



EXPLORING THE RELATIONSHIP BETWEEN ACADEMIC STRESS, EMOTIONAL RESILIENCE, AND SLEEP PATTERNS AMONG NURSING STUDENTS IN KERALA

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Abstract: The mental health and well-being of nursing students are significantly shaped by how they cope with academic stress, emotional challenges, and lifestyle factors such as sleep. This study aimed to investigate the role of academic stress in shaping emotional resilience and sleep patterns among nursing students in Kerala. Specifically, it explored the independent and combined effects of academic stress on emotional resilience and sleep quality, while also analysing differences across varying levels of stress. A total of 200 nursing students from selected institutions in Kerala were selected using convenience sampling and completed standardized questionnaires, including the Perception of Academic Stress Scale and validated tools to assess emotional resilience and sleep patterns. As the data did not meet the assumptions of normality, Spearman correlation and non-parametric one-way ANOVA (Kruskal-Wallis test) were used for statistical analysis. The results revealed significant negative correlations between academic stress and both emotional resilience and sleep quality. The Kruskal-Wallis test further indicated significant differences in emotional resilience and sleep patterns among students experiencing low, moderate, and high levels of academic stress. These findings underscore the importance of targeted interventions to manage academic stress and strengthen resilience for improving the overall well-being of nursing students.

IndexTerms - Academic stress, Emotional Resilience, Sleep patterns, Nursing students, Mental health

I.INTRODUCTION

Mental health involves a key part of the overall well-being of an individual and influences how a person thinks, feels, or acts in everyday life. It's related to emotional, psychological, and social wellbeing and critically sets the balance for how people cope with stress, connect with others, or even make decisions (Comer, 2021). A survey conducted by Mental Health America in 2022 indicated that 81% of employees felt that stress at work impacted their mental health, up from 78% in 2021. According to the American Psychological Association's 2023 Work in America Survey, 55% of workers believed their employer viewed the workplace as more mentally healthy than it truly is. In the UK, the Health and Safety Executive estimated that during 2022/23, approximately 875,000 workers experienced work-related stress, depression, or anxiety, resulting in a total of 17.1 million lost working days. Medical health professionals form the backbone of the healthcare system. They ensure promotion, maintenance, and restoration of health through their work. Medical and healthcare professionals often have to deal with the complex interdependencies of mental health and their specific area of work, which is the result of patient care having such a high level of stress, emotional challenges, and physical demands. Nursing students are students at teaching levels (e.g., diploma through associate's, bachelor's, or advanced) and are developing to become professional nurses. For example, these professional nurses go through programs on theories and through exercises in direct clinical work, including hands-on experiences of patient care (Potter Perry, 2023).

The Nursing student's experience is one of strain, balancing the demands of rigorous work in the classroom with the time needed to complete numerous clinical hours and manage personal space (Giddens, 2022). For most students it is the move from theory to practice when taking care of real patients which induces stress. Thus, Time Management and Coping skills are of high importance in relation to which student will be successful (Benner, 2023). Students may also be emotionally challenged by witnessing suffering and serious illness and consequently exhaust themselves if they are not sufficiently prepared to deal with such burdens (Cherry2Jacob, 2022). Nursing students are constantly under academic, practical, and sleeping pressures - the loss of which increases their health and confidence, and the possibility of successfully passing their studies. Nursing students are burdened by huge workloads, rigorous clinical internship, and high expectations which leads to colossal academic stress. Prolonged stress sometimes might negatively affect their

cognitive performance, mental health, and overall academic result. Students who can manage and go through the hard times become better nurses because they meet the emotionally demanding situations in both clinical and academic settings. The ones who have greater resilience are more capable of dealing with burnout, tend to be more helpful, and suffer from fewer psychological changes. A shift from the normal sleeping patterns because of study, clinical shifts, and stress may result in sleepiness, lack of focus, and losing temper. The sleeping habit is considered the main factor associated with high levels of depression, anxiety, and low academic performance.

Operational definitions:

Academic Stress: Academic stress refers to the psychological and physiological strain experienced by students due to academic-related demands, such as exams, deadlines, coursework, and competition. It can manifest in cognitive (e.g., worry, negative thoughts), emotional (e.g., anxiety, frustration), behavioural (e.g., procrastination, avoidance), and physiological (e.g., sleep disturbances, fatigue) responses (Deb et al., 2015). Academic stress arises when students perceive an imbalance between academic challenges and their coping abilities, potentially affecting their overall well-being and academic performance (Pascoe et al., 2020).

Emotional Resilience: Emotional resilience refers to an individual's ability to effectively adapt to stress, adversity, or emotional challenges while maintaining psychological well-being and stability. It involves the capacity to regulate emotions, recover from setbacks, and utilize positive coping strategies in difficult situations (Luthar et al., 2000). Emotional resilience is often assessed through self-report scales, behavioural observations, and physiological responses to stress (Connor & Davidson, 2003).

Sleep patterns: Sleep patterns refer to the habitual characteristics of an individual's sleep, including sleep duration, sleep quality, sleep efficiency, and sleep consistency. These patterns are typically assessed through self-reports, actigraphy, or polysomnography to measure sleep behaviours and disturbances (Buysse et al., 1989).

The previous research studies lack gaps in terms of understanding the relationship between academic stress, emotional resilience and sleep patterns among nursing students. There are no or limited studies conducted among nursing students in Kerala. The full-term academic stress and related problems of nursing students are not been addressed. The studies highlight the need for interventions to improve sleep, reduce stress, and promote healthy coping strategies among students. Future research should further explore the impact of sleep quality on student well-being and academic performance. There are studies related to variables like anxiety, depression etc but linking academic stress, emotional resilience and sleep patterns are limited or nil.

This study aims at exploring the relationship between academic stress, emotional resilience, and sleep patterns among nursing students in Kerala. It also takes into account relevant socio-demographic factors.

RESEARCH METHODOLOGY

Population and Sample

The study has been designed with a cross-sectional correlational research approach to examine the association between academic stress, emotional resilience, and the patterns of sleep among the nursing students in Kerala. A correlational design is appropriate for this study, it allows for examining associations between variables without any manipulation. Nursing students of different academic years were enrolled in this study to make a diverse and representative sample. Selection of participants is by means of the convenience sampling method, where participants are selected based on their easy availability and willingness to take part in the study. The specimen for the study included undergraduate (U.G.) and postgraduate (P.G.) nursing students of first, second, and final-year standing. Participants were purposefully sampled based on relevant characteristics—nursing students of various years and nursing fields of study in the state of Kerala. The sample for the present study is calculated with the assistance of the G*Power 3.1 Software to ensure that the sample suffices for adequate power for correlations between academic stress, emotional resilience, and sleep patterns among nursing students. The power analysis was based on the following input characteristics: Effect size (r)=0.30 (medium effect size according to Cohen's suggestion) Level of significance (α)=0.05 Statistical power ($1-\beta$)=0.80. G Power revealed a minimum of 94 participants needed for statistical validity. But for enhanced study reliability and to ensure a diversification of respondents, the sample size was adjusted upward to 200 nursing students. The survey was distributed through a Google Form link shared through institutional emails and student groups for the learners to fill it from their homes. The exclusion criteria are Part-time working nurses and nursing personnel no longer enrolled in college, Nursing students diagnosed with chronic physical disabilities or psychiatric conditions, i.e., anxiety disorders, depression, insomnia, chronic pain that might influence emotional resilience and sleep-wake patterns independently, Nursing students who are on Academic leave.

Data and Sources of Data

The structured questionnaires used for data collection included: Perception of Academic Stress Scale (PASS) to measure academic stress Pittsburgh Sleep Quality Index (PSQI) to assess sleep patterns Brief Resilience Scale (BRS) to evaluate emotional resilience. In addition, the above was queried in Online Mode- A Google Form link shared through institutional emails and student groups for the learners to fill it from their homes. Collection and analysis of data-maintained confidentiality by not collecting any item identifying individuals, e.g., names or student IDs. Responses were securely stored in a password-protected database, accessible only to the researcher.

Statistical package for the social sciences (SPSS) was employed to analyze data from the study. Where necessary, nonparametric tests were applied in hypothesis testing since the data was not normally distributed. Spearman's Rank Correlation Coefficient was employed to examine the correlation between sleep patterns, emotional resilience, and academic stress. This is a non-parametric test used to assess the strength and direction of association between the variables. A One-Way ANOVA analysis was administered to investigate for statistically significant differences in emotional resilience and sleeping patterns across the varying academic stressors and quality of sleep. Understanding the differing levels of stress can help inform how it impacts nursing students' psychological and/or behavioral responses. All analyses were performed at a significance level of $p < 0.05$ to determine statistical significance.

Ethical clearance and informed consent

This study adhered to the norms set by international and national bodies to protect participants' rights, welfare, and privacy. Ethical considerations were guided by the Declaration of Helsinki (World Medical Association, 2013), the National Ethical Guidelines for Biomedical and Health Research Involving Human Participants (Indian Council of Medical Research [ICMR], 2017), and ethical guidelines of the institutional ethics committee. Before data collection, ethical clearance was sought from the institutional ethics committee. Participants were given a comprehensive information sheet describing the purpose, aims, and procedures of the study. A written informed consent was taken from each participant, ensuring that they willingly participated with complete knowledge of their rights. Participant anonymity was ensured by not collecting any personal identifiers (e.g. student IDs, or contact information). Data were safely stored in a password-protected database accessible to the researcher alone. Participants' answers were anonymous, meaning their identities could not be traced. Informed that the participation was totally voluntary and free of any type of obligation and that they were entitled to drop out from the study at any time without presenting any justification and without incurring any kind of academic or personal penalty.

RESULTS AND DISCUSSION

RESULTS

Table 1.

Correlation between Academic stress, Emotional Resilience, Sleep patterns.		
VARIABLE	EMOTIONAL RESILIENCE	SLEEP PATTERNS
ACADEMIC STRESS	-.312**	.195**
EMOTIONAL RESILIENCE		-.099

Note. **. Correlation is significant at 0.01 level.

Table 1 represents Spearman's Correlation to study the relationship between the variables under study. A Spearman correlation analysis was conducted to examine the relationship between academic stress, emotional resilience, and sleep patterns among nursing students in Kerala. The results revealed a moderate negative correlation between academic stress and emotional resilience, $r(198) = -.31$, $p < .01$, indicating that higher academic stress was associated with lower emotional resilience. There was also a weak but significant positive correlation between academic stress and sleep patterns, $r(198) = .20$, $p < .01$, suggesting that higher academic stress was associated with more sleep disturbances. However, the correlation between emotional resilience and sleep patterns was not statistically significant, $r(198) = -.10$, $p > .05$.

Table 2.

Kruskal-Wallis test Comparing emotional resilience based on academic stress among nursing students in Kerala.

Variable	Academic Stress	N	Mean Rank	Chi Square	p- value
Emotional Resilience	High	38	69.71		
	Moderate	151	105.64	16.429***	.001
	Low	11	136.27		

Note. $p < 0.01$

Table 2 represents Kruskal-Wallis test Comparing emotional resilience based on academic stress among nursing students in Kerala. The results showed a statistically significant difference in emotional resilience based on academic stress between the groups, Chi-square value=16.429, $p < 0.01$. Individuals belonging to Low Academic stress group has the highest Mean Rank (Mean Rank=136.27).

Table 3

Post Hoc pairwise Comparisons of emotional resilience based on academic stress.

Academic stress (I)	ACADEMIC STRESS (J)	Mean Difference (I-J)	p-value
HIGH	MODERATE	-.299*	.001
	LOW	-.731*	.001
MODERATE	LOW	-.432*	0.004

Note. Dependent variable: Emotional Resilience; *. Mean difference Significance at 0.05 level.

Table 3 represents Post Hoc pairwise Comparisons of emotional resilience based on academic stress. Post hoc pairwise comparisons using the Bonferroni test indicated that students with high academic stress reported significantly lower emotional resilience (M difference = -0.299, $p < .001$) compared to those with moderate stress, and significantly lower emotional resilience (M difference = -0.731, $p < .001$) compared to those with low stress. Additionally, students with moderate stress reported significantly lower emotional resilience than those with low stress (M difference = -0.432, $p = .004$).

Table 4.

Kruskal-Wallis test Comparing emotional resilience based on sleep patterns among nursing students in Kerala.

VARIABLE	SLEEP PATTERNS	N	Mean Rank	Chi Square	p- value
EMOTIONAL RESILIENCE	HIGH	42	107.48		.594
	MODERATE	135	99.60	1.040	
	LOW	23	93.07		

Note $p < 0.01$

Table 4 represents Kruskal-Wallis test Comparing emotional resilience based on sleep patterns among nursing students in Kerala. The p-value = .594 is greater than .01, indicating that there is no statistically significant difference in emotional resilience among students with different sleep pattern categories (high, moderate, low). There is no significant difference in emotional resilience across the three sleep pattern groups ($\chi^2(2) = 1.040$, $p = .594$). This suggests that, in this sample, sleep patterns do not significantly impact emotional resilience among nursing students in Kerala.

Table 5.

Kruskal-Wallis test Comparing sleep patterns based on academic stress among nursing students in Kerala.

Variable	Academic Stress	N	Mean Rank	Chi Square	p- value
Sleep patterns	High	38	119.42		
	Moderate	151	97.49	6.447*	.040
	Low	11	76.50		

Note $p < 0.05$

Table 5 represents Kruskal-Wallis test Comparing sleep patterns based on academic stress among nursing students in Kerala. It can be found that there are statistically significant differences in sleep patterns based on academic stress ($p < 0.05$). The p-value = .040 is less than .05, indicating that the differences in sleep patterns across academic stress groups are statistically significant. The mean rank is highest for students with high academic stress (119.42), followed by moderate (97.49), and lowest for low stress (76.50).

Table 6.

Post Hoc pairwise Comparisons of sleep patterns based on academic stress.

Academic stress (I)	ACADEMIC STRESS (J)	Mean Difference (I-J)	p-value
HIGH	MODERATE	1.227	.075
	LOW	2.230	0.040
MODERATE	LOW	1.002	0.070

Note. Dependent variable: Sleep patterns; *. Mean difference Significance at 0.05 level.

Table 6 represents Post Hoc pairwise Comparisons of sleep patterns based on academic stress. Post hoc pairwise comparisons using Dunn's test with Bonferroni correction revealed that none of the pairwise differences were statistically significant. The comparisons showed slightly higher sleep pattern scores in students with high academic stress compared to those with moderate (mean difference = 1.23, $p = .075$) and low stress (mean difference = 2.23).

DISCUSSION

The results revealed a moderate negative correlation between academic stress and emotional resilience, $r(198) = -.31, p < .01$. This indicates that higher academic stress was associated with lower emotional resilience. This discovery aligns with earlier research showing that extended academic stress can hinder a person's ability to cope effectively with challenges (Chao, 2012; Pulido-Martos et al., 2012). It emphasizes that resilience isn't just a static quality; it can diminish when faced with ongoing academic pressures.

There was a statistically substantial change in the Kruskal-Wallis test results for the emotional resilience of students depending on the level of academic stress ($\chi^2(2) = 16.429, p = .001$). Students facing less academic stress were the most emotionally resilient, and at the opposite end, those who were under high stress reported the lowest levels of it. The Post hoc analysis, besides, the commission of a diagram, confirmed these findings; thus proving again that stress and resilience have an inverse relationship, and the process of overloading resources to the brain will surely lead to the withdrawal of resilience.

Even though earlier studies (like Palagini et al. 2014) hint at a link between sleep quality and being resilient, this study didn't find such a connection among nursing students. Based on the results, there is no significant difference in emotional resilience based on sleep patterns among nursing students in Kerala.

Differences in sleep patterns between academic stress categories were statistically significant ($\chi^2(2) = 6.447, p = .040$), with more stressed students reporting more disturbed sleep. This result aligns with previous findings of a relationship between psychological stressors and sleep-related impairment (Lund et al., 2010). However, the post hoc pairwise comparisons were not statistically significant; suggesting that there is a significant difference amongst the groups, but the differences are unclear between specific pairs of categories (e.g., high vs. moderate). This could be a type of threshold effect where only the most extremely stressed individuals noticeably changed their sleep. Otherwise, it could illustrate that while there is a difference, the effect is minor and highly variable for individuals. Although the Kruskal-Wallis tests indicated a statistically significant difference in sleep patterns between academic stress groups ($\chi^2(2) = 6.447, p = .040$), post hoc comparisons did not reveal significant differences between pairs. Based on the results, there is significant difference in sleep patterns based on academic stress among nursing students in Kerala.

Conclusion

The current investigation sought to assess the relationship between academic stress, emotional resilience and sleep patterns among nursing students in Kerala. The most important study result emerged as a significant negative association between academic stress and emotional resilience, which suggests that as academic stress increased, students' behaviour demonstrated decreased capacity to adapt to and recover from adversity. This highlights the susceptibility to emotional exhaustion related to academic stress triggered by high academic demands among nursing students. Furthermore, the significant positive relationship between academic stress and sleep interference indicated that students who perceived themselves to be under more stress also experienced reduced sleep quality. This finding supports previous studies which have highlighted how academic stress may ultimately produce physiological and behavioural dysfunction (sleep interference) that may detract from learning and cognitive function. The analyses also found differences that were statistically significant across categories of emotional resilience and levels of academic stress, but in this case,

low academic stress had significantly greater emotional resilience than lower to the moderate and high level of academic stress. The findings outlined a call to action for nursing institutions to enact stress-management programs, resilience workshops, and mental health interventions specifically for nursing students. Institutions should also consider adding sleep hygiene education and support for students with academic demands. By tracing the linkages of how academic stress influences resilience and sleep this research is providing evidence-based recommendations for curriculum developers, nursing educators and policy makers to enhance academic student supports. Overall, supporting emotional resilience for nursing students along with managing sleep issues could enhance academic performance, support retention, and potentially enhance future practicing healthcare providers.

Limitations of the study.

1. All participants were recruited from specific nursing institutions in Kerala, which may jeopardize any generalizability of findings to other areas, or nursing students in different academic and cultural settings.
2. Participants may have responded to survey questions to appear in a socially acceptable manner or under reported/over-reported on their stress and sleep problems (e.g., response bias).
3. The timing in which the questionnaires were provided could have impacted the outcomes. For example, participants responding during exam time or clinical placements may have not been reporting their stress or sleep disturbances without some momentary elevation. Additionally, the study did not take into consideration external contextual factors (e.g. pending personal issues or institutional workload), which may have compromised accuracy of measurements.
4. The study utilized cross-sectional design, it limits the capacity to be able to prove causal states between academic stress, emotional resilience, and sleep patterns.
5. There may be some limitations with the measures used (e.g. the Perception of Academic Stress Scale) which while validated, could be limited regarding cultural sensitivity and, at times, not being able to capture the full experience of stressors as would be experienced in Indian nursing education. However, measuring sleep was based on subjective self-reporting, rather than objective measures (e.g. clinical assessment) that may lessen the accuracy of the measurements.

Recommendations.

1. Stress management programs are incorporated into nursing programs.
2. Introduce workshops and activities to enhance resilience.
3. Education and support for sleep hygiene.
4. Monitor and support high academic stress students.
5. Include more emotional well-being modules in nursing curriculum

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