increasing COVID patients'. In the family factor, most of the respondents 67 (36.4%) said that necessity of spending a lot of money on recharge for mobile internet data during online class causes significant stress and anxiety. out of 184 respondents only 18 (9.7%) were working at the hospital. Similarly, In environmental factor, Out of 18 respondents 8 (44.4%) said that long term duty hours, respectively In personal factor, fifty percent respondents 9 (50%) said that long staying in hospital causes stress and anxiety.

Level of depression, anxiety, stress, insomnia

In regards to the level of depression, stress, anxiety and insomnia. The presents study, shows that majority of the respondents 143 (77.71%) had normal level of depression, 22 (11.95%) had a mild level, 19 (10.32%) had a moderate level of depression respectively. In present study majority of the respondents 132 (71.73) had a normal level of Anxiety, 26 (14.3%) had a mild level, 19 (10.32%) had moderate level, 6 (3.26%) had a severe level, 1 (0.54%) had extremely severe. In contrast to this study, slightly higher level of anxiety than the present study. Even in normal circumstances students experience anxiety. Among university and college students in Hong Kong, the prevalence of moderate anxiety was 12.2% and severe anxiety was 5.8% ([7]); in Portugal 15.6% suffered from moderate anxiety while 8.3% suffered from severe anxiety ([8])

Majority of the respondents 172 (93.47%) had a normal level of stress 9 (4.89%) had a mild level, 3 (1.63%) had a moderate level stress respectively. Most of the respondents 87 (47.28%) had no clinically significant insomnia, 52 (28.26%) had subthreshold insomnia, 33 (17.93%) had a moderate severity, 12 (6.52%) had a severe insomnia respectively. In contrast to this study conducted a cross sectional study in China shows that total of 1, 563 respondents 564 (36.1%) respondents had insomnia symptoms according to the Insomnia Severity Index (ISI) ([9]).

In contrast to this study conducted a cross-sectional study in China, shows that many Chinese healthcare workers reported symptoms of depression 50.4%, anxiety 44.6%, insomnia 34.0%, and distress 71.5% during the COVID-19 outbreak ([10]). Studies from different parts of the world have suggested the prevalence of anxiety to range from 11.3%–50% and findings of the present study are within this reported range. ([11]).

5. Conclusion

Education has gone online during the COVID-19 Lockdown. This study was conducted to assess the factors associated with perceived stress, anxiety, depression, insomnia during COVID-19 outbreak among nursing students. Based on the findings, Majority of the respondents had normal level of depression, normal level of anxiety, similarly normal level of stress and majority of the respondents had no clinically significant insomnia. Majority of the respondents stressed when reading/hearing news about the increasing COVID-19 patients. There was a statistical difference between the score of depression with age, marital status, residence and score of insomnia with age, marital status, residence and score of anxiety with age, marital status. Health program with coping strategies program should be carried out periodically among nursing students to tackle and cope with stressful crisis situation. It is the responsibility of college and concerned authorities to identify the causes and take reducing measures.

6. Conflicts of interest

The authors declared that there are no conflicts of interest.

7. Author Contribution

Puspa Kumari Deo carried out the design the study, paper's conception, analysis, and interpretation of data and drafted the paper. Sandhya Budhathoki participated in the design of the study, interpretation of data and review of the paper; Jyotshna Raut participated in data collection, interpretation of the data and review of the paper. Bibhav Adhikari participated in data analysis, interpretation of the data and review of the paper; Jyoti Shrestha participated in data collection, interpretation and review of paper and all authors contributed to editing it and approved the final manuscript.

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