ORIGINAL ARTICLE

# Frequency and Correlation between Depression, Anxiety, and Stress among Nursing Students

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## ABSTRACT

**Background:** The nursing profession has been identified as an increasingly challenging profession. Depression, anxiety, and stress have been established considerably among nursing students that have a negative impact on personal and as well as education.

**Objectives:** To determine the frequency and correlation between depression, anxiety and stress among nursing students. Identify the association of socio-demographic variables with depression, anxiety, and stress among nursing students.

**Methodology:** A cross-sectional study was accomplished at two public sector nursing colleges in Islamabad. The duration of the study was 4 months from October 2021 to January 2022. Students who are enrolled in general nursing and BS nursing programs of both genders were invited to participate in the study. The calculated sample size was 355. Non-probability convenience sampling method was utilized to access study participants. DASS-21 questionnaire was used for screening depression, anxiety, and stress. A chi-square test was applied to identify the association of demographic variables with depression, anxiety, and stress. Pearson correlation was also used to determine the correlation between depression, anxiety, and stress. P-value ≤0.05 was considered a level of significance.

**Results:** A total of 355 participants were included, the majority of them 79.4% were from the age group 18 – 23 years. Most of the participants 80% were female and 89% were unmarried. In this study, the prevalence of depression, anxiety, and stress was reported at 44.2%, 64.20%, and 42.3% respectively. Educational programs and family history of psychiatric disorders were found to be statistically significant for depression. Moreover, gender, year of study, and educational program exhibited significant anxiety. In addition, years of study, educational program and residency were also established as significant with stress.

**Conclusion:** It is concluded from the current study that nursing students were facing significant levels of depression, anxiety, and stress. The anxiety levels were higher in participants followed by depression and stress. Moreover, there was a significant positive strong correlation between depression, anxiety, and stress.

**Keywords:** Anxiety, depression, stress, nursing students, education.

## INTRODUCTION

Nursing is a practical discipline in which students learn theory and practice in the clinical areas, which counts as a double burden on students. The prevalence of depression 24.3%, anxiety 39.9%, and stress 20.0% has been established among nursing students. Furthermore, anxiety and depression were found far more prevalent in female nursing students while depression in male nursing students [1]. Low academic performance and absenteeism are identified as early signs of depression, anxiety, and stress among nursing students [2].

Moreover, education is a process that leads to stressful experiences and also students encounter considerable academic, social, and personal stress during their student tenure. Stress is well known to be associated with the progression of anxiety and depression and a positive relationship is established between stress, anxiety, and depression. The research study conducted in Sri Lanka demonstrated the utmost prevalence of 51.1%, 59.8%, and 82.6% of academic year, physical

& mental well-being, and satisfaction with nursing studies are the factors found statistically significant with depression, anxiety, and stress [3]. Similarly, an updated literature review disclosed a very high range of anxiety 7.7-65.5%, depression 6.0-66.5% and stress 12.2-96.7% among medical students who were living outside of North America [4]. It is confirmed that depression, anxiety and stress can lead to decreasing in academic performance as well as clinical areas [5]. Sources of such types of the disorder may be faculty expectations, educational environment, health care personnel, senior nurses, clinical practice, patients' and students' lifestyle, and family background, financial issues, low support or other mates [6, 7].

Thus, causes can be internal and external. A research study revealed that depression and emotional attention predict suicidal ideation significantly [8]. There is documentary evidence of the possibility of preventing such types of disorders among nursing students by establishing family and school-based approaches [9]. In addition, one more research study revealed that students could receive counseling from the respective faculty through planned schedules to improve their psychological health and mental well-being [10]. Female

nursing candidates are at higher risk as compared to male candidates for mental health [11]. Besides, a study conducted in Karachi, Pakistan on medical students, revealed that 35.6 percent of students were found with suicidal ideation whereas 13.9 percent of students had the intention of a suicide attempt. However, only 4.8 percent of them managed to try throughout their lives [12]. Nursing students face several challenges during their course of nursing education which may cause certain physical as well as psychological disturbance which leads to poor academic performance. Consequently, the mental health status of candidates is relatively important in order to enhance academic performance and effective learning. Therefore, this research study was employed to determine the frequency and correlation between depression, anxiety, and stress and identify the association of socio-demographic variables with depression, anxiety, and stress among nursing students at the College of Nursing Federal Government Poly Clinic and College, Pakistan Institute of Medical Sciences (PIMS), in Islamabad, Pakistan.

## MATERIALS AND METHODS

This descriptive cross-sectional study was accomplished at two public sector nursing colleges specifically the College of Nursing Federal Government Polyclinic and College of Nursing PIMS, Islamabad. The study was carried out for a period of 4 months from October 2021 to January 2022. The targeted populations of this study were all nursing students, who were studying in the diploma program, and BS Nursing at the College of Nursing Federal Government Polyclinic and College of Nursing PIMS, Islamabad. Both male and female nursing students of both nursing programs who were willing to participate in the study were included in the study. Students, who have any chronic disease like Diabetic Mellitus (DM) or HTN (Hypertension), were excluded from the study. Moreover, those students, who were taking psychotic medications, were also excluded from the study. The sample size was calculated through OpenEpi version 3.0, an online sample size calculator. It was calculated by taking 63.9% of depression [13] with a 95% confidence level and a 5% margin of error. The calculated sample size was 355 nursing students of both genders. Non-probability convenient sampling technique was used to assess the participants.

All students, who were studying at Federal Government Polyclinic and PIMS, Islamabad were approached physically to fill out the structured questionnaire at their institutes. Written informed consent was taken from all participants. Firstly, all students were invited to attend the introductory session of the present study. After that, a self-administered questionnaire was distributed among students and collected back almost after 30 minutes.

Open accessed, structured, and validated questionnaire "depression, anxiety, and stress scale-21" (DASS-21) [14] was used for this study. It is comprised of 04

points from 0-3 such as "0" did not apply to me at all "1" applied to me to some degree, or time "2" applied to me to a considerable degree or a good part of the time "3" applied to me very much or most of the time." The normal cut-value of depression, anxiety, and stress is 0-9, 0-7, and 0-14 respectively. The mild cut-value of depression, anxiety, and stress is 10-13, 8-9, and 15-18 respectively. The moderate cut-value of depression, anxiety, and stress is 14-20, 10-14, and 19-25 respectively. The severe cut-value of depression, anxiety, and stress is 21-27, 15-19, and 26-33 respectively. The extreme severe cut-value of depression, anxiety, and stress is 28+, 20+, and 34+ respectively.

Data was entered and analyzed by using SPSS version 21. After checking the assumptions of normality with the Shapiro-wilk test, mean ± standard deviation was computed for all quantitative variables. Data was also analyzed in frequency and percentages for all qualitative variables. A chi-square test was applied to identify the association of demographic variables with depression, anxiety, and stress. Pearson correlation was also used to determine the correlation between depression, anxiety, and stress. P-value ≤0.05 was considered a level of statistical significance.

## RESULTS

A total of 355 participants were included, the majority of them 282 (79.4%) were from the age group 18–23 years, followed by 24-29 years 50(14.1%), and 30-35 years 11(3.1%). Only 4(1.1%) had an age above 42 years. There is a dominancy of female respondents (80%). 136(38.3%) were in the third year of their study program followed by the first year 115(32.4%), 70(19.7%) in the second year, and 34(9.6%) in the final year. Almost all (96.6%) participants did not face any academic failure. Only a few (3.4%) had an academic failure during their study period. Concerning marital status, most of the subjects 316(89%) were unmarried, there is only 1(0.3%) widow participated in the study. As for smoking status, almost all (98.6%) study subjects did not smoke. Three-fourths of 276(77.7%) participants belonged to the Pakistan Institute of Medical Sciences (PIMS), while 79(22.3%) were from Poly Clinic Hospital.
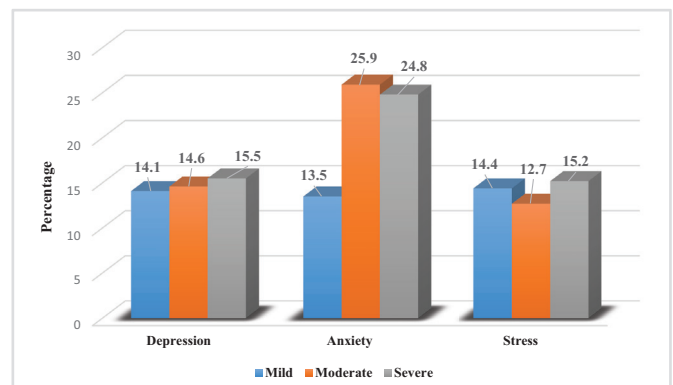


**Fig. (1):** Prevalence of depression, anxiety, and stress among respondents.

**Table 1:** Association of socio-demographic variables with depression, anxiety, and stress.

| Variable | Depression | | p-value | Anxiety | | p-value | Stress | | P-value |
|---|---|---|---|---|---|---|---|---|---|
| | Yes n (%) | No n (%) | | Yes n (%) | No n (%) | | Yes n (%) | No n (%) | |
| **Age (In years)** | | | | | | | | | |
| 18-29 | 145 (43.7) | 187 (56.3) | 0.156 | 215 (64.8) | 117 (35.2) | 0.501 | 138 (41.6) | 194 (58.4) | 0.384 |
| 30 & Above | 12 (52.2) | 11 (47.8) | | 13 (56.5) | 10 (43.5) | | 12 (52.2) | 11 (47.8) | |
| **Gender** | | | | | | | | | |
| Male | 30 (42.3) | 41 (57.7) | 0.790 | 38 (53.5) | 33 (46.5) | 0.039 | 26 (36.6) | 45 (63.4) | 0.347 |
| Female | 127 (44.7) | 157(55.3) | | 190 (66.9) | 94 (33.1) | | 124 (43.7) | 160 (56.3) | |
| **Year of Study** | | | | | | | | | |
| 1 | 40 (34.8) | 75 (65.2) | 0.050 | 54 (47.0) | 61(53.0) | <0.001* | 37 (32.2) | 78 (67.8) | 0.004* |
| 2 | 30 (42.9) | 40 (57.1) | | 41 (58.6) | 29 (41.4) | | 25 (35.7) | 45 (64.3) | |
| 3 | 71 (52.2) | 65 (47.8) | | 107 (78.7) | 29 (21.3) | | 68 (50.0) | 68 (50.0) | |
| 4 | 16 (47.1) | 18 (52.9) | | 26 (76.5) | 8 (23.5) | | 20 (58.8) | 14 (41.2) | |
| **Academic Failure** | | | | | | | | | |
| Yes | 7(58.3) | 5 (41.7) | 0.382 | 9 (75.0) | 3 (25.0) | 0.549 | 6 (50.0) | 6 (50.0) | 0.768 |
| No | 150 (43.7) | 193 (56.3) | | 219 (63.8) | 124 (36.2) | | 144 (42.0) | 199 (58.0) | |
| **Marital Status** | | | | | | | | | |
| Single | 141 (44.6) | 175 (55.4) | 0.443 | 206 (65.2) | 110 (34.8) | 0.365 | 136 (43.0) | 180 (57.0) | 0.531 |
| Married/ Widow | 16 (41.0) | 23 (59.0) | | 22 (56.4) | 17 (43.6) | | 14 (35.9) | 25 (64.1) | |
| **Smoking** | | | | | | | | | |
| Yes | 1 (20.0) | 4 (80.0) | 0.388 | 2 (40.0) | 3 (60.0) | 0.354 | 2 (40.0) | 3 (60.0) | 1.000 |
| No | 156 (44.6) | 194 (55.4) | | 226 (64.6) | 124 (35.4) | | 148 (42.3) | 202 (57.7) | |
| **Institute** | | | | | | | | | |
| Federal/Poly Clinic | 31 (39.2) | 48 (60.8) | 0.369 | 48 (60.8) | 31 (39.2) | 0.506 | 38 (48.1) | 41 (51.9) | 0.247 |
| PIMS | 126 (45.7) | 150 (54.3) | | 180 (65.2) | 96 (34.8) | | 112 (40.6) | 164 (59.4) | |
| **Educational Program** | | | | | | | | | |
| Diploma | 89 (51.1) | 85 (48.9) | 0.011* | 135 (77.6) | 39 (22.4) | <0.001* | 89 (51.1) | 85 (48.9) | 0.001* |
| BSN | 68 (37.6) | 113 (62.4) | | 93 (51.4) | 88 (48.6) | | 61(33.7) | 120 (66.3) | |
| **Residency** | | | | | | | | | |
| With family | 66 (52.4) | 60 (47.6) | 0.146 | 90 (71.4) | 36 (28.6) | 0.158 | 66 (52.4) | 60 (47.6) | 0.012* |
| With relative | 7 (43.8) | 9 (56.3) | | 8 (50.0) | 8 (50.0) | | 7 (43.8) | 9 (56.3) | |
| With Friends | 5 (38.5) | 8 (61.5) | | 8 (61.5) | 5 (38.5) | | 2 (15.4) | 11 (84.6) | |
| Hostel | 79 (39.5) | 121 (60.5) | | 122 (61.0) | 78 ((39.0) | | 75 (37.5) | 125 (62.5) | |
| **Family History of Psychiatric Disorder** | | | | | | | | | |
| Yes | 6 (50.0) | 6 (50.0) | 0.003* | 8 (66.7) | 4 (33.3) | 0.097 | 5 (41.7) | 7 (58.3) | 0.074 |
| No | 132 (41.5) | 186 (58.5) | | 199 (62.6) | 119 (37.4) | | 129 (40.6) | 189 (59.4) | |
| Don't Know | 19 (76.0) | 6 (24.0) | | 21 (84.0) | 4 (16.0) | | 16 (64.0) | 9 (36.0) | |

*Significant at p<0.05

As far as their educational program is concerned, almost equal participation was from both the diploma 174(49%) and BSN 181(51%) programs. Moreover, more than half of 200(56.3%) were living in hostel accommodation followed by 126(35.5%) with family, 16(4.5%) with relatives, and 13(3.7%) with friends. Furthermore, only 12(3.4%) had a positive family history of psychiatric disorders.

**Fig. (1)** exhibits the prevalence of depression, anxiety, and stress among study participants. In this study, the prevalence of depression was reported 44.2%, anxiety 64.2%, and stress 42.3%.

Table **1** expressed chi-square statistics to measure the association of baseline characteristics of respondents with depression, anxiety, and stress. The table explained that half of the participants from the diploma program had depressive symptoms. This proportion was significantly higher compared with the BSN program (p=0.011). Furthermore, a family history of psychiatric disorder had a significant association with depression (p=0.003).

Concerning the association between anxiety and demographic characteristics, gender was found in statistically significant association. Females examined in this study had a significantly higher proportion than males having anxiety symptoms (p=0.039). Three-fourths of the participants from the third year (78.7%) and fourth year (76.5%) followed by the second year (58.6%) of their study had a certain level of anxiety and these variables had a significant relationship (p<0.001). Furthermore, anxiety was more prevalent 135 (77.6%) among diploma students as compared to those students who were doing BSN degree 93 (51.4%) and this variable is also found statistically significant (p<0.001).

**Table 2:** Relationship between depression, anxiety, and stress among the participants.

| | Depression | Anxiety | Stress |
|---|---|---|---|
| **Depression** | 1.0 | | |
| **Anxiety** | 0.784** | 1.0 | |
| **Stress** | 0.705** | 0.678** | 1.0 |

**: Correlation is significant at the 0.01 level (2-tailed)

In examining the association between stress and baseline characteristics, study year (p=0.004), educational program (p=0.001), and residency of participants (p=0.012) were found in significant association with stress.

Table **2** disclosed the relationship between depression, anxiety, and stress among nursing students. The Pearson's correlation between depression, anxiety, and stress scores of the participants revealed that there was a significant positive strong correlation between depression and stress (r=0.70, p<0.001), depression and anxiety (r=0.78, p<0.001), and between anxiety and stress (r=0.67, p<0.001).

## DISCUSSION

Nursing students are the nurses of the future. Hence, their psychological health, as well as physical, is most important for the best nursing care. If students' health is not up to mark, they cannot get a proper education. Consequently, their clinical skills will be substandard as compared to the normal ones. Therefore, the main objective of this study was to determine the frequency of depression, anxiety, stress, and its associated factors among nursing students.

In this study, the frequency of depression was 44.2%. The results are slightly higher 57.9% than the Chinese study [15] and an almost similar 38.2% depression was established in Nepal [16]. On the other hand, another Nepalis study [17] disclosed 22.27% depression and 21% depression reported in Malaysia [17] which is significantly lower than the current study.

The present study revealed anxiety at 64.2%. Likewise, the results are a little bit lower 51.6% than our study findings [15]. In contrast, research studies conducted in Nepal disclosed 46.9% and 28.25% anxiety which is much lower than our study [15, 16]. Likewise, a Malaysian study [17] disclosed 50% anxiety which is comparable to our research finding.

In the current study, stress is reported at 42.3% among nursing students. Similarly, the result findings are a bit greater stress 55.6% than our study [15]. In contrast, 24.1% and only 6.52% stress were described in research studies carried out in Nepal [16, 17]. Also, 12% stress was reported in Malaysia [18] which is also much lesser than this research finding

It may be due to an underdeveloped country, peaked COVID-19 season, social distance and final examination of the students. Secondly, nursing students reported

a lack of knowledge about their mental health in a Pakistani research study [19]. As a result, students and their parents do not focus on psychological health. Yet this prevalence is lower than among other medical students in the Pakistani context [20].

In the current study, the prevalence of depression was recorded as 44.20%. Amongst, 14.10%, 14.60% and 15.50% were mild, moderate and severe depression respectively. Moreover, older students were found more depressed as compared to younger ones. On the other hand, a literature review of 27 studies highlighted 34% depression among nursing students and a large percentage of depression mentioned among younger students [21]. This may happen because as kids grow, roles and responsibilities may also be increased. In addition, an older child should support the family in financial burden. In the present study, more depression 44.7% noticed among female participants. In contrast, a Jordanian research study revealed that males faced more depression as compared to females [22]. Might be one of the major causes of female depression is family issues and domestic work leads them to mental problems. In our research study, more depression 50% were recorded among those subjects who had a family history of psychiatric history and this variable also found a statistically significant p-value of 0.003 with depression. This finding is also supported by a research study conducted in Saudi Arabia which highlighted that a significant relationship was evident between positive family history of depression or any psychiatric disorder [23], as some psychiatric disorders are run in families. Additionally, due to involvement of one family member disturbs the entire family. In the present study, the year of study and depression varied, in the third year of the study 52.2% of depression was noticed and this variable was also found significant with depression with a p-value of 0.05. This finding is in line with a study conducted in Karachi Pakistan reported more depression in semester III as compared to semester-I and II [24]. The students reach near graduation they will think more and more about searching for a job in a renowned institute. If they do not succeed in their aim, which will lead them toward depression and other physical and mental problems.

We found a 64.20% prevalence of anxiety among nursing students, slightly higher than the study done in Osijek, Croatia [25] and shiraz, Iran [26]. In the current study, differences were observed between age groups, older (30 years old and above) students were reported low 56.5% anxiety as compared to younger (18 to 29 years old) but this variable not found statistically significant.

A similar type of finding was reported by a study conducted in Ontario, Canada [27]. More females were found anxious 66.9% than males and the gender variable was found to be statistically significant with an anxiety p-value of 0.039. Likewise, findings were reported in a study accomplished in Iran. In the present study, the age of the participants, academic failure, marital status,

smoking habit, educational institute, residency and family history of psychiatric haven't established statistical significance with anxiety scores. These findings are also supported by the same Iranian research [28].

In the current study, 42.30% of stress was noticed and female participants were suffering more from stress. It is very close to a study conducted in Malaysia [29]. In the current study, there was no statistical association found between stress and age, gender, marital status, smoking status and institute. Whereas, In a Brazilian [30] study a significant association has been found between stress and sex, age group, and marital status. In the present study, the increased trend of the stress of 32.2%, 35.7%, 50% and 58.8% were noticed as the year of study progressed from 1 to 4th year respectively. A similar type of trend has been recorded by a study done in Australia [31].

A meta-analysis was conducted to measure the effectiveness of different interventions such as yoga, mindfulness and meditation on anxiety, depression and stress. It found a significant reduction in depression, stress and anxiety among study participants as compared to the control group [32]. Hence, such types of intervention should be conducted in educational institutions periodically to reduce mental disorders. As the student will remain a psychological fit, he learns vast in theory class which ultimately makes better clinical practice. Consequently, leads to better patient outcomes.

## CONCLUSION

It is concluded from the current study that the nursing students were facing a significant level of depression, anxiety and stress. The anxiety levels were higher in participants followed by depression and stress. It is also highlighted that the educational program, family history of psychiatric disorder, gender, year of study and residency of the participants are associated with anxiety, depression and stress. Moreover, there was a significant positive strong correlation between depression, anxiety and stress.

## ETHICS APPROVAL

Ethical permission for data collection was granted by Federal Government Polyclinic Ref: No. FGPC. 1/12/2021/Ethical Committee. Confidentiality of data was assured. Participation of participants was voluntary. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki declaration.

## CONSENT FOR PUBLICATION

Written informed consent was taken from all of the participants who participated in this study.

## AVAILABILITY OF DATA

The data set analyzed during the current study is not made public due to confidentiality. However, data may be shared at a reasonable request to the corresponding author.

## FUNDING

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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## AUTHOR'S CONTRIBUTION

SHB designed the study, conception and data collection. R data analysis and interpretation, manuscript writing B contributed to draft writing.

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