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Effect of Triangular Nursing Interventions on Perceived academic stress among undergraduate Nursing students at selected colleges.

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*doi: 10.48047/AFJBS.6.15.2024.1090-1117***Abstract:**

Nursing is a practice -based discipline. It has two components during training process theory and as well as practical. The focus of nursing is to train and develop a competent qualified nurse who can serve the public, community, and the Nation. Nursing students needs to play a dual role during their training program, this may tend to develop anxiety during their course of studies. Emotional maturity can be a pathway to make the students to have good emotional control and act based on the situations. Stress management strategies can be employed to make students feel relaxed and psychological well -being can be enhanced. Triangular Nursing Interventions can be a part of stress management strategy which can be taught to the nursing students for maintaining their physical and mental health. The Objectives of the Study is to assess the level of perceived academic stress among undergraduate nursing students in study and control group prior and after triangular nursing interventions. After obtaining permission from principals of nursing college, dates were fixed according to the convenience of the college authorities and students. Written consent was received from the students. Pre assessment was carried out with help of structured questionnaire. Demographic Proforma, perceived academic stress were administered to nursing students on the first day of data collection. Average time taken to fill the questionnaire was 15-20 minutes. The components of triangular nursing interventions were developed based on relaxation, resilience and recreational activities. Weekly once triangular nursing interventions session was carried out for 4weeks for the duration of 45minutes to the study group. After 4weeks session, it will be reinforced and motivated monthly once in person for follow-up. Post- test assessment was carried out at 4th, 8th and 12th week. No intervention was carried out for control group. Post assessment was carried out at 4th, 8th and 12th week. After collecting data for post assessment triangular nursing interventions sessions and booklet with diary was given for nursing students of control group. Nursing Students who had severe level of perceived academic stress were referred for psychological help, counselling and follow up was carried out. During the 12th week of post assessment 143 samples were in the experimental group and 140 samples were in the control group because of attrition. In pre-test level of Perceived academic stress, majority 98(65.3%) had severe and 52(34.7%) had moderate level of perceived academic stress in study group. Likewise, 94(62.7%) had severe and 56(37.3%) had moderate stress in control group. Interestingly, none of them had mild level of Perceived Academic stress. This may be due to lack of awareness about the measures to overcome the Perceived academic stress by the students. However, in the study group, after the Triangular Nursing interventions, nearly three fourth of them 104(69.3%) experienced mild level of academic stress, only few 42(28%) had moderate level, 4(2.7%) reported severe level of perceived academic stress. Analysis of the data reveals the mean and standard deviation of pre and post-test scores of the study group that the mean difference 40.46% of effectiveness was found with the mean score (10.77±13.14) and (40.46±19.05) respectively in the aspect of level of Perceived academic stress. Apart from this, findings also shows that pre and post-test calculated 't' value was 26.008 which is larger than p value at 0.001 level in the study group. Whereas, in the control group, the calculated 't' value 4.699 is lesser than the p value at 0.001 level. Results shows that there is a statistically high significant difference between pre and post-test level of perceived academic stress in the study and control group. So, Triangular nursing interventions technique was significantly effective in decreasing the perceived academic stress of the nursing students. There was a negative Correlation between perceived academic stress and coping($r=-0.134$, $p=0.103$) in study group and not Significant at $p<0.000$ in Post-test III, whereas there is a negative Correlation between perceived academic stress and coping($r=-0.553$, $p=0.000$) in control group and Significant at $p<0.000$ Post-test III. The current study confirmed that there was a significant reduction in the post test stress score than the pretest stress. It reveals that Triangular Nursing Interventions was effective in reducing the stress among nursing students. Hence Faculties should pay attention to implement this Triangular nursing interventions routinely for the overall development of nursing students along with the routine academic plan.

Key words: stress, Coping skills and nursing students, Triangular Nursing Approach

Introduction:

Stress is a harmful construct that can be linked to many dangerous situations. It is often thought of as an individual's response to physical demands or to a disturbing event in their surroundings (Mathew, 2017). University students often experience high levels of stress due to concerns about their academic success, time management, and involvement in patient care (Mohamed & Ahmed, 2012). There are numerous sources of stress for university students, such as a heavy academic workload, numerous assignments, and adjusting to a new environment. There is a high rate and level of stress and depression among students in various academic fields, which is cause for concern (El Ansari, Adetunji, & Oskrochi, 2014). Nursing students often have to devote long hours to studying and may not have enough time for other activities (Gibbons, Dempster, & Moutray, 2011).

Furthermore, nursing students spend a significant amount of time in clinical settings and have the heavy responsibility of being accountable for their patients (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013). In addition, financial strain, difficulty managing time, and the use of complex technology can all be sources of stress for many students (Seyedfatemi, Tafreshi, & Hagani, 2007).

Some students struggle to cope with their stressors because they don't have an effective study plan. While it may not be possible to completely eliminate stress, students can reduce it through coping mechanisms, which help to maintain their psychosocial well-being (Singh, Sharma, & Shama, 2011).

Nursing students often have to study for long hours, leaving little time for other activities (Gibbons, Dempster, & Moutray, 2011). They also spend a lot of time in clinical settings, where they have the responsibility of caring for patients (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013). Additionally, financial stress, difficulty managing their time, and the use of advanced technology can all be sources of stress for nursing students (Seyedfatemi, Tafreshi, & Hagani, 2007).

Clinical practice is an important part of nursing education because it allows nursing students to apply their knowledge and develop their practical skills (Merdiye and Rengin, 2008; Chesser-Smyth, 2005). Studies from various countries, including Sweden, Canada, Britain, Turkey, Australia, China, Iran, the United States, and Ireland, suggest that nursing students may experience similar issues during clinical practice. High levels of stress may not only impact academic performance, but also overall health, potentially leading to conditions such as hypertension, heart disease, and immune deficiency disorders (Lee et al., 2007). There is evidence to suggest that stress during undergraduate training may have long-term negative effects on mental health and the quality of patient care provided by nurses (Chan et al., 2009; Evans and Kelly, 2004; Sheu et al., 2002). Research has shown that baccalaureate nursing students experience higher levels of stress than students in other healthcare fields (Beck et al., 1997). Additionally, female nursing students may have higher levels of stress than male students (Kirkland, 1998).

There is a link between stress and mental health problems among students, which can pose significant challenges for universities, according to Chopra (2019), Karaman (2019), and Crawford

et al. (2015). Frögéli et al. (2016) also identified important factors that may contribute to stress in students, including organizational stressors and the combination of theoretical and practical components in nursing programs.

It is important to identify and address levels of academic stress among nursing students and implement strategies to mitigate its negative effects on health and academic performance. One potential solution is the use of triangular nursing interventions to help students manage academic stress. At this point, it is essential to find the level of academic stress in nursing students and rectify the problems. The researcher was motivated to assess the undergraduate nursing student's perception of academic stress on a daily basis, and to implement triangular nursing interventions as a way of reducing the negative effects on their health and academic performance. It is very important for nursing students to learn how to manage academic stress, if it cannot be eliminated.

Nursing students often face a high level of stress due to the demands of their academic program, which includes taking clinical practice courses from the beginning (Reeve et al., 2013). This can be especially stressful due to the limited time available for studying and the long hours spent in clinical settings such as hospitals and healthcare centers (Shriver & Scott-Stiles, 2000). Some students may struggle to manage their stress due to a lack of effective study strategies. While it may not be possible to eliminate stress, students can work to reduce it by developing coping mechanisms to preserve their psychosocial well-being (Singh, Sharma, & 13 Shama, 2011). Research has shown that nursing students experience higher levels of stress compared to other students (Gibbons et al., 2011; Goff, 2011; Reeve et al., 2013).

Materials and Methods:

It was an experimental study conducted in the Department of Nursing; the study received ethical approval from the Institutional Human Ethical Committee. Simple random sampling was performed to select the study subjects. Nursing students from first to final year, moderate and severe level of perceived academic stress were included for the study.

Perceived academic stress scale (Sheu et al., 1997 & Rao 2012) with total items are 29 was used to screen for academic stress among students. After that, those fulfilling the inclusion criteria were selected for the study. The scale has the following items namely, Taking care of patients - 8 items, Teachers and Nursing staff - 6 items, Assignment and workload - 5 items, Peers and daily life - 4 items, Lack of professional knowledge and skills -3 items, Environment - 3 items. The Scoring as follows: This is a five-point Likert scale. Each statement has 5 choices of scoring 0=Never, 1=Almost never, 2=Sometimes, 3=Often and 4=very often. A total of 300 students were selected within the study period.

Procedure

A total of 300 students were selected by the sampling procedure for the study. Written informed consent was obtained from all the study participants. The data about the sociodemographic variables and psychosocial were collected using the semi-structured sociodemographic pro forma

designed, was then administered to find out the academic stress.. Finally, the association between the severity of academic stress and various sociodemographic and psychosocial variables variables was assessed. The correlation between academic stress and their grades among students was also assessed using appropriate statistics.

Statistical analysis

The results and observations were analysed keeping the aims and objectives in mind, and data were expressed as frequency, percentage, mean, and standard deviation. IBM Statistical Package for the Social Sciences (SPSS) version 26 was used for descriptive analysis of the data. Tables and charts have been prepared using Microsoft Excel spreadsheets. Pearson's Chi-square or Fisherion 26 was used for descriptive analysis of the data. Tables and chart independent-samples t-test has been used to see the mean difference between continuous variables. The Pearson correlation coefficient has been used to see the relationship between two continuous variables. A P value of <0.001 has been considered statistically significant.

RESULTS

A total of 300 students were screened for having academic stress using Perceived academic stress and selected for the study who fulfilled the inclusion criteria. The results and observations made are as follows.

Table 1.1 Frequency and percentage distribution of demographic variables of Undergraduate Nursing students in the study and control group N=300

Demographic variables	Study group		Control group		Chi-Square and p value
	No.	%	No.	%	
1. Age in years					$\chi^2 = 0.754$ d.f =2 p= 0.686
a. 17-19 years	78	52.00	72	48.0	
b. 20-22	40	26.7	40	26.7	
c. above 23 years	32	21.3	38	25.3	
2. Residence					$\chi^2 = 2.722$ d.f =1 p= 0.099
a. Urban	126	84.0	114	76.0	
b. Rural	24	16.0	36	24.0	
3. Year of study -B.Sc. (Nursing)					$\chi^2 = 2.667$ d.f =3 p= 0.446
a. I year	49	32.7	47	31.3	
b. II year	32	21.3	43	28.7	
c. III year	40	26.7	38	25.3	
	29	19.3	22	14.7	

d. IV year					
4. Education (Head of the family)	34	22.7	29	19.3	$\chi^2 = 1.321$ d.f = 4
a. No formal Education	39	26.0	32	21.3	p= 0.858
b. Primary Education	44	29.3	48	32.0	
c. Secondary Education	19	12.7	19	12.7	
d. Higher Secondary Education	14	9.3	22	14.7	
e. Collegiate					
5. Religion					$\chi^2 = 1.221$ d.f = 2
a. Hindu	132	88.0	128	85.3	p= 0.543 (N.S)
b. Christian	15	10.0	18	12.0	
c. Muslim	3	2.0	4	2.7	
6. Occupation of Father					$\chi^2 = 1.176$ d.f = 4
a. Unemployed	11	7.3	10	6.7	p=0.882 (N.S)
b. Self-employed	41	27.3	47	31.3	
c. Unskilled	45	30.0	42	28.0	
d. Non-professionals	39	26.0	29	19.3	
e. Professionals	14	9.4	22	14.7	
7. Occupation of Mother					$\chi^2 = 0.318$ d.f = 1
a. Housewife	120	80.0	116	77.3	p= 0.573 (N.S)
b. Working mother	30	20.0	34	22.7	
8. Type of family					$\chi^2 = 0.148$ d.f = 1
a. Nuclear	135	90.0	124	82.7	p= 0.700 (N.S)
b. Joint	15	10.0	26	17.3	
9. Type of stay					$\chi^2 = 0.487$ d.f = 1
a. Hostel	87	58.0	81	54.0	p= 0.485 (N.S)
b. Day Scholar	63	42.0	69	46.0	
10. Grading point average					$\chi^2 = 1.910$ d.f = 4
a. A (91-100%)	5	3.3	7	4.6	p = 0.752 (N.S)
b. B (81-90%)	5	3.3	4	2.7	
c. C (71-80%)	20	13.4	25	16.7	
d. D (61-70%)	48	32.0	43	28.6	
e. E (51-60%)	42	28.0	52	34.7	
f. F(<50%)	30	20.0	19	12.7	
11. Learning Resources					$\chi^2 = 0.831$ d.f = 3
a. Friends	31	20.6	37	24.6	p= 0.842 (N.S)
b. Self	40	26.7	34	22.7	

c. Library	15	10.0	19	12.7	
d. Online	64	42.7	60	40.0	
12. Sleep Hours					$\chi^2 = 0.783$
a. <6 hours	107	71.4	95	63.3	d.f = 2
b. 6 to 8 hours	32	21.3	39	26.0	p=0.676 (N.S)
c. >8hours	11	7.3	16	10.7	

Note: N.S. – Not Significant

The above table 1.1 enumerated the description of demographic variables in study and control group. As per the first objective of this study, the demographic variables of 300 undergraduate nursing students from both control (150) and study (150) groups were screened.

The data presented in shows that, majority of the undergraduate Nursing students 78 (52%) and 72(48%) are in the study group and control group were in the age group of 17-19years. Similarly, urban residence constitutes the most in both groups 126 (84 %) in the study group and 114(76%) in the control group. With regard to the year of study, 49(32.7%) in the study group and 47(31.3%) in the control group were in the First year of B.Sc. Nursing. Majority of the parent as a head of the family had educational qualification of Primary education 44(29.3%) in the study group and 48(32%) in the control group.

Most of them 132(88%) in the study group and 128(85.3%) in control group were from Hindu religion. Majority of the father 45(30%) in study group and 42(28%) in control group were unskilled worker. With regard to mother's occupation 120(80%) in the study group and 116(77.3) in the control group were house wife.

In context to the type of family 135(90%) of them in the study group and 124(82.7) of them in control group were belonging to Nuclear family. Majority of Nursing students 87(58%) in the study group and 81(54%) in the control group were residing at hostel.

In regards to the grading point average, most of them were belongs to D 48(32%) and average of E 52 (34.7%) in the study group and the control group respectively. In the aspect of learning resources, majority of them 64(42%) in the study group and 60(40%) in control group were studying by self. Most of the Nursing college students 107(71%) in the study group and 95(63%) in the control group sleep hours were <6hours.

1.2: Assessment of frequency and the percentage of the Pre & post-tests level of perceived academic stress among undergraduate students (N=300)

Level of Perceived Academic stress	Study group			Control group			Chi-Square and p value
	N	No.	%	N	No.	%	
1. Pretest							$\chi^2 = 0.231$ d.f = 1 p = 0.630 (N.S)
a. Moderate	150	52	34.7	150	56	37.3	
b. Severe		98	65.3		94	62.7	
2. Post Test 1							$\chi^2 = 3.001$ d.f = 1 p = 0.083 (N.S)
a. Moderate		81	54.0		66	44.0	
b. Severe	150	69	46.0	150	84	56.0	
3. Post Test 2							$\chi^2 = 64.655$ d.f = 2 p = 0.000 ***
a. Mild		38	25.3		5	3.3	
b. Moderate	145	93	62.0	143	61	40.7	
c. Severe		19	12.7		84	56.0	
4. Post Test 3							$\chi^2 = 111.596$ d.f = 2 p = 0.000 ***
a. Mild		104	69.3		8	5.3	
b. Moderate	143	42	28.0	140	59	39.3	
c. Severe		4	2.7		83	55.4	

Note: *** - $p < 0.001$ Level of Significant, N.S. – Not Significant

The above table elaborates the level of perceived academic stress in study and control group during Pre and Post- test I,II &III. With regards to the perceived academic stress, 52(34.7%) % of them are having moderate level, 98(65.3%) of them are having severe level of stress during pretest. In the control group 56(37.3%) of them are having moderate level of perceived academic stress, 94(62.7%) of them are having severe level. Chi-square test proved that there is no significant difference existed between the Pretest level of perceived academic stress among undergraduate nursing students in the study and control group.

During Post-test 1, 81(54%) of them are had moderate level of perceived academic stress, 69(46%) of them had severe level and none of them had mild level of stress score in study group. In the control group, 66(44%) of them are having moderate level of perceived academic stress, 84(56%) of them are having severe level. Chi-square test proved that statistically there is no significant difference between Post-test I level of perceived academic stress among undergraduate nursing students in the study and control group.

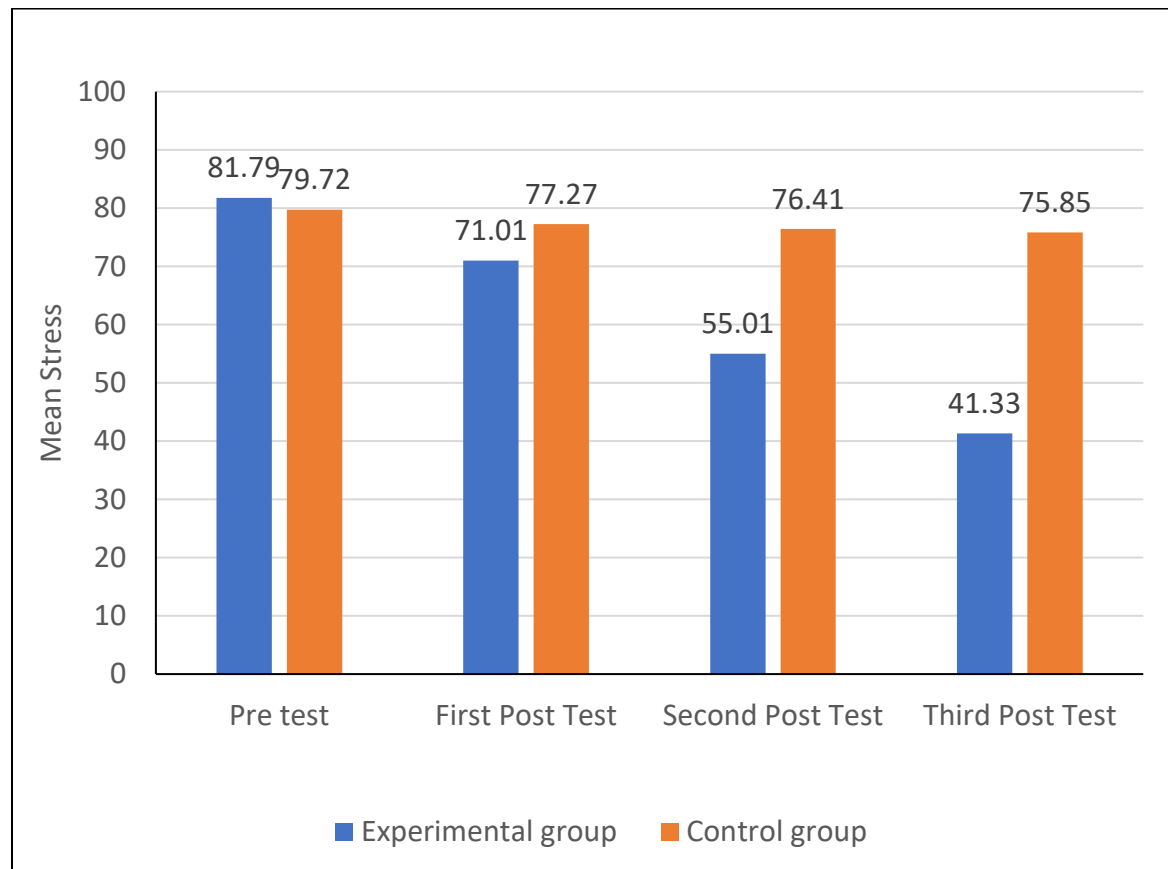
In the Post- test 2, 38(25.3%) of them had mild level of perceived academic stress, 93(62%) % of them had moderate level and 19(12.7%) were in severe level of stress score in Study group. In the control group, 5(3.3%) of them had mild level of perceived academic stress, 61(40.7%) of them were in moderate level and 84(56%) were in severe level of perceived academic stress score. Chi-square test proved that statistically there is significant difference at $p=0.000$ between Pretest II level of perceived academic stress among undergraduate nursing students in the study and control group.

In Post-test 3,104(69.3%) of them were in mild level of perceived academic stress, 42(28%) of them were in moderate level and 4(2.7%) had severe level of stress score in study group. In the control group, 8(5.3%) of them had mild level of perceived academic stress, 59(39.3%) of them were in moderate level and 83(55.4%) are in severe level of

perceived academic stress score. Chi-square test proved that statistically there is significant difference at $p=0.000$ between Pretest III level of perceived academic stress among undergraduate nursing students in the study and control group.

The data presented in table 1.2 shows that there is statistical significant difference was found among undergraduate nursing students in study and control group at $p=0.000$ in Post-test 2 and Post-test 3 respectively. This shows that Triangular nursing interventions session was an effective intervention to reduce the perceived academic stress among undergraduate nursing students, Hence Hypothesis was accepted.

Figure 1. Mean Stress score between Study and Control group from Pre to Post Test III among undergraduate Nursing Students



Data presented in figure 1 shows that mean pre-test PAS in regards to taking care of patients, the mean scores of undergraduate nursing students in the study and control group were 23.164±.16 and 22.31±5.75 respectively, the mean pre- test PAS-Teachers and Nursing staff scores in the study and control group were 16.794±.60 and 15.93±4.07 respectively, mean Pre- test PAS- Assignments and workload scores in study and control group were 16.25±2.74 and 16.56± 2.93 respectively, mean Pre- test PAS- Peers and daily life scores in study and control group were 10.89 3±.54 and 10.47 ±3.72 respectively, Pre -test PAS-Lack of professional knowledge and skills scores in study and control group were 7.91±1.31 and 7.69±1.36 respectively, Pre- test PAS- The environment scores in study and control group were 6.791±.19 and 6.761±.23 respectively and overall scores in study and control group were 81.79 1±3.19 and 79.72 16±.12 respectively.

**Table 1.36: Effectiveness of Triangular nursing interventions on Perceived Academic Stress among undergraduate Nursing Student for Study and Control Group
N=300**

Between Test	Study group			Control group			Independent t test and p value
	n	Effective Mean (SD)	Paired t test & p value	n	Effective Mean (SD)	Paired t test & p value	
1. Pre-test to Post-test 1	150	10.77 (13.14)	t = 10.041 p = 0.000 ***	150	1.00 (8.02)	t = 1.527 P = 0.129 (N. S)	t = 7.775 p= 0.003 (N.S)
2. Pre-test to Post-test 2	145	26.77 (20.44)	t = 16.042 p = 0.000 ***	143	1.86 (5.96)	t = 3.820 p = 0.017	t = 14.330 p= 0.000 ***

						(N.S)	
3. Pre-test to Post-test 3	143	40.46 (19.05)	t = 26.008 p = 0.000 ***	140	2.43 (6.33)	t = 4.699 p = 0.086 (N.S)	t = 23.203 p= 0.000 ***

Note: *** - $p < 0.001$ Level of Significant, N.S – Not Significant

Table 1.3 represents the mean perceived academic stress and standard deviation score of PAS among undergraduate nursing students between the study and control groups. During the pre-test, the mean PAS score was 10.77 with SD 13.14 in the study group. In the control group, the mean PAS score was 1.00 with SD 8.02. There was significant difference in the PAS score between the study group during Pre-test to Post-test I $p < 0.001$ whereas there was no significant difference in the PAS score between the control group during Pre-test to Post-test I at $p < 0.001$.

PAS score was 26.77 with SD 20.44 in the study group. In the control group, the mean PAS score was 1.86 with SD 5.96. There was significant difference in the PAS score between the study group during Pre-test to Post-test II $p < 0.001$ whereas there was no significant difference in the PAS score between the control group during Pre-test to Post-test I at $p < 0.001$.

PAS score was 40.46 with SD 19.05 in the study group. In the control group, the mean PAS score was 2.43 with SD 6.33. There was significant difference in the PAS score between the study group during Pre-test to Post-test III $p < 0.001$ whereas there was no significant difference in the PAS score between the control group during Pre-test to Post-test I at $p < 0.001$.

T test reveals that there is statistically no significant difference in PAS score during pre-test and post-test I ($P < 0.00$) between study and control group whereas there is a statistically significant difference in PAS score at post-test II ($P < 0.00$) and Post-test III ($p, 0.00$) between study and control group. This shows that Triangular nursing interventions is an effective intervention to reduce the perceived Academic stress among undergraduate Nursing students.

Table 1.4: Descriptive statistics for Perceived academic Stress of various Aspects among Undergraduate Nursing Students for Study and Control Group during Post-test III
N=300

Various aspects of PAS	Study group (n = 143)		Control group (n = 140)		Independent t test and p value
	Mean	SD	Mean	SD	
1. Taking care of patients	16.50	3.09	21.20	5.89	t = 8.652 p= 0.000 ***
2. Teachers and nursing staff	9.73	2.78	14.37	5.17	t = 9.685 p= 0.000 ***
3. Assignments and workload	4.48	5.75	13.97	6.35	t = 13.577 p= 0.000 ***
4. Peers and daily life	3.67	5.40	18.23	8.90	t = 17.127 p= 0.000 ***
5. Lack of professional knowledge and skills	5.35	1.74	6.78	2.08	t = 6.479 p= 0.000 ***
6. The environment	3.43	1.74	5.67	1.67	t = 11.394 p= 0.000 ***
Overall Stress	41.33	12.75	75.85	21.64	t = 16.834 p= 0.000 ***

Note: *** - $p < 0.001$ Level of Significant

Data presented in table 1.4 shows that the mean Post-test III score, PAS-Taking care of patients scores of undergraduate nursing students in the study and control group were 16.50 ± 3.09 and 21.20 ± 5.89 respectively, mean post- test III, PAS-Teachers and Nursing staff scores in the study and control group were 9.73 ± 2.78 and 14.37 ± 5.17 respectively, mean Post-test(III) PAS- Assignments and workload scores in study and

control group were 4.48 ± 5.75 and 13.97 ± 6.35 respectively, mean Post-test III PAS- Peers and daily life scores in study and control group were 3.67 ± 5.40 and 18.23 ± 8.90 respectively, Post-test III PAS-Lack of professional knowledge and skills scores in study and control group were 5.35 ± 1.74 and 6.78 ± 2.08 respectively, Post-test III PAS- The environment scores in study and control group were 3.43 ± 1.74 and 5.67 ± 1.67 respectively and overall scores in Post-test III of study and control group were 41.33 ± 12.75 and 75.85 ± 21.64 respectively.

Tables 1.5: Association between Perceived Academic Stress in Pre-Test with Demographic Variables for study Group among undergraduate Nursing Students (N=300)

Demographic variables	Pre-test Stress score (n=150)			F and t value and p value
	No.	Mean	SD	
1. Age in years				
a. 17-19 years	78	88.47	6.52	F= 31.770 p = 0.000 ***
b. 20-22	40	77.03	13.40	
c. above 23 years	32	71.44	15.89	
2. Residence				
a. Urban	126	83.05	12.822	t = 1.597 p = 0.112 (N.S)
b. Rural	24	79.47	13.657	
3. Year of study				
a. I year	49	90.67	5.83	F = 24.491 p = 0.000***
b. II year	32	85.28	5.92	
c. III year	40	74.75	13.52	
d. IV year	29	72.62	16.25	
4. Education				
a. No formal Education	34	85.05	10.34	F= 0.864 p = 0.487 (N.S)
b. Primary Education	39	79.45	13.75	
c. Secondary Education	44	80.80	13.35	
d. Hr. Sec. Education	19	83.65	13.77	
e. Collegiate	14	82.50	13.41	
5. Religion				
a. Hindu	132	81.82	13.27	F= 0.134 p = 0.875 (N.S)
b. Christian	15	79.88	12.15	

c. Muslim	3	83.50	14.66	
6. Occupation of Father				F= 1.094
a. Unemployed	11	87.00	11.93	p = 0.362 (N.S)
b. Self-employed	41	80.17	12.98	
c. Unskilled	45	80.53	13.56	
d. Non-professionals	39	81.56	12.83	
e. Professionals	14	85.63	13.88	
7. Occupation of Mother				t = 0.810
a. Housewife	120	81.35	13.35	p = 0.244 (N.S)
b. Working mother	30	83.53	12.60	
8. Type of family				t = 1.107
a. Nuclear	135	81.40	13.29	p = 0.270 (N.S)
b. Joint	15	85.50	12.03	
9. Type of stay				t = 0.619
a. Hostel	87	81.22	13.71	p = 0.537 (N.S)
b. Day Scholar	63	82.57	12.50	
10. Grading point average				F = 1.010
a.91-100	5	74.73	13.49	p = 0.405 (N.S)
b.81-90	5	84.20	12.79	
c.71-80	20	81.83	12.79	
d.61-70	48	81.95	13.72	
e.51-60	42	82.75	12.62	
f.<50	30	80.32	13.01	
11. Learning Resources				F = 1.194
a. Friends	31	83.08	10.53	p = 0.314 (N.S)
b. Self	40	80.32	14.24	
c. Library	15	81.17	12.88	
d. Online	64	85.76	11.90	
12. Sleep Hours				F = 8.667
a.<6 hours	107	74.58	13.96	p = 0.000 ***
b. 6 to 8 hours	32	85.57	11.01	
c. >8hours	11	81.21	13.67	

Note: *** - $p < 0.001$ Level of Significant, N.S. – Not Significant

Table 1.5 describes the association between Perceived academic stress and demographic variables in Pre test of Study group.

The chi-square test was used to find out the association between Perceived academic stress and demographic variables in Pre-test of Study group. Results revealed that age, year of study and Sleep hours were statistically significant at $p < 0.001$ and other variables were not significant

Table 1.6: Association between Perceived Academic Stress in Post-Test III with Demographic Variables for Control Group among Undergraduate Nursing Students (N=300)

Demographic variables	Third Post-test Stress score (n=140)			F and t value and p value
	No.	Mean	SD	
1. Age in years				
a. 17-19 years	69	86.50	18.81	F= 23.123 p = 0.000 ***
b. 20-22	35	71.25	11.36	
c. above 23 years	36	61.16	24.88	
2. Residence				
a. Urban	110	75.93	21.35	t = 0.051 p = 0.959 (N.S)
b. Rural	30	75.75	22.15	
3. Year of study				
a. I year	40	91.34	17.26	F = 23.412 p = 0.000 ***
b. II year	40	77.67	14.93	
c. III year	38	64.32	15.44	
d. IV year	22	59.09	26.92	
4. Education				
a. No formal Education	29	73.44	24.00	F= 0.782 p = 0.539 (N.S)
b. Primary Education	30	72.72	21.61	
c. Secondary Education	45	79.89	20.45	
d. Hr. Sec. Education	16	74.92	24.23	

e. Collegiate	20	80.25	15.15	
5. Religion				F = 6.651
a. Hindu	120	78.13	20.43	p = 0.002 **
b. Christian	16	56.17	22.63	
c. Muslim	4	68.25	25.30	
6. Occupation of Father				F = 1.399
a. Unemployed	10	69.30	19.42	p = 0.237 (N.S)
b. Self-employed	40	73.34	21.27	
c. Unskilled	42	79.02	20.99	
d. Non-professionals	26	81.38	24.06	
e. Professionals	22	70.82	20.31	
7. Occupation of Mother				t = 1.034
a. Housewife	110	76.30	21.76	p = 0.303 (N.S)
b. Working mother	30	74.29	21.47	
8. Type of family				t = 0.035
a. Nuclear	120	76.48	20.91	p = 0.977 (N.S)
b. Joint	20	70.56	27.22	
9. Type of stay				t = 1.876
a. Hostel	79	71.99	21.77	p = 0.082 (N.S)
b. Day Scholar	61	78.38	20.73	
10. Grading point average				F = 0.845
a. 91-100	7	67.57	21.20	p = 0.499 (N.S)
b. 81-90	4	73.83	22.53	
c. 71-80	25	77.36	20.75	
d. 61-70	40	75.69	23.85	
e. 51-60	45	81.50	18.65	
f. <50	19	80.01	18.36	
11. Learning Resources				

a. Friends	36	79.61	22.13	F = 0.386 p = 0.763 (N.S)
b. Self	30	74.77	21.55	
c. Library	19	76.55	19.81	
d. Online	55	74.30	23.95	
12. Sleep Hours				
a.<6 hours	92	69.96	21.43	F = 1.482 p = 0.230 (N.S)
b. 6 to 8 hours	33	78.25	21.12	
c. >8hours	15	75.40	22.32	

Note: ** - $p < 0.01$, *** - $p < 0.001$ Level of Significant, N.S. – Not Significant

Table 1.6 describes the association between Perceived academic stress and demographic variables in Third Post-test of control group. The chi-square test was used to find out the association between Perceived academic stress and demographic variables in Third Post-test of control group. Results revealed that age, year of study and religion were statistically significant at $p < 0.001$ and other variables were not significant.

Table 1.7: Repeated Measures ANOVA Results of Perceived Academic Stress Score for more than two time measures among undergraduate Nursing Students for study and Control Group (N=300)

Stress score for repeated measures	Study group				Control group			
	N	Mean	SD	95% C.I.	N	Mean	SD	95% C.I.
1. Pre-test Stress	150	81.79	13.19	79.7 – 83.9	150	79.72	16.12	77.1 – 82.3
2. First Post-test Stress	150	71.01	14.75	68.6 – 73.4	150	77.27	18.43	74.3 – 80.2
3. Second Post-test Stress	145	55.01	16.75	52.3 – 57.7	143	76.41	18.52	73.4 – 79.4
	143	41.33	12.75	39.3 – 43.4	140	75.85	21.64	72.4 – 79.3

4. Second Post-test Stress								
Repeated Measures ANOVA Lambda Test	Wilks' Multivariate	F = 223.272 p = 0.000 (Significant at p<0.001)			F = 13.578 p = 0.000 (Significant at p<0.001)			

Table 1.7 displays the repeated measures of PAS over a period of time among undergraduate nursing students between the study and control groups. A decrease in the mean scores of PAS was prominent in each test than the previous test in the study with mean scores remaining same in the control group. The mean score of the PAS between the groups showed a decrease in the mean scores of the PAS in the study group than the control group which was statistically significant at $p < 0.001$.

DISCUSSION

Nurses are the backbone of health-care system and to be a proficient nurse, it needs hours and days of extensive training since the 1st day of nursing school or college. Within the whole duration of training, nursing students are often subjected to stressful situations. Varied stressors such as academic expectations, adjustment to college and hostel life, separation from family, dealing with different kinds of patients put a great threat on the health of the students.

Stress is defined as a highly individualized response to a stressors (Lazarus & Folkman 1984). In this study, stress is the students' subjective response to the stressors within the clinical environment.

Stress during nursing training is also propounded by role transition, role demand, and ambiguity. Academic stress has a negative physiological and social impact on students and may affect their learning and overall performance. Nursing is a very challenging profession, which requires very stringent training since initial years of nursing education. Throughout the training period, students are exposed to various stressful situations.

Inability to cope up with varied stressors may lead to psychological distress and impede students' pursuits of nursing career.

Characteristics of the samples

In regard to the age of the students, in the study group 78(52%) and 72(48%) in the control group were in the age group of 17-19 years and, nearly two third of them 40(26.7%), and 40(26.7%) in the study group were in the age group of 20 and 22 years respectively and in the control group, 38(25.3%) and 32(21.3%) were in the age group of above 23 years respectively. During the adolescent period, they undergo many psychological and physiological changes making them more prone to various stressors. The current findings are supported by the study done by Maj, I.D. & Meena, C. (2016), to assess the stressors among Basic B.Sc. nursing students. The findings revealed that the major types of stressors for the students at the age of 17-20 and 21-24 years are clinical and academic stressors and the mean stress score was 5.96.

In context to the gender, all the samples in the control 150(100%) in study group were females. The researcher points out the reason for the majority of the students being girls in two groups. It is because girls mostly prefer the nursing profession than boys, and also, the adolescent's girls are found to perceive negative interpersonal events as more stressful than the boys. This was similar to a study conducted by Nandini, P. and Indeira, P. (2016), who expressed the relationship between demographics and stress 105 levels, stressors and coping mechanisms among college students which interpreted that 75% (n=70) of females experienced academic stress.

Maximum nursing students 87(58%) in the study group and 81(54%) in the control group were staying at hostel and 63(42%) in the study group and 69(46%) in the control group were days scholar. 52(34.7%) in the control group and 42(28%) in the study group were scoring E grade (51-60%) and few Nursing students 5(3.3%) in the study group and 7(4.6%) in the control group were scoring A (91-100%) grade.

In the category of sleep hours, the majority of the samples in the study group, 107(71.4%) and 95(63.3%) in the control group had the habit of sleeping for less than 6 hours whereas 11(7.3%) in study group and 16(10.7) in control group had the habit of sleeping for more than 8 hours. The current finding is supported by the study done by Mohammadi, A. (2018) which stated that there is a positive and significant correlation between academic performance and study habits. In addition to this finding is consistent with the study done by Alimohamadi, N. (2018), to identify nursing student's sleeping in relation to study habits and its relationship with academic performance which revealed that there was a significant positive correlation between the mean score sleep habits and academic performance.

The first objective of the study was to assess the pre and post-test level of perceived academic stress and coping strategies in study and control group of undergraduate nursing students.

In pre-test level of Perceived academic stress, majority 98(65.3%) had severe and 52(34.7%) had moderate level of perceived academic stress in study group. Likewise, 94(62.7%) had severe and 20(20%) had moderate stress in control group. Interestingly, none of them had mild level of Perceived Academic stress. This may be due to lack of awareness about the measures to overcome the Perceived academic stress by the students. However, in the study group, after the TNI, nearly three fourth of them 104(69.3%) experienced mild level of academic stress, only few 42(28%) had moderate level, 4(2.7%) reported severe perceived academic stress. Therefore, these 104 findings proved that there is a significant decrease in the level of perceived academic stress among undergraduate nursing students after TNI. So, the TNI technique is undoubtedly effective in reducing the intensity of Perceived academic stress. The findings also suggest that it would be wise for the faculty to implement TNI weekly once for the nursing student with academic stress and motivate and guide to make use of the strategies to overcome the academic stress at the earliest stage. The current study findings are congruent with the following research

findings of Viji, P. et al., (2013) who assessed the level of stress and coping mechanism among 60 first year B.Sc. nursing students and the results revealed that only one student (1.7%) had severe stress, 46.7% had moderate, and remaining 51.6% had mild stress. Additionally, current study findings are also similar with research carried out by Rajesh, K., Nancy, (2018) to find out the stress and coping strategies among 180 nursing students and the results show that there was low (25%), moderate (50%) and severe (75%) stress levels. It also revealed that 62 (34.4%) had moderate stress whereas 59 (32.8%) and 59 (32.8%) fall in the category of low and high stress respectively. From this current research findings researcher concluded that, although it is less intense, perceived academic stress is present for the undergraduate nursing students. This may be related to the fact that the student, whilst entering into the higher semester, may face a process of adaptation to adulthood, becoming more independent and responsible.

The second objective of the study was to evaluate the effectiveness of Triangular Nursing Interventions on perceived academic stress in study and control group of undergraduate nursing students

Analysis of the data reveals the mean and standard deviation of pre and post-test scores of the study group that the mean difference 40.46% of effectiveness was found with the mean score (10.77 ± 13.14) and (40.46 ± 19.05) respectively in the aspect of level of Perceived academic stress. Apart from this, findings also shows that pre and post-test calculated 't' value was 26.008 which is larger than p value at 0.001 level in the study group. Whereas, in the control group, the calculated 't' value 4.699 is lesser than the p value at 0.001 level. Results shows that there is a statistically high significant difference between pre and post-test level of perceived academic stress in the study and control group. So, TNI technique was significantly effective in decreasing the academic stress of the nursing students.

The third objective of the study was to evaluate the effectiveness of Triangular Nursing Intervention on academic stress and performance between the study and control group of undergraduate nursing students.

Findings of this study is explained with the unpaired 't' test, the mean and standard deviation of study group of pre and post-test scores reveals that mean difference - 48.43 of effectiveness was found with the mean score (108.4±8.84) and (60.72±22.40) in the aspect of academic stress. The calculated 't' value was 19.81 which is greater than p value at 0.0001 and shows that there is statistically high significant difference in the post test level of academic stress between the study and control group

Thus, it infers that the study group had higher score in comparison with the control group. These finding shows that there is a significant decrease in the level of perceived academic stress among students in the study group than the control group. This proves that the TNI is effective in reducing the level of academic stress. The findings from the current study are congruent with results from the study conducted by Sneha, P. Ranjana, T. Dhanya, N. (2014), through a pre-experimental study to assess effectiveness of selected interventions on stress level among 40 nursing students of Bharati Vidyapeeth college of nursing, Pune and the findings of the study shows that, majority that is 65% of the nursing students had mild (score 0-24), 32.5% of them had moderate (score 25-48) and 2.5% of them had severe stress (score 49-72) before intervention. In post-test, majority of 92.5% of them had mild (score 0-24) and 7.5% of them had moderate stress (score 25-48). This shows that there is remarkable decrease in the symptoms of stress level of the nursing students.

Susan Bublitz (2016) aimed at investigating the association between the stress levels of nursing students and their sociodemographic and academic characteristics. This quantitative, analytical and cross-sectional study was conducted in four Brazilian higher education Institutions. Data were collected from April 2011 to March 2012, using a

sociodemographic and academic tool form for the students and the Assessment of Stress Among Nursing Students. This study showed that education is assessed as a stressor and that there is an association between the nursing students' characteristics and the stress level.

Regarding the associations, statistically significant differences between stress and the following variables were observed: age group, work activity, satisfaction with the course and whether the student has already thought of dropping out of the course. Once the academic and socio demographic characteristics of the nursing students and their stress levels are known, one can contribute to propose measures that minimize the effects of stress on these individuals. Moreover, once stress is minimized it is expected that students will have improved academic performance, less distress and more satisfaction by the time they enter the work market since the experiences the students had during their academic education are similar to those they face and professional life.

The study was similar with findings of Acta Paul Enferm (2017) conducted a study on stress in nursing students, socio-demographic and academic vulnerabilities. The aim of this study was to analyze the association between the presence of stress in nursing study and socio-demographic and academic vulnerabilities. The result of this research study among all students 64% presenting stress with the stress following associated factor sex $p < 0.010$, age group $p < 0.029$, mental status $p < 0.001$, cost of children $p < 0.001$, occupational status $p < 0.001$, cost of education $p < 0.009$ and current study period $p < 0.001$. The study concludes that women, students with partners, and those in the final year of study were more likely to have stress.

CONCLUSION

This study showed that Triangular nursing interventions influenced Perceived academic stress of Undergraduate nursing students. Multivariate results indicated that significant interaction did occur between these dependent variables and independent variable. In comparison with the control group, students who received the Triangular nursing interventions had lower scores of PAS.

The majority of nursing students presented medium stress levels, followed by high stress levels. This finding is similar to that of other studies and deserves attention from the parties involved in the teaching-learning process of nursing students since high levels of stress can interfere negatively in the process and in the students' health.

Experiences during clinical practices have caused positive and negative emotions in students. Negative emotions were experienced more than positive emotions. Seeing patients recover due to the care provided, being responsible for care caused students to experience several positive emotions such as happiness, conscience, and belonging. However, students experienced emotions such as anger, sadness, helplessness, anxiety, hopelessness, and inadequacy when nurses do not act responsibly during patient care and do not show the necessary attention, nurses do not consider the student, and patients do not trust the student nurse. The emotions experienced by the students in the clinic have several physical, psychological, social, and academic effects. Psychological effects were experienced as anxiety and fear, academic effects were experienced as motivation and professional development, physical effects were experienced as health problems such as high blood pressure, gastric ulcer, and social effects were experienced as misunderstanding and awareness.

It is important to recognize that addressing the academic and psychosocial factors associated with academic stress. It requires collaboration and coordination among various stakeholders, including mental health professionals, policymakers, educators, and community

organizations. By working together, we can implement comprehensive strategies that target the underlying determinants of suicidal behavior and promote mental well-being.

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