

**Academic Stress and Mindless Eating: A Cross-Sectional Study on the Association between Academic Stress and Eating Behaviors among Nursing Students in Karachi, Pakistan**

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**ABSTRACT**

**Background:** *The academic and career stress has various negative effects on student's physical and mental health. Food consumption without hunger is one of the consequences occurs from academic stress. Nursing students who have academic as well as rigorous clinical duties stress are more prone to adapt mindless eating behavior.*

**Objectives:** *To determine the association between academic stress and mindless eating behaviors among undergraduate nursing students.*

**Methodology:** *A cross-sectional (analytical) study design was conducted among 203 nursing students at Jinnah college of nursing (November 2025- January 2026). Academic Stress Inventory and Mindful Eating Behavior Scale were used. Spearman correlation, linear and multiple regression test applied to evaluate relationships.*

**Result:** *The 203 participants Mindful eating behavior showed a moderate negative relation with academic stress ( $r = -0.552$ ). There were also significant negative correlations between mindful eating and various academic variables of stress such as the role stress of teachers ( $r = -0.546$ ), relationship stress ( $r = -0.570$ ), and test stress ( $r = -0.508$ ).*

**Conclusion:** *The mindful eating and academic stress of nursing students are moderately negatively correlated. High stress was linked to reduced mindful eating, which underscores the possible benefit of mindful eating activities on enhancing student well-being in nursing programs.*

**Keywords:** *Academic performance, Academic stress, Eating behaviors, Mindful eating, Mindless eating, Nursing students.*

## INTRODUCTION

Life in a university offers excess challenges to the students and these include the intensive lectures, deadlines, the exams and the competition that is offered by the peer rating. Besides, concerns about further career patterns or educational achievements often place a significant intellectual burden on the mental state of students. The combination of these factors leads to what is usually termed as academic stress which involves both psychological and physiological pressure that is caused by academic pressures. Empirical studies have found out that prolonged experience of academic stress may trigger the onset of harmful eating habits, which are usually known as mindless eating or emotional eating (Papier, Ahmed, Lee, & Wiseman, 2015). As an example, learners having high stress levels can use food as a coping mechanism which develops poor diets that undermine their general health (van Strien, Konttinen, Homberg, Engels, & Winkens, 2016). Unhealthy eating habits not only cause significant harm to the physical health but also impose a certain influence on the relationships with other people and on emotional states (Kugu, Akyuz, Doğan, Ersan, & Izgic, 2006). Additionally, the literature also suggests that sustained academic stress can lead to incompatible health effects in the long-term in cases where mitigation is not taken, such as weight gain, gastrointestinal disruption and psychological ailments such as anxiety and depression (Pascoe, Hetrick, & Parker, 2019). The cause-and-effect relationship between academic stress and mindless eating in university students is questioned by citing that the negative effects of dietary habits can be extremely harmful to both the physical condition and social life of a student.

The phenomenon of academic stress is well-documented among the university students with the research already showing the inescapable effect of the same. Many students complain of increase in the stress levels that can be traced to increasing academic demands, which many times are compounded by change in lifestyle especially the circadian rhythms change, physical actions, and change in the dietary patterns (AlHamlan et al., 2025).

Mindless eating refers to consumption that lacks any actual physiological signs of hunger in it. Instead, it is almost always triggered by emotions like stress, anxiety, boredom, or external triggers like spending too much time studying or having to work at night or spending too much time in the digital media. In case of university students, this can be in form of the purchase of food that has high energy content yet lacks nutrients as they prepare to write their examinations, or they can consume unintentionally but distracted by their electronic devices. Under such circumstances, food is not a source of sustenance as it is an adaptive coping mechanism. One of the recent reviews determined that there was a moderate positive relationship between emotional eating and stress in college students (Faizah & Purwandari, 2025). People who were characterized with high levels of stress propensity were noted to indulge in emotional-based eating more often and displayed low ability to stick to healthy dietary habit (El-Zayat et al., 2025). These results support the association of academic stress and dysfunctional eating habits.

Academic stress can expressively pose a threat to the well-being and health of nursing students, potentially leading to unhealthy coping behaviors like uncontrolled eating. Despite its importance, limited research has explored the relationship between academic stress and eating behaviors among nursing students in Pakistan.

This study will enhance our understanding regarding link of stress on eating behaviors in nursing students. Furthermore, it provides insights for developing interventions that promote healthy coping approaches. It may also guide institutional policies to foster student well-being and

academic success. Therefore, this study aimed to examine the relationship between academic stress of undergraduate nursing students and mindless eating behaviors.

## **SUBJECTS AND METHODS**

### **Research Design**

A study design used for the study was cross-sectional (analytical).

### **Study Setting**

The data were collected between November 2025 to January 2026 from nursing students of Jinnah College of Nursing

### **Study Population**

Undergraduate Generic BSN Students

### **Sample Size**

The sample size was calculated using standardized formula  $n = ((Z_{\alpha/2} + Z_{\beta})^2) / r^2 + 3$  (Cohen, 2013) Considering a two-tailed significance level of 1% ( $\alpha = 0.05$ ,  $Z_{\alpha/2} = 2.576$ ), a power of 90% ( $Z_{\beta} = 1.282$ ), and an anticipated correlation coefficient of  $r = 0.314$ , the required sample size was calculated as 154. The sample size was increased by 30% to take into the consideration possible non-response and incomplete data hence a final sample size of 203 participants. (Garrett, Licata, & Hoffman, 2021).

### **Sampling Technique**

For recruitment of participants and data collection, a non-probability convenience sampling technique was used.

### **Sampling Criteria**

#### **Inclusion**

undergraduate nursing students from all academic years and semesters and are willing to participate in the study.

#### **Exclusion**

The population includes students in their first semester were excluded from study as their results were not yet available. Moreover, the students who were on long term academic leaves and submitted incomplete responses were also excluded from the study.

### **Data Collection Tool**

An online self-administered tool was adopted, which has two standardized sections. After the demographic section, participants were assessed for Mindful Eating Behavior through MEBS scale. The MEBS scale consists of 17 items over four domain; Focused eating (5-item), Eating in response to hunger and satiety cues (5-items), Eating with awareness (3-item), and Eating without distraction (4-item). A 5 point-likert scale was used for responses, ranging from 1 = Never to 5 = Very Often. Reverse coding was applied to items 11 to 17. The overall score for this questionnaire was 85. Higher scores on the Mindful Eating Behavior Scale (MEBS) indicated a greater tendency toward mindful eating behaviors, whereas lower MEBS scores reflected mindless eating behaviors and were associated with higher levels of academic strain as measured by the Academic Stress Inventory (ASI). The scale Cronbach's  $\alpha$  ranged from 0.70 to 0.89 (L. H. Winkens et al., 2018).

The Academic Stress Inventory (ASI) consisted of 34 items assessing seven dimensions: Teachers' Stress (9-item), Results Stress (5-item), Test Stress(4-item), Group Study Stress(5-item), Peer Stress(4-item), Time Management Stress(3-item), and Self-Inflicted Stress(4-item) (Lin & Chen, 2009). Responses were recorded on a 5-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree, with overall scores of 170. Higher scores in ASI scale indicated higher level of academic stress. The Cronbach's  $\alpha$  for this scale was 0.90 (Lin & Chen, 2009). Higher scores in ASI scale indicated higher level of academic stress. Academic performance was measured using the most recent Grade Point Average (GPA) as reported by each participant.

In addition to domain-specific scores, overall, ASI and MEBS scores were computed by adding the scores for all items (34 for ASI and 17 for MEBS), as well as domain-specific scores. These total scores were then used in correlation analyses alongside the domain-specific scores.

### **Ethical Consideration**

Permission for data collection was obtained from Institutional Review Board of Sohail University (Protocol # 00219/25). Before data collection, confidentiality, benefits and minimal potential harms were clearly explained in the classroom to the participants. Written consent has been taken before data collection.

### **Data Collection Procedure**

Before data collection, approval from the Ethical Review Committee was obtained. After IRB approval, meetings with the principal of nursing college/institute was held to discuss in detail the study objectives and the plan for data collection. After receiving permission from the principal, meetings with undergraduate nursing students were arranged according to their free schedules. During the meeting with participants, the purpose of the study was explained. Moreover, the participants were informed about their data confidentiality and their voluntary nature of participation. After this, written consent was obtained from the participants, and the Google Form link was shared with them in the classroom.

### **Data Analysis**

The dependent variable was mindful eating (MEBS total and subscale scores). The independent variables were academic stress (ASI score). Demographic variables included gender, age, academic year, academic performance and residence (urban/rural).

To analyze data, SPSS version 26 was used. The Shapiro-Wilk test was used to determine the normality of data of continuous variables, and the result showed that it was not normally distributed. Thus, non-parametric statistical procedures were used. Frequencies and percentages were used to provide descriptive statistics of categorical variables, with median and the interquartile range (IQR) being the measures of central tendency and measure of dispersion of continuous variables.

Frequencies and percentages were used to explain the Academic Stress Inventory (ASI) and Mindful Eating Behavior Scale (MEBS) items. The overall ASI and MEBS scores were summarized using median and interquartile range (IQR). The relationships between mindful eating habits and academic stress were analyzed with the help of the rank correlation coefficient of Spearman. A correlation test was conducted between the ASI total and factor scores and MEBS total and domain scores. The p-value of below 0.05 was taken as statistically significant for two tailed. Moreover, linear and multiple regression test were also performed to examine the predictive effects of academic stress and selected demographic variables on mindful eating behavior.

### **RESULTS:**

The sociodemographic and academic characteristics of the participants were shown in Table 1. The Participants' age ranged between 18 to 44 years, with a median age 21.00 years (IQR: 20-23). The participants' last semester median Grade Point Average (GPA) was 3.76 (IQR: 3.50-3.95).

Among 203 participants, 47.8% were male and 52.2% were female. In terms of academic qualification, most of the students were from first year (41.4%). Regarding their living area, half of the study participants (50.7%) lived with their families, while 23.6% of the study participants lived alone, 15.3% lived in shared flats outside the campus, and 10.3% of the students lived in campus hostel. Additionally, 89.2% of participants did not smoke and only 10.8% reported smoking (Table 1).

Regarding their academic scores, the majority (62.6%) of the students achieved a GPA between 3.51-4.00, while 28.1% of the students had a GPA of 3.01-3.50, and the remaining participants 9.4% had a GPA between 2.51 and 3.00 (Table 1).

**Table 1. Distribution of participants' categorical variables (n = 203)**

| <b>Variables</b>            | <b>n (%)</b> |
|-----------------------------|--------------|
| <b>Gender</b>               |              |
| Male                        | 97 (47.8)    |
| Female                      | 106 (52.2)   |
| <b>Year of Study</b>        |              |
| First Year                  | 84 (41.4)    |
| Second Year                 | 33 (16.3)    |
| Third Year                  | 42 (20.7)    |
| Fourth                      | 44 (21.7)    |
| <b>Living Situation</b>     |              |
| On-campus residence         | 21 (10.3)    |
| Off-campus shared apartment | 31 (15.3)    |
| Living with Family          | 103 (50.7)   |
| Independent living (alone)  | 48 (23.6)    |
| <b>Smoking Status</b>       |              |
| Yes                         | 22 (10.8)    |
| No                          | 181 (89.2)   |
| <b>GPA Category</b>         |              |
| 2.51-3.0                    | 19 (9.4)     |

|           |            |
|-----------|------------|
| 3.01-3.50 | 57 (28.1)  |
| 3.51-4.0  | 127 (62.6) |

The overall median academic stress was 114 (IQR: 97-134). The results of Academic stress inventory scales indicates that more than half of the study participants agree 53(26.1%) and strongly agree 52 (25.6%) that assignments and assessments are too difficult. Moreover, 63 (31%) participants strongly agreed that the content information provided by teachers are excessive, unable to finish on time and absorb. One third of the study participants strongly agree 71(35%) felt lot of pressure because of their text books in foreign language. In addition, 73(36%) of the study participants have conflict with their parents due to academic results. A total of 101 (49.7%) of the study participants agree and strongly agree that they would be able to find suitable study partner if they had to do academic group work. Moreover, Stressors that were most frequently reported were learning environment. Total 111 (54.6%) participants agreed and strongly agreed that they like to study alone as they disturb classmates' chatting. Over 111 (54.7%) percent of the study participants reported other concerns related to time-management and social life balance. According to them, academic stress has negatively affected their social life because of having difficulty in managing time for academic activity with social life (Table 2).

**Table 2. Distribution of responses to the Academic Stress Inventory (ASI) items (n = 203)**

| <b>Statements</b>                                                                                                    | <b>Strongly Disagree<br/>n (%)</b> | <b>Disagree<br/>n (%)</b> | <b>Neutral<br/>n (%)</b> | <b>Agree<br/>n (%)</b> | <b>Strongly Agree<br/>n (%)</b> |
|----------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------|--------------------------|------------------------|---------------------------------|
| I feel that the forms and content of exercises and reports of some teachers are too strict.                          | 10 (4.9)                           | 43 (21.2)                 | 56 (27.6)                | 49 (24.1)              | 45 (22.2)                       |
| I feel that the exercises and reports of some teachers are too difficult.                                            | 10 (4.9)                           | 42 (20.7)                 | 46 (22.7)                | 53 (26.1)              | 52 (25.6)                       |
| I feel that the exercises and reports of some teachers are excessive.                                                | 8 (3.9)                            | 41 (20.2)                 | 49 (24.1)                | 54 (26.6)              | 51 (25.1)                       |
| I feel that I do not understand a lot about some teachers' teaching content.                                         | 19 (9.4)                           | 50 (24.6)                 | 37 (18.2)                | 48 (23.6)              | 49 (24.1)                       |
| Some teachers provide too much data; this causes me to be unable to finish studying and to assimilate the knowledge. | 11 (5.4)                           | 58 (28.6)                 | 27 (13.3)                | 44 (21.7)              | 63 (31.0)                       |

|                                                                                                                            |           |           |           |           |           |
|----------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| I feel a lot of pressure because some subjects use foreign language books.                                                 | 24 (11.8) | 61 (30.0) | 27 (13.3) | 20 (9.9)  | 71 (35.0) |
| I feel that I am not able to adapt to some teachers' teaching methods.                                                     | 8 (3.9)   | 56 (27.6) | 34 (16.7) | 47 (23.2) | 58 (28.6) |
| I feel that once I got into university, I could not keep up with the speed of the teachers' instruction.                   | 8 (3.9)   | 65 (32.0) | 40 (19.7) | 34 (16.7) | 56 (27.6) |
| In some courses, I have to spend a lot of time looking for data and information.                                           | 7 (3.4)   | 25 (12.3) | 34 (16.7) | 74 (36.5) | 63 (31.0) |
| I feel that my parents think that I am not serious with my studies.                                                        | 4 (2.0)   | 33 (16.3) | 39 (19.2) | 69 (34.0) | 58 (28.6) |
| I have conflicts with my parents due to my academic results.                                                               | 33 (16.3) | 53 (26.1) | 25 (12.3) | 19 (9.4)  | 73 (36.0) |
| I feel that there is vast difference between my current results and high school results.                                   | 42 (20.7) | 42 (20.7) | 27 (13.3) | 28 (13.8) | 64 (31.5) |
| I worry that my academic results will not meet my parents' expectations.                                                   | 18 (8.9)  | 41 (20.2) | 45 (22.2) | 49 (24.1) | 50 (24.6) |
| I feel that the results of my recent tests are imperfect and have regressed.                                               | 33 (16.3) | 66 (32.5) | 25 (12.3) | 26 (12.8) | 53 (26.1) |
| I do not get good enough sleep at night because I worry about school tests.                                                | 31 (15.3) | 69 (34.0) | 27 (13.3) | 26 (12.8) | 50 (24.6) |
| I stay up late before all the big and small school tests.                                                                  | 21 (10.3) | 46 (22.7) | 37 (18.2) | 51 (25.1) | 48 (23.6) |
| I worry that I have to redo the compulsory courses in which I fail.                                                        | 11 (5.4)  | 63 (31.0) | 34 (16.7) | 41 (20.2) | 54 (26.6) |
| I feel that the tests and class content of some subjects are variable, which causes me to be unable to prepare adequately. | 26 (12.8) | 59 (29.1) | 30 (14.8) | 36 (17.7) | 52 (25.6) |
| I often face problems as to how to share work with my classmates when some exercises or reports require group work.        | 10 (4.9)  | 55 (27.1) | 55 (27.1) | 45 (22.2) | 38 (18.7) |



|                                                                                                                                 |           |           |           |           |           |
|---------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| When group work is required to complete an exercise or report, I worry that I will not be able to find a suitable group member. | 14 (6.9)  | 47 (23.2) | 41 (20.2) | 50 (24.6) | 51 (25.1) |
| When I give a speech or presentation, I worry that my classmates will laugh at my inability to perform well.                    | 13 (6.4)  | 55 (27.1) | 42 (20.7) | 40 (19.7) | 53 (26.1) |
| Sometimes, the words used by my classmates easily hurt my self-esteem or cause harm.                                            | 27 (13.3) | 44 (21.7) | 33 (16.3) | 43 (21.2) | 56 (27.6) |
| I feel nervous when I need to make a speech or give a presentation.                                                             | 16 (7.9)  | 47 (23.2) | 34(16.7)  | 45 (22.2) | 61 (30.0) |
| When I want to study on my own, I am often affected by my classmates' chatting.                                                 | 15 (7.4)  | 33 (16.3) | 44 (21.7) | 49 (24.1) | 62 (30.5) |
| I feel that my classmates are very noisy during class and this influences my class situations.                                  | 12 (5.9)  | 45 (22.2) | 44 (21.7) | 50 (24.6) | 52 (25.6) |
| I feel that there is open strife and veiled struggles among classmates due to academic performance.                             | 7 (3.4)   | 34 (16.7) | 40 (19.7) | 63 (31.0) | 59 (29.1) |
| I am very worried that my academic results are not as good as those of my classmates are.                                       | 5 (2.5)   | 29 (14.3) | 72 (35.5) | 57 (28.1) | 40 (19.7) |
| I feel that I am not able to adjust and schedule the time between academic and social activities effectively.                   | 19 (9.4)  | 46 (22.7) | 45 (22.2) | 47 (23.2) | 46 (22.7) |
| I feel that it is very difficult for me to find a balance between my academic and social activities.                            | 12 (5.9)  | 44 (21.7) | 36 (17.7) | 60 (29.6) | 51 (25.1) |
| I feel that the social activities and student association affect my academic work.                                              | 8 (3.9)   | 46 (22.7) | 41 (20.2) | 60 (29.6) | 48 (23.6) |
| I feel that my learning level is not as good as that of my classmates.                                                          | 14 (6.9)  | 55 (27.1) | 50 (24.6) | 47 (23.2) | 37 (18.2) |

|                                                                                           |          |           |           |           |           |
|-------------------------------------------------------------------------------------------|----------|-----------|-----------|-----------|-----------|
| I feel that I have so many courses that I am out of breath.                               | 20 (9.9) | 62 (30.5) | 41 (20.2) | 29 (14.3) | 51 (25.1) |
| I feel that I have no interest in some subjects or academics.                             | 13 (6.4) | 63 (31.0) | 52 (25.6) | 47 (23.2) | 28 (13.8) |
| I feel that after I entered university, my performance was not as good as I had expected. | 15 (7.4) | 59 (29.1) | 34 (16.7) | 54 (26.6) | 41 (20.2) |

The overall median score of mindful eating behavior 44 (IQR: 33-56). In terms of mindful eating behavior, 65 (32%) of study participants sometime noticed the taste and texture of their food, while 46 (27.6%) of the study participants sometimes noticed food aroma. 59 (29.1%) of the respondents indicated that they maintain concentration during eating sometime. In addition to body and hunger cues, the study participants 43 (21.2%) reported often relied on hunger signals to guide eating. Moreover, 77 (37.9%) participants reported that they never snacked without being aware they were eating. Approximately 123 (60.6%) participants reported that they never ate something without being aware of it. Nearly half of the participants 87 (42.9%) stated that they never engaged in multitasking while eating and 103 (50.7%) reported that they never read while eating. (Table 3)

**Table 3. Distribution of responses to the Mindful Eating Behavior Scale (MEBS) items (n = 203)**

| <b>Statements</b>                                     | <b>Never<br/>n (%)</b> | <b>Seldom<br/>n (%)</b> | <b>Someti<br/>mes<br/>n (%)</b> | <b>Often<br/>n (%)</b> | <b>Very<br/>Often<br/>n (%)</b> |
|-------------------------------------------------------|------------------------|-------------------------|---------------------------------|------------------------|---------------------------------|
| I notice flavors and textures when I'm eating my food | 42 (20.7)              | 36 (17.7)               | 65 (32.0)                       | 30 (14.8)              | 30 (14.8)                       |
| I stay aware of my food while eating                  | 44 (21.7)              | 34 (16.7)               | 46 (22.7)                       | 41 (20.2)              | 38 (18.7)                       |
| I notice how my food looks                            | 37 (18.2)              | 38 (18.7)               | 43 (21.2)                       | 46 (22.7)              | 39 (19.2)                       |
| I notice the smells and aromas of food                | 34 (16.7)              | 33 (16.3)               | 56 (27.6)                       | 32 (15.8)              | 48 (23.6)                       |

|                                                              |            |           |           |           |           |
|--------------------------------------------------------------|------------|-----------|-----------|-----------|-----------|
| It is easy for me to concentrate on what I eat               | 32 (15.8)  | 36 (17.7) | 59 (29.1) | 37 (18.2) | 39 (19.2) |
| I trust my body to tell me when to eat                       | 31 (15.3)  | 49 (24.1) | 50 (24.6) | 42 (20.7) | 31 (15.3) |
| I trust my body to tell me what to eat                       | 34 (16.7)  | 36 (17.7) | 62 (30.5) | 38 (18.7) | 33 (16.3) |
| I trust my body to tell me how much to eat                   | 39 (19.2)  | 33 (16.3) | 55 (27.1) | 37 (18.2) | 39 (19.2) |
| I rely on my hunger signals to tell me when to eat           | 35 (17.2)  | 48 (23.6) | 47 (23.2) | 43 (21.2) | 30 (14.8) |
| I rely on my fullness signals to tell me when to stop eating | 43 (21.2)  | 43 (21.2) | 40 (19.7) | 35 (17.2) | 42 (20.7) |
| I snack without being aware that I am eating                 | 77 (37.9)  | 39 (19.2) | 53 (26.1) | 18 (8.9)  | 16 (7.9)  |
| I eat automatically without being aware of what I eat        | 122 (60.1) | 26 (12.8) | 37 (18.2) | 10 (4.9)  | 8 (3.9)   |
| I eat something without really being aware of it             | 123 (60.6) | 28 (13.8) | 33 (16.3) | 9 (4.4)   | 10 (4.9)  |
| My thoughts tend to wander while I am eating                 | 63 (31.0)  | 33 (16.3) | 70 (34.5) | 20 (9.9)  | 17 (8.4)  |
| I think about things I need to do while I am eating          | 52 (25.6)  | 28 (13.8) | 66 (32.5) | 40 (19.7) | 17 (8.4)  |
| I multi-task while I am eating                               | 87 (42.9)  | 19 (9.4)  | 60 (29.6) | 22 (10.8) | 15 (7.4)  |
| I read while I am eating                                     | 103 (50.7) | 26 (12.8) | 57 (28.1) | 8 (3.9)   | 9 (4.4)   |

The result of this indicated both positive and negative correlations over different MEBS domains. Only ASI factors showed negative moderate relationships with MEBS Domain 1, Domain 3, Domain 4, the total MEBS score among which the correlation coefficients were between -0.050 to -0.570 . Conversely, all ASI factors had a positive relationship with MEBS Domain 2 with

coefficients between 0.365 and 0.856. Additionally, the overall ASI score demonstrated a moderate negative correlation of -0.552 (p-value <0.001) with the overall MEBS score. These results suggest that academic stress is generally associated with negative mindful eating behaviors, while higher emotional reactivity to food triggers is positively linked to increased academic stress (Table 4).

**Table 4. Correlations between Academic Stress Inventory (ASI) and Mindful Eating Behavior Scale (MEBS) total and subscale scores (n = 203)**

| Variable                                    |                         | MEBS<br>Domain 1 | MEBS<br>Domain 2 | MEBS<br>Domain 3 | MEBS<br>Domain 4 | Overall MEBS |
|---------------------------------------------|-------------------------|------------------|------------------|------------------|------------------|--------------|
| ASI Factor 1<br>– Teachers’<br>role stress  | Spearman<br>Correlation | -0.445           | 0.856**          | -0.050           | -0.230           | -0.546**     |
|                                             | Sig. (20tailed)         | <0.001           | <0.001           | 0.482            | <0.001           | <0.001       |
|                                             | N                       | 203              | 203              | 203              | 203              | 203          |
| ASI Factor 2<br>–<br>Relationship<br>stress | Spearman<br>Correlation | -0.549**         | 0.694**          | -0.169           | -0.309           | -0.570**     |
|                                             | Sig. (20tailed)         | <0.001           | <0.001           | 0.016            | <0.001           | <0.001       |
|                                             | N                       | 203              | 203              | 203              | 203              | 203          |
| ASI Factor 3<br>– Test stress               | Spearman<br>Correlation | -0.494           | 0.538**          | -0.102           | -0.247           | -0.508**     |
|                                             | Sig. (20tailed)         | <0.001           | <0.001           | 0.149            | <0.001           | <0.001       |
|                                             | N                       | 203              | 203              | 203              | 203              | 203          |
| ASI Factor 4<br>– Group study<br>stress     | Spearman<br>Correlation | -0.409           | 0.524**          | -0.125           | -0.240           | -0.434       |
|                                             | Sig. (20tailed)         | <0.001           | <0.001           | 0.076            | <0.001           | <0.001       |
|                                             | N                       | 203              | 203              | 203              | 203              | 203          |
| ASI Factor 5<br>– Peer stress               | Spearman<br>Correlation | -0.289           | 0.426            | -0.089           | -0.161           | -0.335       |

|                                                                |                         |          |         |        |        |          |
|----------------------------------------------------------------|-------------------------|----------|---------|--------|--------|----------|
|                                                                | Sig. (20tailed)         | <0.001   | <0.001  | 0.208  | 0.022  | <0.001   |
|                                                                | N                       | 203      | 203     | 203    | 203    | 203      |
| ASI Factor 6<br>– Time<br>management<br>stress                 | Spearman<br>Correlation | -0.236   | 0.365   | -0.134 | -0.095 | -0.278   |
|                                                                | Sig. (20tailed)         | <0.001   | <0.001  | 0.056  | 0.180  | <0.001   |
|                                                                | N                       | 203      | 203     | 203    | 203    | 203      |
| ASI Factor 7<br>– Self-<br>imposed<br>stress                   | Spearman<br>Correlation | -0.365   | 0.393   | -0.053 | -0.141 | -0.349   |
|                                                                | Sig. (20tailed)         | <0.001   | <0.001  | 0.456  | 0.045  | <0.001   |
|                                                                | N                       | 203      | 203     | 203    | 203    | 203      |
| <b>Overall<br/>Academic<br/>Stress<br/>Inventory<br/>(ASI)</b> | Spearman<br>Correlation | -0.529** | 0.735** | -0.131 | -0.277 | -0.552** |
|                                                                | Sig. (20tailed)         | <0.001   | <0.001  | 0.062  | <0.001 | <0.001   |
|                                                                | N                       | 203      | 203     | 203    | 203    | 203      |

The univariate linear regression analysis showed that academic stress had a statistically significant negative effect on mindful eating behavior. Specifically, for each one-unit increase in academic stress, mindful eating behavior decreased by 0.293 units (SE = 0.032,  $\beta = -0.524$ ,  $t = -9.065$ ,  $p < 0.001$ , 95% CI: -0.357 to -0.229). Nearly a third ( $R^2 = 0.290$ ) of the variance in mindful eating behavior was accounted for by this model, meaning that academic stress explains nearly one-third of the variance in mindful eating behavior. (Table 5)

In addition to academic stress, several demographic and academic factors were explored independently. Gender showed a non-significant trend ( $\beta = -3.060$ ,  $p = 0.106$ ). Year of Study was positively associated with mindful eating: Year 2 ( $\beta = 5.540$ ,  $p = 0.030$ ), Year 3 ( $\beta = 11.592$ ,  $p < 0.001$ ), and Year 4 ( $\beta = 13.187$ ,  $p < 0.001$ ) students reported significantly higher scores compared to Year 1. GPA in the mid-range (3.01–3.50 vs 3.51–4.00) was negatively associated with mindful eating ( $\beta = -8.875$ ,  $p < 0.001$ ), while low GPA (2.51–3.00) was not significant ( $p = 0.990$ ). There was a positive association between age and mindful eating ( $\beta = 0.704$ ,  $p = 0.008$ ). Other factors, including living situation and smoking status, were not statistically significant predictors (all  $p > 0.25$ , Table 5).

**Table 5. Univariate Linear Regression Analysis of Mindful Eating Behavior (MEBS)  
Predicted by Academic Stress and Demographic Variables (n = 203)**

GPA was categorized into three ranges: Low GPA (2.51–3.00), Mid GPA (3.01–3.50), and High GPA (3.51–4.00, reference group). Year of Study was compared against Year 1 (reference group). Living situation was compared against “living with family” as the reference category. Gender was coded as Male vs Female, and smoking status as Yes vs No.

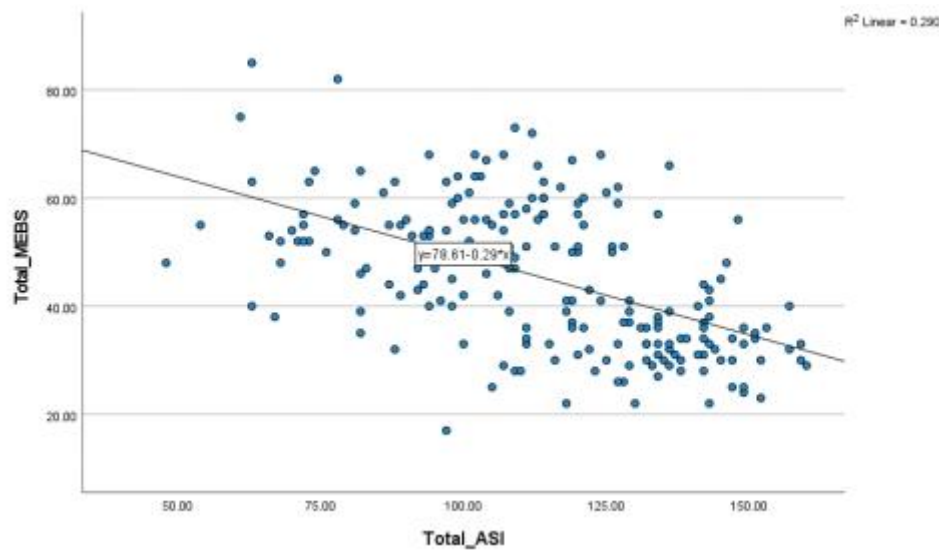
| Variable                                          | $\beta$ (SE)   | t      | 95% CI                   | p-value          |
|---------------------------------------------------|----------------|--------|--------------------------|------------------|
| <b>Academic Stress (ASI)</b>                      | -0.293 (0.032) | -9.065 | <b>-0.357 to -0.229</b>  | <b>&lt;0.001</b> |
| <b>Age</b>                                        | 0.704 (0.261)  | 2.7    | <b>0.190 to 1.218</b>    | <b>0.008</b>     |
| <b>Gender (Male vs Female)</b>                    | -3.060 (1.887) | -1.622 | <b>-6.781 to 0.660</b>   | <b>0.106</b>     |
| <b>Year 2 vs Year 1</b>                           | 5.540 (2.541)  | 2.18   | <b>0.530 to 10.551</b>   | <b>0.03</b>      |
| <b>Year 3 vs Year 1</b>                           | 11.592 (2.194) | 5.283  | <b>7.265 to 15.919</b>   | <b>&lt;0.001</b> |
| <b>Year 4 vs Year 1</b>                           | 13.187 (2.106) | 6.262  | <b>9.035 to 17.340</b>   | <b>&lt;0.001</b> |
| GPA (2.51–3.00 vs 3.51–4.00)                      | 0.042 (3.257)  | 0.013  | -6.379 to 6.464          | 0.99             |
| <b>GPA (3.01–3.50 vs 3.51–4.00)</b>               | -8.875 (2.016) | -4.402 | <b>-12.850 to -4.900</b> | <b>&lt;0.001</b> |
| On-campus residence vs Living with family         | 1.278 (3.113)  | 0.411  | -4.861 to 7.418          | 0.682            |
| Off-campus shared apartment vs Living with family | -2.445 (2.631) | -0.929 | -7.634 to 2.743          | 0.354            |
| Independent living vs Living with family          | -1.852 (2.229) | -0.831 | -6.246 to 2.543          | 0.407            |
| Smoking Status (Yes vs No)                        | 1.414 (3.050)  | 0.464  | -4.600 to 7.428          | 0.643            |

A multivariable linear regression analysis indicated that academic stress was not statistically significant after adjustment ( $B = 0.016$ ,  $p = 0.689$ ). Age ( $\beta = -0.162$ ,  $p = 0.405$ ), gender ( $\beta = 1.746$ ,  $p = 0.181$ ), and GPA (3.01–3.50 vs 3.51–4.00) ( $\beta = 0.688$ ,  $p = 0.669$ ) also did not have statistically significant effects on mindful eating behavior. In contrast, Year of Study remained a strong predictor: Year 2 ( $\beta = 17.646$ ,  $p < 0.001$ ), Year 3 ( $\beta = 21.905$ ,  $p < 0.001$ ), and Year 4 ( $\beta = 23.552$ ,  $p < 0.001$ ) students reported significantly higher mindful eating scores compared to Year 1. The final model accounted for 57.2% of the variance in the mindful eating scores ( $R^2 = 0.572$ , Adjusted  $R^2 = 0.557$ ) (Table 6).

**Table 6. Multivariable Linear Regression Analysis of Mindful Eating Behavior (MEBS) Predicted by Academic Stress and Demographic Variables (n = 203)**

| Variable                     | $\beta$ (SE)   | t     | 95% CI                  | p-value          |
|------------------------------|----------------|-------|-------------------------|------------------|
| Academic Stress (ASI)        | 0.016 (0.041)  | 0.401 | -0.064 to 0.096         | 0.689            |
| Age                          | -0.162 (0.194) | 0.834 | -0.546 to 0.221         | 0.405            |
| Gender (Male vs Female)      | 1.746 (1.300)  | 1.343 | -0.818 to 4.311         | 0.181            |
| <b>Year 2 vs Year 1</b>      | 17.646 (2.339) | 7.545 | <b>13.033 to 22.259</b> | <b>&lt;0.001</b> |
| <b>Year 3 vs Year 1</b>      | 21.905 (2.397) | 9.14  | <b>17.179 to 26.632</b> | <b>&lt;0.001</b> |
| <b>Year 4 vs Year 1</b>      | 23.552 (2.656) | 8.868 | <b>18.314 to 28.790</b> | <b>&lt;0.001</b> |
| GPA (3.01–3.50 vs 3.51–4.00) | 0.688 (1.608)  | 0.428 | -2.484 to 3.860         | 0.669            |

The scatter plot to assess relationship between academic stress and mindful eating behavior shows a moderate negative linear relationship, with a coefficient of determination ( $R^2$ ) of 0.290, which indicates 29% of the changes in eating habits are due to academic stress and the remaining 71% is unexplained e.g., due to error. (Figure 1).



**Figure 1: Scattered Plot: Relationship Between Academic stress and Mindful Eating Behavior:**

## DISCUSSION:

This study assessed the relation between academic stress and mindful eating practices in undergraduate nursing students, providing significant results in terms of health implications and educational practices in nursing. The general academic stress was high, as nursing training is rather challenging. Particularly salient were stressful factors related to instruction practice, school demands, parental requirements, peer relations, tests, and time management. Mindful eating behaviors are intermediate in nature and are some conscious eating behaviors but have relatively less robust emotional regulation and conscious control. Correlational analyses showed that significant and negative relation between academic stress and mindful eating was present, which shows that unhealthy stress correlated with the worst eating self-regulation and daily health habits.

The reported high educational pressure in this context is consistent with prior studies portraying nursing education as a high-pressure environment. The respondents indicated that stress was caused by workloads, instructional demands, difficulty in understanding the course material, and pressure caused by parental overestimation and academic comparison. Similar stressors were reported among university students, in which academic stress, faculty stress, and evaluative stress are significant factors of student stress (Alexatou et al., 2025). The constant presence of both theoretical work and the performance-based clinical demands make nursing students very susceptible and, therefore, confirms the continuity of both structural and interpersonal stressors.

This research builds upon existing literature by analyzing the correlation between certain stress areas and individual elements of mindful eating. The stress associated with instructional roles and the academic workload showed unhealthy correlations with eating cue awareness indicating that cognitive overload and time pressure adversely affect attention when eating. As studies have shown, when cognitive functioning is too high, the processes of self-control and internal body monitoring are disrupted (Chen & Qi, 2025). Eating, under academic pressure, can be an activity of distraction instead of a conscious act based on the hunger and satiety signals.



Interpersonal stress, specifically parental expectations and family standards-related fear of failing to achieve them, was negatively correlated with a number of dimensions of mindful eating. Such results are consistent with the evidence of family stress correlating with emotional eating and disordered eating behaviors. Emotional distress and dependence on food coping strategy impact can be increased by stress caused by parental expectations (Chen & Qi, 2025). The findings highlight the role of social and cultural settings in shaping eating habits of students.

Stress about tests had a negative correlation with mindful eating awareness and conscious food choices. Irregular meal patterns, snacking, and emotional eating have been linked with examination anxiety. The current results support this body of literature, denoting that the stress related to tests can focus attention away when eating and interrupt regulation guided by physiological cues (Karaağaç, Ceylan, & Bellikci-Koyu, 2025).

Poor mindful eating habits were also associated with the peer-related stress and stress related to group study. Challenges during group work, competition and fear of being evaluated negatively may create social stress which may spread to eating contexts. According to previous research, there is a correlation between peer comparison and social judgment and the subsequent emotional dysregulation and maladaptive coping behaviors (Shatwan & Alzharani, 2024), which can decrease attentiveness during meals and promote mindful eating.

Another important predictor that was found to contribute to impaired mindful eating was time-management stress. Learners who had a problem prioritizing academic and social needs had low eating awareness and control. This is consistent with the evidence that lack of time constraints and planning has led to missed meals, inconsistent food consumption, and use of convenience foods (Saintila et al., 2025).

The behavior between overall academic stress and overall mindful eating behavior was found to be consistently negative, which has been supported by previous findings that indicated the environmental influence of stress on healthy eating habits among college students to be an inverse relationship (Silva et al., 2025). This study investigated mindful eating as a multidimensional concept that included awareness, emotional regulation, and distraction-free eating in contrast to previous research that studied emotional eating or the quality of the diet (El-Zayat et al., 2025).

Academic stress is a major cause of influencing mindful eating behavior among nursing students (Dutt, Keyte, Egan, Hussain, & Mantzios, 2018). Stress is not only associated with poorer mindful eating but also is a psychological factor that reduces the person control their eating habits like over eating, eat without hunger, choosing healthy food (Hill et al., 2022). This could be attributed to the fact that long-term academic stress might lead to impairment of executive functioning, decrease in attentional control and heightening of emotional reactivity which are vital constituents of mindful eating. When one is in a state of chronic stress, they will tend to eat automatically or be influenced by their emotions than under the influence of their internal hunger, physical need and fullness signals, resulting in a loss of eating awareness and control (Ertem & Karakaş, 2020).

Students who perform better in academics possibly have stronger time management, self-discipline and using effective coping strategies compared to student who have academic stress or have average performance. These cognitive-behavioral abilities can improve academic achievements and health-related self-management, such as mindful eating.

Conversely, demographic variables like age have limited impact on mindful eating among nursing students, which implies that behavioral and psychological determinants are more important than biological or demographic variables. There is the need to implement stress management and mindfulness-based interventions into the academic setting to help students not only improve their psychological health but also adopt healthy lifestyle habits.

The positive correlation between academic stressors and non-reactivity to food triggers might seem counter-intuitive but probably because of the disconnection to the inner stimuli due to the stressful process. Stress-induced chronic conditions may lead to hypersensitivity to hunger and satiety signals and foster reactive eating due to environmental or emotional stimuli and not imposed control (L. H. H. Winkens et al., 2018).

One of the strengths of the study is that it targets Pakistani nursing students, a sample that is underrepresented in the literature. Even though stress-eating interactions are evidenced in the international literature, few studies have examined the associations in South Asian nursing settings. The results offer culturally applicable evidence that academic stress is connected to poor eating control, which confirms the universality of stress eating interactions (Van Beekun et al., 2024; L. H. Winkens, 2025). It has significant implications for nursing education. The findings of the study can be generalized to undergraduate nursing students in other settings, but it is important to remember the use of non-probability sampling technique and data from one study setting should be taken into consideration when generalizing the finding to other population. The mitigation of the high academic standards, the encouragement of positive teaching methods, and the incorporation of stress-management training can indirectly assist in the process of healthier eating patterns. Nevertheless, the cross-sectional study type restricts causality, and self-data can be biased. The causal pathways must be established by longitudinal research.

## **CONCLUSION:**

Mindful eating habits among undergraduate nursing students had negative relationships with academic stress. Greater academic stress was also associated with less mindful eating in a variety of areas indicating that mindful eating may be incorporated into nursing education to assist students in stress management and wellness.

## **Availability of data:**

Authors confirm that all information which supports the findings of the study is available in the article.

Data-sets produced and/or processed during the current study are not accessible publicly because of the confidentiality of the participants and institutional ethics limitations.

## **Conflict of Interest:**

The author does not have any conflict of interest.

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**REFERENCES**

- Alexatou, O., Papadopoulou, S., Mentzelou, M., Deligiannidou, G.-E., Dakanalis Αντόνιος Ντακανάλης, A., & Giaginis, C. (2025). Exploring the Impact of Emotional Eating Among University Students: A Literature Review. *Medical Sciences*, 13, 56. doi:10.3390/medsci13020056
- AlHamlan, A. W., AlDhafiri, D. A., AlHajri, N. A., AlHouli, A. H., AlHubaidah, S. M., AlJassar, A. M., . . . Qasem, W. (2025). The impact of academic stress on the lifestyle of university students in Kuwait. *BMC Public Health*, 25(1), 2338.
- Chen, S., & Qi, X. (2025). A randomized controlled trial of mindfulness: effects on academic stress, academic burnout, and psychological resilience in university students. *Front Psychol*, 16, 1722669. doi:10.3389/fpsyg.2025.1722669
- Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*: routledge.
- Dutt, S., Keyte, R., Egan, H., Hussain, M., & Mantzios, M. (2018). Healthy and unhealthy eating amongst stressed students: Considering the influence of mindfulness on eating choices and consumption. *Health Psychology Report*, 7. doi:10.5114/hpr.2019.77913
- El-Zayat, A., Sultan, S., Alharthi, S., Jamal, D., Abdullah, A., & Albusati, N. (2025). The relationship between perceived stress and emotional eating among university students in Saudi Arabia. *Discover Mental Health*, 5(1), 107.
- Ertem, M., & Karakaş, M. (2020). Relationship between emotional eating and coping with stress of nursing students. *Perspectives in Psychiatric Care*, 57. doi:10.1111/ppc.12599
- Faizah, N., & Purwandari, E. (2025). Emotional Eating and Stress in College Students: A Meta-Analysis Study. *People and Behavior Analysis*, 3, 66-81. doi:10.31098/pba.v3i1.3160
- Garrett, E., Licata, A., & Hoffman, J. (2021). Mindful eating and perceived stress in college students. *Journal of the Academy of Nutrition and Dietetics*, 121(9), A94.
- Hill, D., Conner, M., Clancy, F., Moss, R., Wilding, S., Bristow, M., & O'connor, D. B. (2022). Stress and eating behaviours in healthy adults: a systematic review and meta-analysis. *Health Psychology Review*, 16(2), 280-304.

- Karaağaç, Y., Ceylan, C., & Bellikci-Koyu, E. (2025). The relationships among perceived stress, mindful eating, addiction-like eating behavior, and BMI in adults: Exploring gender-specific pathways. *Eat Behav*, 57, 101989. doi:10.1016/j.eatbeh.2025.101989
- Kugu, N., Akyuz, G., Doğan, O., Ersan, E., & Izgic, F. (2006). The Prevalence of Eating Disorders Among University Students and the Relationship with Some Individual Characteristics. *The Australian and New Zealand journal of psychiatry*, 40, 129-135. doi:10.1111/j.1440-1614.2006.01759.x
- Lin, Y. M., & Chen, F. S. (2009). Academic stress inventory of students at universities and colleges of technology. *World Transactions on Engineering and Technology Education*, 7, 157-162.
- Papier, K., Ahmed, F., Lee, P., & Wiseman, J. (2015). Stress and dietary behaviour among first-year university students in Australia: sex differences. *Nutrition*, 31(2), 324-330. doi:10.1016/j.nut.2014.08.004
- Pascoe, M., Hetrick, S., & Parker, A. (2019). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth*, 25, 1-9. doi:10.1080/02673843.2019.1596823
- Saintila, J., Valle-Chafloque, A., Barreto-Espinoza, L. A., López-López, E., Gálvez-Díaz, N. D. C., Lizarraga-De-Maguiña, I. G., . . . Távara, G. L. (2025). Self-Perceived Health Status and Life Satisfaction Associated with Emotional Eating in Nursing and Medical Students: A Cross-Sectional Study in a Region of Peru. *Medical Sciences*, 13(3), 196.
- Shatwan, I. M., & Alzharani, M. A. (2024). Association between perceived stress, emotional eating, and adherence to healthy eating patterns among Saudi college students: a cross-sectional study. *J Health Popul Nutr*, 43(1), 144. doi:10.1186/s41043-024-00637-w
- Silva, I., Meireles, A. L., Chagas, C., Cardoso, C. S., Oliveira, H. N., Freitas, E. D., . . . Ferreira, L. G. (2025). Emotional Eating and Its Relationship with Symptoms of Anxiety, Depression, and Stress During the COVID-19 Pandemic: A Multicenter Study in College Students. *Int J Environ Res Public Health*, 22(3). doi:10.3390/ijerph22030354
- Van Beekum, M., Shankland, R., Rodhain, A., Robert, M., Marchand, C., Herry, A., . . . Péneau, S. (2024). Development and validation of the mindful eating scale (mind-eat scale) in a general population. *Appetite*, 199, 107398. doi:10.1016/j.appet.2024.107398
- van Strien, T., Konttinen, H., Homberg, J. R., Engels, R. C., & Winkens, L. H. (2016). Emotional eating as a mediator between depression and weight gain. *Appetite*, 100, 216-224. doi:10.1016/j.appet.2016.02.034
- Winkens, L. H. (2025). Mindful eating behavior scale (MEBS). In *Handbook of Assessment in Mindfulness Research* (pp. 609-621): Springer.

Winkens, L. H. H., van Strien, T., Barrada, J. R., Brouwer, I. A., Penninx, B., & Visser, M. (2018). The Mindful Eating Behavior Scale: Development and Psychometric Properties in a Sample of Dutch Adults Aged 55 Years and Older. *J Acad Nutr Diet*, 118(7), 1277-1290.e1274. doi:10.1016/j.jand.2018.01.015

