The Effect of Stress on Distance Learning Nursing Degree Students: A Cross-Sectional Study

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ABSTRACT

Nursing is acknowledged to be a stressful profession worldwide. Being a nurse and a student at the same time is a considerable challenge. Many part-time students experienced stress as they complete their studies. This study aims to investigate the level of stress among e-PJJ nursing degree students. It also seeks to identify the causes and effects of stress on the students. This study applied a quantitative cross-sectional study design. Purposive sampling was used to select the target population of 96 e-PJJ nursing degree students at UiTM Selangor, Puncak Alam campus. The participants included all nursing degree students who were enrolled in a flexible learning course. This study was conducted between January 2019 and January 2020. The study showed most of the respondents had mild stress to severe stress. Headache was identified as the most common effect of stress, while the less common effect is drastic weight loss. Two significant academic factors, feeling stressed as the submission deadline neared and sitting for the examination, were the most influential in causing stress. The one-way ANOVA found statistical differences between the number of children and the stress level. A Tukey post hoc test revealed that those with two children have a significantly higher level of stress, followed by those with one child and those with four children. In conclusion, this study found that most e-PJJ nursing degree students experienced stress, mainly at a low level. Well-managed stress is essential in ensuring part-time students can succeed both in their work and studies.

1. INTRODUCTION

Nursing education in Malaysia is undergoing continuous major transformation at a more advanced level. Implementation and constant professional development practices are seen as an advancement of practice in the nursing profession. On the other hand, with the support of higher authority, there have been many universities that offer undergraduate courses in nursing with flexible study time or part-time distance study. This career advancement does not come easily. A lot of hard work and sacrifice are contributed to achieving success. It should be noted that previous studies have indicated that the undergraduate nursing education system is evident in putting students through a stressful phase (Brown et al., 2016).

Distance learning or part-time students involved in this profession deal with stress in the workplace and their studies. It is clear from the extensive evidence in the literature that nursing is acknowledged to be a stressful profession worldwide (Lim et al., 2010). The research study by Ugwoke et al. (2018) also found that academic stressors are consistently highly ranked in studies where participants are associated with packed schedules, busy juggling study, and work-life, including extracurricular activities. These activities can take a toll on the physical and mental health of the students, mainly if they do not get enough rest or sleep. If left untreated, these stressors can compound over time, leading to even greater levels of stress. There is ample evidence supporting the pressure of working and studying at the same time. Preparing for examinations and acquiring professional knowledge, skills, and attitudes were reported as the most stressful aspects of the medical or health profession training by Kulsoom (2015) as many skills and knowledge need to be acquired in a short period.

Stress is produced through an individual's interaction with their environment due to their evaluation of their ability to cope with a demanding situation that exceeds the resources available to them, thus endangering their physical, psychological, and emotional well-being (Lyon, 2012). Stress may result in adverse health effects, low achievement in their studies, and low job performance. Previous studies have indicated that one-third of all college students ranked "stress" as the highest health affecting symptoms which caused anxiety, depression, and poor sleeping pattern (Ugwoke et al., 2018). Stress in students occurs when they need to juggle between work and studies, where both aspects require goals and objectives that need to be met quickly. Apart from that, identifying stressors and the stress level is very important in maintaining a part-time student's lifestyle. Evans et al. (2007) reported that previous studies showed that preparing assignments for submission and juggling between work commitments and study were items with the highest stress ratings with 94.0% and 92.9%. Other potential stressors included workload, completing assignments (51%), and the writing demands at the necessary academic level (32%). In addition, headache and sleep disturbance were the most common symptoms of stress. People are usually unaware and do not notice that they are under stress until it is too late, as the signs may not be obvious initially. In maintaining a healthy lifestyle, it is vital to be aware of and notice all stress symptoms from the beginning and treat them with appropriate stress coping methods.

Stress among nurses is evident in the literature on nursing, but there is little information on the specific stressors that affect registered nurses undertaking further academic studies (García & Ayala, 2017). Therefore, this study aims to investigate the level of stress among e-PJJ nursing degree students. It also seeks to identify the main stressors that contribute to stress among e-PJJ nursing degree students. Knowing the symptoms of stress and the factors that may predispose to stress could help students reduce or prevent stress-related incidences. Early detection could be made so that prevention and coping measures can be taken.

2. METHOD

2.1 Study Design, Location, and Sampling

This study was based on a quantitative cross-sectional study design. The study was conducted at the Faculty of Health Sciences, UiTM Selangor, Puncak Alam campus. The targeted population for this study was the e-PJJ nursing degree students. In this study, the operational definition for e-PJJ is an e-learning system that offers working adults to engage in a distance learning programme. A purposive sampling method was used where 96 students were chosen from a sample of students in total. Each of the respondents was selected according to each group's name list according to inclusion criteria and asked whether they are willing to participate in this study or not.

Sampling size was determined using the formula table develop by Krejcie and Morgan (1970). Based on the formula table, the sample size required is 96 students. Ethical clearance had been obtained from Research Ethics Committee UiTM: 600-IRMI (5/1/6). All the respondents who took part in this study were given a subject information sheet and consent before distributing the questionnaire. The study protocol, including the documentation data and all other information generated, is strictly confidential. No information will be released to any unauthorized third party without prior written approval.

2.2 Research Instrument

A two-section questionnaire was used for data collection. Section A was to gauge demographic data. It consists of six questions to gather respondents' demographic data, including gender, age, marital status, number of children, monthly income, and current semester. Section B presented the Student Stress Inventory (SSI), with 40 items adapted from Mohamed Arip (2016). The SSI consisted of two-part; Part I measured the effect of stress, consisting of 10 items, while Part II consists of three subscales to determine the level and cause of stress among students. The three subscales are Interpersonal Relationship, Academic, and Environmental. Each part was measured using the Likert scale where the designed ordinal scale of "Never-1," "Somewhat Frequent-2," "Frequent-3," and "Always-4" is used. The value mark given for each choice is 1 for "Never," 2 for "Somewhat Frequent," 3 for "Frequent," and 4 for "Always." Finally, scores for all items will be calculated to see which subscale gave the highest scores. All scores for each subscale will be totalled to determine the stress level. It is suggested that those who obtained a score between 122 to 160 reflected having "severe stress," whereas a score between 81 to 121 reflected having "moderate stress," and those who obtained a score of 40 to 80 were having "mild stress." The administration process took approximately 15 to 20 minutes.

2.3 Statistical Analysis

Data collected was analysed by using IBM SPSS version 25.0. Demographic data, stress level, causes, and effects of stress were analysed using descriptive statistics with means, standard deviations, frequencies, and percentages. Independent t-test and one-way ANOVA were used to determine the relationship and differences between sociodemographic factors with the level of stress. The accepted significance was set at $p<0.05$.

3. DATA ANALYSIS AND RESULTS

3.1 Demographic Data

As shown in Table 1, the highest percentage of participation in this study was 89 females (93%), followed by seven males (7%). Most of the participants were those in the age range of 31-40, with 65 (68%) participants. Besides that, more than half of the participants were married, with 63 (66%) participants and only 2 (2%) were widowed. A total of 51 (53%) participants has one child, and only 4 (6%) have more than five children. Most of the participants in this study have a monthly income between RM 4,000.00-6,000.00 (58%).

Table 1. Sociodemographic Characteristics of e-PJJ Nursing Degree Students

Demographic	Frequency	%
Gender		
Male	7	7
Female	89	93
Age		
20-30	25	26
31-40	65	68
41-50	5	5
≥ 51	1	1
Marital status		
Married	63	66
Single	31	32
Widowed	2	2
No. of child		
1	51	53
2	26	27
3	9	9
4	6	6
5 ≥	4	4
Monthly income (MYR)		
1000 - RM3000	36	38
4000 – RM6000	58	60
7000 – RM9000	2	2
≥ 10000	0	0

3.2 Stress among e-PJJ Nursing Degree Students

The results from the Student Stress Inventory (SSI) for this study are shown in Table 2. The total mean (SD) score for SSI was 74.79 (16.79), whereby the maximum score was 128, and the minimum score was 40.

Table 2. Level of Stress among e-PJJ Nursing Degree Students (N=96)

Variable	Mean	SD	Min	Max
Total Score SSI	74.79	16.79	40	128
Subscale score				
Physical	18.57	4.71	10	29
Interpersonal Relationship	15.33	4.73	10	35
Environment	20.82	6.52	10	36
Academic	20.05	5.85	10	36

Table 3 shows the level of stress by categories. The result showed that the majority of students have *"mild stress"* 67.7% (n=65), followed by *"moderate stress"* with 29.2% (n=28), and only 3.1% (n=3) of the students experienced *"severe stress."*

Table 3. Level of Stress among e-PJJ Nursing Degree Students (*N*=96)

Level of Stress	Frequency (*n*)	Percentage (%)
Mild	65	67.7
Moderate	28	29.2
Severe	3	3.1

3.3 Effect of Stress among e-PJJ Nursing Degree Students

Table 4 presents the responses on the effect of stress. The result obtained indicated that *"headache"* is the most significant effect of stress, with a mean (SD) score of 2.36 (0.88). Also, students indicated other physical symptoms, including *"back pain"* with a mean score of 2.31 (0.87), *"constant tiredness or fatigue"* with a mean of 2.16 (0.86), and *"sleep problem"* with 2.10 (0.92). The three lowest mean (SD) score was for *"sweating or sweaty hands"* with a mean score of 1.53 (0.632), *"difficulty breathing"* with a mean score of 1.38 (0.72), and *"drastic weight loss"* with a mean score of 1.34 (0.72).

Table 4. Mean and Frequency Effects of Stress for Each Item (*N*=96)

Effect of Stress	Mean	SD	Frequency			
			Never	Somewhat Frequent	Frequent	Always
Total Effect of Stress	18.57	4.71				
Subscale effect of stress						
Physical Symptoms						
Headache	2.36	0.88	14	45	25	12
Back pain	2.31	0.89	14	51	18	13
Sleep problem	2.10	0.92	27	41	19	9
Difficulty breathing	1.38	0.72	71	16	7	2
Excessive worry	2.03	0.83	26	46	19	5
Stomach pain and nausea	1.56	0.74	56	26	14	0
Constant tiredness or fatigue	2.16	0.86	20	50	17	9
Sweating or sweaty hands	1.53	0.63	52	37	7	0
Frequently cold	1.79	0.83	43	32	19	2
Drastic weight loss	1.34	0.72	75	11	8	2

3.4 Main Causes That Lead to Stress among e-PJJ Nursing Degree Students

Table 5 shows the causes of stress among the e-PJJ nursing degree students. It is clear that the highest causes of stress from the *"Interpersonal Relationship"* subscale are for item "I feel guilty if I fail to fulfil my parent's hope," which was 63.5 %. The lowest percentage was for the item *"My families are not supportive,"* with 13.5%. Thus, these findings show that the majority of the students feel obliged to fulfil their parents' aspirations and will most likely strive to achieve them causing additional stress even though their families are supportive. Furthermore, for the *"Environmental"* subscale, the highest percentage was 90.6% for item "I feel scared being in an insecure place," and the lowest percentage is 21.9% for item *"I have a transportation problem."* These findings revealed how well the e-PJJ students are at adjusting to the social environment and how high or low their resiliency level is. However, for the *"Academic"* subscale, the findings showed that most e-PJJ students, or 90.6% of them, agreed with the item

"I feel stressed as the submission deadline neared," and the lowest percentage is for item *"I lost interest in the course"* at 43.8%. For academic causes, these findings show whether the e-PJJ students are high or low achievers, possess high or low self-motivation, and are poor or good in time management.

Table 5. Causes of Stress among e-PJJ Nursing Degree Students

Item	Frequency	(%)	Rank
Interpersonal Relationship			
I feel guilty if I fail to fulfil my parent's hope	61	63.5	1
My parents wish only for my success	61	63.5	1
I feel frustrated by the lack of faculty management	40	41.7	2
I find it difficult to meet my parent's high expectation	40	41.7	2
My parents treat me as a helpless person	36	37.5	3
I find it difficult to get along with group mates in doing the academic task	36	37.5	3
I feel disturbed when having a problem with my boyfriend/girlfriend	28	29.2	4
My friends did not care about me	24	25	5
My lecturers/teachers are not supportive	22	22.9	6
My families are not supportive	13	13.5	7
Environmental			
I feel scared being in an insecure place	87	90.6	1
Crowding makes me feel uneasy	77	80.2	2
Hot weather makes me avoid going out	76	76.2	3
Messy living conditions distracted me	73	76.0	4
Pollution makes me uneasy	68	70.8	5
Waiting in a long line makes me feel uneasy	66	68.8	6
The surrounding noise distracted me	52	54.2	7
I feel frustrated with inadequate campus facilities	45	46.9	8
I feel stressed with the bad living condition of my home	21	21.9	9
I have a transportation problem	21	21.9	9
Academic			
I feel stressed as the submission deadline neared	87	90.6	1
I feel stressed to sit for the examination	87	90.6	1
I feel nervous delivering the class presentation	77	80.2	2
I feel stressed dealing with difficult subjects	76	79.2	3
I feel burdened by academic workloads	70	72.9	4
I feel difficulty in handling my academic problem	65	67.7	5
I find it difficult to juggle time between study and society involvement	61	63.5	6
I have a financial problem because of the expenses of the university	58	60.4	7
I find it difficult to juggle time between study and social activity	56	58.3	8
I lost interest in the course	42	43.8	9

3.5 Sociodemographic Factors and the Level of Stress.

An independent t-test was conducted to compare the demographic factors versus the level of stress. Table 6 presents the finding that there were no significant differences in the stress levels of males with a mean of (SD) of 75.66 (24.9) and female 76.68 (15.7), $t(94)= 0.176$, $p> 0.05$. A one-way ANOVA was conducted to compare the differences in the level of stress with age, marital status, number of children, and monthly income. However, the result showed no significant differences between these variables, in which the p-value >0.05. However, there were statistical differences between the number of children as determined by one-way ANOVA [$F (4, 91) = 8.062$, $p=0.000$]. A Tukey post hoc test revealed that those who have two children have a significantly higher level of stress with a mean (SD) of 87.80 (19.7), followed by those who have one child 71.92 (11.4), and four children 60.0 (11.0). There is no significant difference between those who have three, five, or more children. This shows that students with two children experience a significantly higher stress level than those with different numbers of children.

Table 6. The Relationship between Sociodemographic Factors with the Level of Stress

Demographic (*n*)	Mean (*SD*)	*t*-statistics (df)	*p-value*
Gender			
Male	(75.66, 24.9)	0.176 (94)	0.860[a]
Female	(76.68, 15.7)		
Age (years)			
20-30 (25)	80.20 (14.5)		
31-40 (65)	72.68(17.3)	1.427 (2,92)	0.240*
41-50 (5)	72.80 (18.0)		
≥ 51 (1)	87.00 (0.00)		
Marital status			
Married (63)	76.88 (18.4)		
Single (31)	71.09 (12.9)	1.534 (2,93)	0.221*
Widowed (2)	66.00 (0.00)		
No. of child			
1(51)	71.92 (11.4)		
2 (26)	87.80 (19.7)		
3 (9)	68.11 (17.28)	8.062 (4,91)	0.000***
4 (6)	60.00 (11.0)		
5 ≥ (4)	64.00 (13.9)		
Monthly income			
RM1000 - RM3000 (36)	79.47 (14.6)		
RM4000 – RM6000 (58)	72.24 (17.7)	2.523 (2,93)	
RM7000 – RM9000 (2)	64.50 (0.71)		0.086*
≥ RM10000 (0)			

an independent t-test
*one-way ANOVA
***Post hoc analysis: Students with two children perceive stress at a significantly higher level than those with a different number of children.

Figure 1 shows that those respondents with two children perceived stress at a visibly higher level than those with a different number of children.
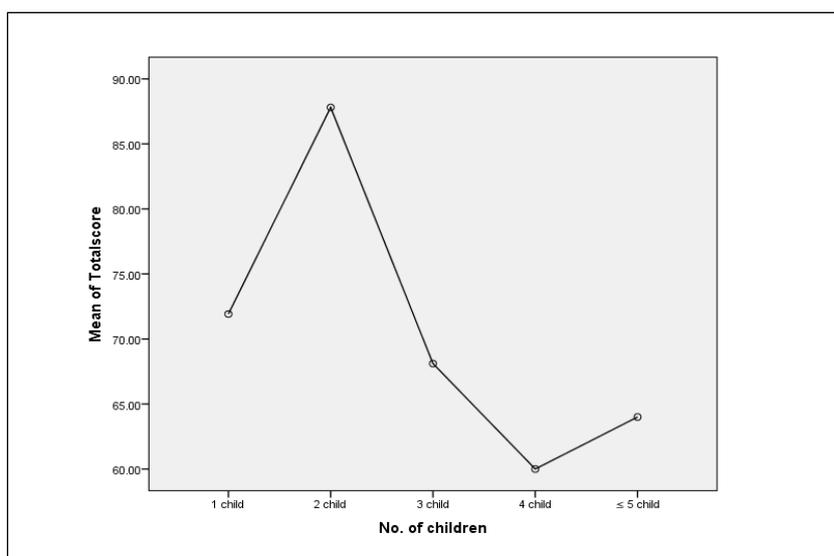

Figure 1. Means Plot of Total Score to Numbers of Children

4. DISCUSSION

The study aims to determine the stress level, causes, and effects among e-PJJ nursing degree students. For the level of stress, it was found that most students do experience stress, and the majority of them just experienced mild stress. These findings are quite similar to what has been found previously by Waghachavare et al. (2013). Researchers found that only 24.4% of respondents perceived stress, and only 14.4% experienced moderate to severe stress. These show that student stress is a common problem in student life. From this study, researchers can conclude that students can manage stress well as most of the students only perceived mild stress. Even though stress was not so prominent, the stress is still there, perceived at a lower level. Only a few students experienced moderate and severe stress compared to mild stress. However, untreated stress could worsen in time, and the degree of stress can intensify. Stress that persists for an extended period may negatively affect students' academic achievement and health status. By 2020, the World Health Organization predicts that stress-related diseases would be one of the top causes of disability.

This study has shown that stress affects students primarily by giving them *"headaches"* and *"back pain,"* where more than 80% of the students experienced them during stress. The finding is consistent with past studies by Evans et al. (2007) and Lyon (2012), which reported that headache is the most common problem due to stress. Moscaritolo (2009) presented *"excessive worry"* as the most common effect, followed by "*headache"* and *"sleep problems,"* and she also found that only 71.9% of students experience sleep problems, while *"excessive worry"* stands at 72.9% and "constant tiredness or fatigue" at 79.2%. These four significant problems are the most common effect of stress found in this study. In contrast, the least common effects were *"breathing difficulties"* and *"drastic weight loss,"* where only 26.0% and 21.9% of students experienced them, respectively. This study found that most of the stresses were caused by academic factors where most of them felt stressed when the submission deadline of assignments neared and when they must sit for the examination.

A study by Abd El-Aziz et al. (2019) pointed out that most nursing students reported experiencing moderate stress due to transportation, academic, interpersonal, and social factors. This study found that environmental factors were among the main contributors, academic and interpersonal relationship factors. These findings also support the result from the study by Sahari et al. (2012), which concluded that the environmental factor is the major contributing factor in stress on students, especially part-time students. The authors also mentioned that uncomfortable living conditions at home were among the main factors contributing to stress among students. In this study, *"feeling scared being in an insecure place"* was at the top rank of the environmental factor. In contrast, *"bad living condition at home"* shares the lowest rank with the "*transportation problem."* The environment plays a significant role that affects the students' stress level as one's life is affected by their surrounding environment, which was also consistent with the findings of Essel and Owusu (2017). Changing of living or surrounding environment can also cause some stress to the students. As an e-PJJ student, adjustments to the environment, living conditions, or lifestyle might need to be made to meet study requirements. Some students learn to adapt to a new environment, while others might find it stressful. The environment can affect stress in human beings. A good and healthy environment can leave positive impacts on people, as much as an unhealthy environment can cause problems and eventually stress. In terms of environmental stress, people can change their environment by moving to another place, cleaning their surroundings, or improving them. For the academic factors, this study shows that *"feeling stressed as submission deadline neared"* and *"feeling stressed to sit for the examination"* were rank as the top academic stressor. These findings

suggest that the first step to learning how to better cope with stress is to identify what causes stress in the first place. Essel and Owusu (2017) found *"preparing assignments for submission," "doing the course assignments," "the demands of writing an assignment to the necessary level," "the prospect of the final examination,"* and *"preparing for the course examination"* are all ranked as leading stressors which were significant in their study. These also show that the academic structure varies in different universities.

Some universities are aware of the *"course workload"* contributing to students' stress levels and have lightened the academic workload. However, interpersonal relationship factors were the less contributing factor in predisposing stress among students. A study by Timmins and Kaliszer (2002) also compares academic factors with interpersonal relationship factors. Some degrees of stress were reportedly caused by the relationship with lecturers and clinical placements coordinators, but most students do not report stress from interpersonal relationships factors. This study found that in terms of interpersonal relationship factors, most of the students, or 63.5%, felt stressed when they might fail to fulfil their parents' hope or were unable to grant their parents' wish for their success in their study. The *"relationship with lecturers"* factor was given the second-lowest rank in this study as a factor that causes stress among students. Only 22.9% of students felt stress because of their relationship with their lecturers. This shows that most students have a good relationship with their lecturers and teaching personnel.

This study found no significant relationship between most sociodemographic factors in determining the relationship between sociodemographic factors and stress level. However, there is a significant relationship between the number of children with the level of stress. This is probably because those with more children have already established their family and have enough experience in taking care of their family. In comparison, those with fewer children were just about to start their families with minimal experience.

5. CONCLUSION

In conclusion, this study shows that most e-PJJ nursing degree students experienced stress at a low level. It is normal to face challenges and difficulties juggling between family, work, and studies as a student. The stress level among the respondents in this study was between low to moderate. Stress among university students cannot be eliminated. Still, a lot should be done to prepare students to positively manage stress to maximize their opportunities to effectively learn and grow during their student life and achieve success in academic and social environments. Appropriate actions should be taken, especially at the university level, to ensure that the stress level is well controlled and kept at a low level to help them manage their studies and work effectively. In the future, a similar study can be done on other course groups or faculty to assess the presence of stress and to investigate the cause and effect in different settings in comparison to this study. The study can even be conducted in various universities to compare the results and collaborate to solve the problem. The study can also be done in a more significant setting or with a broader population to acquire more persistent and accurate data to construct prevalent measures to reduce stress among students.

REFERENCES

Abd El-Aziz Mohamed Madian, A., Mahmoud Abdelaziz, M., & Abo Elsoud Ahmed, H. (2019). Level of stress and coping strategies among nursing students at Damanhour University, Egypt. American Journal of Nursing Research, 7(5), 684–696.

Brown, K., Anderson-Johnson, P., & McPherson, A. N. (2016). Academic-related stress among graduate students in nursing in a Jamaican school of nursing. *Nurse Education in Practice, 20*, 117–124. https://doi.org/10.1016/j.nepr.2016.08.004

Essel, G., & Owusu, P. (2017). Causes of students' stress, its effects on their academic success, and stress management by students. *Journal of Musculoskeletal Pain, 2*(2), 82. Retrieved from http://bit.ly/2hxhzqB

Evans, W., Brown, G., Timmins, F., & Nicholl, H. (2007). An exploratory study identifying the programme related stressors amongst qualified nurses completing part-time degree courses. *Nurse Education Today, 27*(7), 731–738. https://doi.org/10.1016/j.nedt.2006.10.015

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, *30*(3), 607-610.

Kulsoom, B., & Afsar, N. A. (2015). Stress, anxiety, and depression among medical students in a multiethnic setting. *Neuropsychiatric disease and treatment*, 11, 1713–1722. doi:10.2147/NDT.S83577

Lim, J., Bogossian, F., & Ahern, K. (2010). Stress and coping in Singaporean nurses: A literature review. *Nursing and Health Sciences, 12*(2), 251–258. https://doi.org/10.1111/j.1442-2018.2010.00514.x

Lyon, B. (2012). Stress, coping, and health: a conceptual overview. In V. H. Rice (Ed.), *Handbook of Stress, Coping, and Health: Implications for Nursing Research, Theory, and Practice*, (2nd ed., pp. 2-20). Thousand Oaks, CA: SAGE Publications Inc.

Manzano-García, G., & Ayala, J. C. (2017) Insufficiently studied factors related to burnout in nursing: Results from an e-Delphi study. PLoS ONE 12(4): e0175352. https://doi.org/10.1371/journal.pone.0175352

Mohamed Arip, Mohammad Aziz Shah. (2016). Manual of Student Stress Inventory (SSI) Development, Validity and Reliability of Student Stress Inventory (SSI). Retrieved from https://www.researchgate.net/publication/316662054_manual_of_student_stress_invent ory_SSI_Development_Validity_And_Reliability_of_Student_Stress_Inventory_SSI

Moscaritolo, L. M. (2009). Interventional strategies to decrease nursing student anxiety in the clinical learning environment. *Journal of nursing education*, *48*(1), 17-23

Sahari, S. H., Yaman, Y. M., & Awang-Shuib, A. R. (2012). Environmental stress among part time students in Sarawak. *Procedia-Social and Behavioral Sciences*, *36*, 96-102. https://doi.org/10.1016/j.sbspro.2012.03.011

Timmins, F., & Kaliszer, M. (2002). Aspects of nurse education programmes that frequently cause stress to nursing students–fact-finding sample survey. *Nurse education today*, *22*(3), 203-211. https://doi.org/10.1054/nedt.2001.0698.

Ugwoke, S. C., Arumede, F. I., Oboegbulem, A. I., Amoke, J. N., Agundu, U. V., Oko, A. O., ... & Nwobi, U. A. (2018). Management of Students' Stress in Federal Colleges of Education in Nigeria. *International Journal of Applied Engineering Research*, *13*(17), 13219-13226.

Waghachavare, V. B., Dhumale, G. B., Kadam, Y. R., & Gore, A. D. (2013). A Study of Stress among Students of Professional Colleges from an Urban area in India. *Sultan Qaboos University Medical Journal*, *13*(3), 429.

World Health Organization (WHO) (2014). *Social Determinants of Mental Health*. Retrieved August 17, 2021, from https://apps.who.int/iris/bitstream/handle/10665/112828 /9789241506809_eng.pdf.

APPENDIX

Appendix 1: Survey Instrument

Variables	Item Code	Item	Reliability Score	Source
Stress Assessment				
Effect of Stress	ES1	Headaches	0.920	
	ES2	Back pain	0.920	
	ES3	Sleep problem	0.921	
	ES4	Difficulty breathing	0.922	
	ES5	Excessive worry	0.919	
	ES6	Stomach pain and nausea	0.920	
	ES7	Constant tiredness or fatigue	0.919	
	ES8	Sweating or sweaty hands	0.920	
	ES9	Frequent cold/flu/fever	0.921	
	ES10	Drastic weight loss	0.922	
Cause of Stress				
Interpersonal Relationship	IR1	I find difficult to meet my parent's high expectation	0.918	
	IR2	My parents treat me as a helpless person	0.920	
	IR3	I feel guilty if I fail to fulfil my parent's hope	0.919	
	IR4	My parents wish only for my success	0.920	
	IR5	I find it difficult to get along with group mates in doing academic task	0.920	
	IR6	My friends did not care about me	0.918	
	IR7	I feel disturbed when having problem with my boyfriend/girlfriend	0.919	
	IR8	My families are not supportive	0.920	
	IR9	My lecturers/ teachers are not supportive	0.920	Mohamed
	IR10	I feel frustrated by the lack of faculty management	0.923	Arip (2016)
Academic	AC1	I have a financial problem because of the expenses of the university	0.919	
	AC2	I find difficult to juggle time between study and social activity	0.917	
	AC3	I feel nervous delivering the class presentation	0.918	
	AC4	I feel stressed as submission deadline neared	0.918	
	AC5	I feel stressed to sit for examination	0.916	
	AC6	I find difficult to juggle time between study and society involvement	0.918	
	AC7	I loss interest towards courses	0.917	
	AC8	feel burden of academic workloads	0.917	
	AC9	I feel stressed dealing with difficult subject	0.918	
	AC10	I feel difficult in handling my academic problem	0.917	
Environmental	EV1	I have transportation problem	0.921	
	EV2	I feel stressed with the bad living condition of my home	0.919	
	EV3	The surrounding noise distracted me	0.918	
	EV4	Pollution makes me uneasy	0.917	
	EV5	Hot weather makes me avoid going out	0.919	
	EV6	Messy living conditions distracted me	0.919	
	EV7	I feel frustrated with inadequate campus facilities	0.918	
	EV8	Crowding makes me feel uneasy	0.918	
	EV9	Waiting in a long line makes me feel uneasy	0.917	
	EV10	I feel scared being in an insecure place	0.920	

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