THE RELATIONSHIP BETWEEN ACADEMIC STRESS AND EMOTIONAL EATING IN HIGH SCHOOL STUDENTS

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Academic stress may be associated with maladaptive eating behaviors among adolescents. This study aimed to examine the relationship between academic stress and emotional eating among high school students in Ponorogo, Indonesia. A quantitative correlational study with a cross-sectional design was conducted among 171 Grade 12 students at State Senior High School 1 Babadan, selected through proportionate random sampling from a population of 298 students. Academic stress and emotional eating were measured using the Educational Stress Scale for Adolescents (ESSA) and the Dutch Eating Behavior Questionnaire (DEBQ), respectively. Data were analyzed using Spearman's rank correlation test. Moderate academic stress and moderate emotional eating were reported by 49.7% and 56.1% of participants, respectively. A significant positive association was identified between academic stress and emotional eating (\(r_s = 0.320\), \(p < 0.001\)), indicating that higher academic stress was associated with greater emotional eating tendencies. These findings highlight the importance of addressing academic stress and emotional eating in school-based adolescent health promotion. Further longitudinal studies are needed to clarify the temporal relationship between these variables and inform targeted preventive strategies.

Keywords: *Academic Stress; Emotional Eating; Adolescents*

INTRODUCTION

Academic stress among adolescents is a major mental health concern because it can have negative effects on both physical and psychological well-being(Puspasari et al., 2026) . Adolescence, particularly late adolescence, is a developmental stage during which individuals are highly vulnerable to academic stress due to increasing academic demands, pressure to excel, and limited stress management skills(Wuthrich et al., 2020). Academic stress is defined as a psychological response that occurs when individuals perceive that academic demands exceed their adaptive capacity (Khoiroh et al., 2022; Tharaldsen et al., 2023). Students' levels of academic stress may be influenced by both internal factors, such as mindsets and beliefs, and external factors, including academic pressure, homework load, parental expectations, and social pressure (Shofiyah & Salamah, 2022) .

Emotional eating refers to the tendency to consume food in response to negative emotions rather than physiological hunger and may contribute to unhealthy dietary patterns and an increased risk of overweight and obesity(Indahwati et al., 2017) . Among adolescents, emotional eating is a relevant health concern, as demonstrated by a study of 1,622 adolescents in the United States, which reported that 30% engaged in emotional eating (Kidwell et al., 2024) Academic stress may be one factor associated with this behavior, as academic

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workloads, concerns about grades, and performance expectations may challenge adolescents' ability to regulate emotions and cope with stress(Ding & Wang, 2026; Noor et al., 2025) . In Indonesia, a study reported that 51.1% of 133 students at SMAN 6 Surabaya experienced emotional eating, while 47.4% experienced moderate academic stress; the study also found a significant association between academic stress and emotional eating ($p = 0.003$)(Ramadhani & Mahmudiono, 2021). Similarly, research among adolescents has identified associations between emotional eating and academic-related factors, including academic worries and academic self-esteem(Chamberlin et al., 2018) . However, evidence concerning this relationship among high school students in Ponorogo remains limited. Preliminary observations at State Senior High School 1 Babadan, Ponorogo, reportedly indicated that students experienced academic pressure related to schoolwork and examinations; however, verified preliminary data on both academic stress and emotional eating are needed to establish the magnitude of these problems in the target population.

Academic stress may challenge adolescents' ability to regulate their emotions and maintain adaptive behaviors, potentially leading to changes in eating patterns (Djoar & Anggarani, 2024) . Emotional eating may represent one such response when individuals use food to cope with negative emotions rather than physiological hunger. Although emotional eating has been discussed as a potential maladaptive coping strategy, its consequences for adolescents' weight status remain inconclusive. A systematic review of 13 studies reported inconsistent evidence regarding the association between emotional eating and weight status in adolescents, highlighting the need for further investigation (Limbers & Summers, 2021). oy's Adaptation Model provides a theoretical framework for understanding this potential behavioral response by conceptualizing individuals as adaptive systems that respond to environmental stimuli through the regulator and cognator subsystems. These processes are reflected in four adaptive modes: physiological function, self-concept, role function, and interdependence (Jennings, 2017). Within this framework, emotional eating may be explored as a potentially ineffective behavioral response to stress, particularly in relation to physiological functioning; however, this conceptual interpretation does not establish that academic stress causes emotional eating. Accordingly, examining the relationship between academic stress and emotional eating may help clarify how these two variables are associated among high school students.

Previous studies have used descriptive and analytical approaches to examine academic stress and emotional eating among adolescents. Although the relationship between these variables has been investigated, existing research has predominantly focused on college students and young adults. Evidence concerning the association between academic stress and emotional eating among high school students, particularly in Ponorogo, Indonesia, remains limited. To address this research gap, the present study employed a correlational design involving students at State Senior High School 1 Babadan, Ponorogo, to examine the association between academic stress and emotional eating. The findings are expected to provide evidence to inform health promotion and preventive strategies in school settings. Specifically, this study aimed to assess the levels of academic stress and emotional eating among students and to determine the association between these variables. The study hypothesized that academic stress would be significantly associated with emotional eating.

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METHOD

This study employed a quantitative correlational design with a cross-sectional approach to examine the relationship between academic stress and emotional eating among high school students. This design was selected because it allows the assessment of the association between the two variables at a single point in time. However, the cross-sectional design does not establish temporal relationships or determine causality. Ethical approval was obtained from the Health Research Ethics Committee (KEPK) of STIKES Bhakti Husada Mulia (No. 032/E-KEPK/STIKES/BHM/V/2025) on May 23, 2025.

The study population consisted of all 12th-grade students enrolled in the science (IPA) and social studies (IPS) programs at State Senior High School 1 Babadan, Ponorogo, totaling 298 students. The sample size was determined using the Slovin formula with a 5% margin of error, resulting in 171 participants. A proportionate random sampling technique was employed to ensure proportional representation from each class. The inclusion criteria were students who actively participated in school activities, provided informed consent to participate, and completed the questionnaire in its entirety.

Academic stress was measured using the Educational Stress Scale for Adolescents (ESSA), developed by Sun et al. (2011), which assesses academic pressure, workload, concerns about grades, self-expectations, and feelings of inadequacy or hopelessness. Emotional eating was measured using the Indonesian-translated version of the Dutch Eating Behavior Questionnaire (DEBQ), developed by van Strien et al. The emotional eating subscale consists of 13 items assessing eating behavior in response to negative emotions. The validity and reliability of the instruments were assessed using data from the 171 participants in this study. Item-total correlation coefficients for the ESSA ranged from 0.227 to 0.545, while those for the DEBQ emotional eating subscale ranged from 0.404 to 0.671. All item-total correlations were statistically significant ($p < 0.05$). Internal consistency was assessed using Cronbach's alpha. The reliability coefficients obtained from the initial analysis were 0.655 for the ESSA and 0.736 for the DEBQ. These results provide preliminary evidence of the instruments' measurement properties in the study sample. Data were collected online through Google Forms over a four-day period. Participants received standardized instructions and provided informed consent before completing the questionnaires. Responses were checked for completeness, and only eligible responses containing complete data were included in the analysis. Although these procedures supported consistent questionnaire administration and reduced errors associated with missing data, potential response and social-desirability biases inherent in self-reported online questionnaires could not be completely excluded.

Data were analyzed using Spearman's rank correlation test with a significance level of 0.05. Prior to the analysis, the data were coded, scored, and tabulated using SPSS software. A p-value of < 0.05 was considered statistically significant, indicating a significant relationship between the two variables.

RESULTS AND DISCUSSION

RESULT

Characteristics of the Respondents

A total of 171 Grade 12 students participated in this study. Most respondents were female (67.3%), aged 18 years (52.6%), enrolled in the natural sciences track (58.5%), and living with their parents (83.6%). Regarding academic stress, 49.7%

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of respondents reported moderate stress, followed by high stress (29.8%) and low stress (20.5%). Emotional eating was predominantly moderate (56.1%), while 39.2% of respondents reported high emotional eating and 4.7% reported low emotional eating. The respondents' characteristics and the distributions of academic stress and emotional eating are presented in Table 1.

Table 1. Characteristics of the Respondents (n=171)

Respondent Characteristic	Result
Gender	
Female	115 (67,3%)
Male	56 (33%)
Age (years)	
17	81 (47,4%)
18	90 (53%)
Academic Track	
Natural Sciences	100 (58,5%)
Social Sciences	71 (41,5%)
Living Arrangements	
Living with Parents	143 (84%)
Living in A Dormitory (alone)	28 (16,4%)
Academic Stress Level	
Low	35 (20,5%)
Moderate	85 (50%)
High	51(30%)
Emotional Eating Level	
Low	8 (4,7%)
Moderate	96 (56,1%)
High	67 (39,2%)

Association Between Academic Stress and Emotional Eating

The distribution of emotional eating differed across academic stress categories. Among students with low academic stress, 77.1% reported moderate emotional eating, whereas 63.0% of students with high academic stress reported high emotional eating. In the moderate academic stress group, 61.2% reported moderate emotional eating. Spearman's rank correlation analysis identified a statistically significant positive association between academic stress and emotional eating ($r = 0.320$, $p < 0.001$). The correlation coefficient indicated a modest positive association, suggesting that higher academic stress tended to co-occur with greater emotional eating tendencies. The detailed distribution is presented in Table 2.

Table 2. Relationship Between Academic Stress and Emotional Eating Among Students at State Senior High School 1 Babadan, Ponorogo (N = 171)

Academic Stress Level	***Emosional Eating***									
	Low		**Moderate**		**High**		**Total**	**%**	**P value**	**r value**
	F	**P (%)**	**F**	**P (%)**	**F**	**P (%)**				
Low	2	6	27	77,1	6	17,1	35	100,0	0,000	0.320
Moderate	4	5	52	61,2	29	34,1	85	100,0		
High	2	4	17	33,3	32	63	51	100,0		

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DISCUSSION

This study identified a statistically significant positive association between academic stress and emotional eating among Grade 12 students at SMA Negeri 1 Babadan, Ponorogo. The Spearman correlation coefficient ((r_s = 0.320), ($p < 0.001$)) indicates a modest positive association, suggesting that students reporting higher academic stress also tended to report greater emotional eating. Although statistically significant, this association should not be interpreted as evidence that academic stress directly causes emotional eating. Rather, it suggests that academic stress may be one of several factors associated with adolescents' eating responses to emotional experiences.

The finding is consistent with previous research linking academic-related experiences and stress to eating-related behaviors. Chamberlin et al., (2018) examined academic-related factors associated with emotional eating among adolescents, supporting the relevance of the academic environment when investigating eating behavior during this developmental stage. Similarly, (Ramadhani & Mahmudiono, 2021) reported a significant association between academic stress and emotional eating among high school students in Surabaya, Indonesia. These findings provide relevant evidence that the relationship between academic stress and emotional eating may also be observed in different adolescent populations. However, the strength and pattern of this association may vary across settings and populations. (Hill et al., 2018), highlighted the importance of examining stress in relation to different eating behaviors among children and adolescents. Taken together, these findings support the relevance of investigating academic stress and emotional eating while recognizing that eating responses to stress may differ between individuals.

The modest strength of the observed association also suggests that individual psychological characteristics may be relevant to understanding emotional eating. (Lu et al., 2016) investigated emotion regulation and emotional eating among Chinese adolescents, while (Shriver et al., 2020) found that emotion regulation, weight status, and negative body image were associated with emotional eating during adolescence. Spinner et al., 2024) reported that emotional dysregulation strengthened the association between perceived stress and emotional eating among adolescent military dependents. These findings suggest that adolescents may differ in how they respond to stressful experiences, depending partly on their ability to regulate emotions and other individual characteristics. Such factors may help explain why academic stress was associated with, but did not fully account for, emotional eating in the present study. Nevertheless, because emotion regulation, body image, and related psychological variables were not assessed in this study, their roles should be considered potential explanations for future investigation rather than mechanisms established by the current findings.

Evidence from university populations provides additional, although indirect, comparisons. (Caso et al., 2020) examined academic stress and unhealthy eating among undergraduate students in Italy and France, demonstrating that associations between stress and food consumption differed according to national context and aspects of eating behavior. Chai et al., (2024) also investigated relationships among stress, anxiety, and eating behavior among Chinese students, highlighting the relevance of psychological distress when examining student eating patterns. However, differences in age, educational context, cultural setting, and outcome measurement limit direct comparisons between these studies and the

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present research. The current study contributes context-specific evidence concerning the association between academic stress and emotional eating among Indonesian high school students. Nevertheless, the findings from a single school in Ponorogo should not be assumed to represent all Indonesian adolescents. Future studies involving multiple schools and more diverse populations are needed to determine whether the association is consistent across educational and cultural settings.

Roy's Adaptation Model provides a theoretical perspective for interpreting the findings. The model conceptualizes individuals as adaptive systems that respond to environmental stimuli through regulatory and cognitive processes, with adaptation expressed across physiological function, self-concept, role function, and interdependence (Jennings, 2017) . From this perspective, academic demands may be considered potential environmental stimuli, while emotional eating may represent one possible behavioral response to emotional distress. This interpretation offers a nursing-oriented framework for considering how students respond to academic pressures. However, the present study measured academic stress and emotional eating rather than the regulatory processes, coping mechanisms, or adaptive modes described in the model. Therefore, the findings do not constitute an empirical test of Roy's Adaptation Model; instead, the model may inform the development of hypotheses and future nursing research on adolescent stress and health-related behavior.

The findings may have implications for school health promotion and nursing practice. The observed association supports considering academic stress and eating-related behavior together when planning adolescent health assessment and education. School nurses, counselors, and teachers may consider providing opportunities for students to discuss academic pressures, recognize emotional responses, and develop adaptive coping strategies. Health education may also address the distinction between physiological hunger and eating in response to emotional distress. However, because this study did not evaluate an intervention, it cannot establish whether stress-management or emotion-regulation programs reduce emotional eating. Intervention studies are therefore needed to determine the effectiveness of these approaches and identify which strategies are most appropriate for adolescents.

Several limitations should be considered when interpreting the findings. First, the cross-sectional design prevents conclusions about temporal order and causality. Second, participants were recruited from a single high school, which limits the generalizability of the results to adolescents in other schools and regions. Third, both variables were assessed using self-report questionnaires, making the findings potentially susceptible to recall and social-desirability biases. Fourth, the analysis focused on the association between academic stress and emotional eating and did not account for other potentially relevant factors, such as emotion regulation, anxiety, self-esteem, body image, social support, or weight status. These variables were not measured and therefore cannot be assumed to explain the observed association. Future longitudinal studies involving multiple schools should examine these potential factors and investigate whether they help explain individual differences in emotional eating. Further intervention research is also warranted to determine whether approaches targeting academic stress and emotional regulation can improve eating-related behaviors and adolescent well-being.

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CONCLUSION AND RECOMMENDATION

CONCLUTION

The findings of this study indicate a positive relationship between academic stress and emotional eating among students at State Senior High School 1 Babadan, Ponorogo. Higher levels of academic stress were associated with a greater tendency toward emotional eating as a maladaptive response to stress. From the perspective of Roy's Adaptation Model, academic stress may be interpreted as a stimulus that challenges adolescents' adaptive processes. When coping responses are less effective, emotional eating may represent a potentially maladaptive behavioral response to emotional demands. This interpretation may relate to the self-concept mode, particularly adolescents' emotional perceptions and self-evaluations. However, the relationship between academic stress and emotional eating may also be associated with other factors, such as emotion regulation skills, self-esteem, and social support, which were not examined in this study. Therefore, the findings should be interpreted as an association rather than evidence of a causal relationship.

RECOMMENDATION

Schools and guidance counselors are encouraged to implement preventive and proactive interventions through counseling services that focus on emotional regulation, stress management, and healthy eating education to strengthen students' adaptive coping strategies. Families should also provide psychosocial support by fostering open and empathetic communication, enabling students to express their emotional concerns more comfortably. Students are encouraged to develop greater self-awareness in managing academic stress through positive coping strategies and supportive social environments. These efforts may also consider strengthening adaptive emotion regulation, positive self-esteem, and access to supportive relationships. Future research should examine additional psychological factors, such as anxiety, depression, and emotion regulation, as well as self-esteem and social support, to better understand factors potentially associated with the relationship between academic stress and emotional eating. Longitudinal and qualitative approaches may provide further insight into how adolescents experience academic stress and respond to emotional demands, supporting the development of theoretically informed and context-specific nursing interventions.

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