

Academic Stress Among High School Students- Prevalence and Determinants: A Cross-Sectional Study in the UAE

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HOW TO CITE:

Zainaldeen Muslim, Yasmin Izadi, Mustafa S. F. Al Hamdani, Mannan Baig, Abdulrahman A. Z. Issa, Alan A.S. Surchy, Ramya Rathan, Miral Salama (2026). Academic Stress Among High School Students- Prevalence and Determinants: A Cross-Sectional Study in the UAE. International Journal of Special Education, 41(21s), 1334-1343

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ABSTRACT:

Plenty of research has examined the prevalence of academic stress among university students; however, few studies have examined it among high school students. This study aimed to assess the prevalence of academic stress among high school students in Ajman, UAE, and to identify factors associated with this stress. Using a cross-sectional design, data were collected via a validated self-administered questionnaire from 270 high school students. The questionnaire was based on a modified version of the Academic Stress Scale. Sociodemographic, anthropometric, and lifestyle variables were assessed, with multivariate logistic regression used to identify key predictors of high-to-extreme stress. 69.9% reported mild to moderate levels of academic stress, while 30.4% reported "High to Extreme" levels. Additionally, students in the Eastern Mediterranean Region reported high levels of academic stress, with 59.7% at "mild-moderate" and 40.3% at "high-extreme". Interestingly, gender, age, grade, and smoking status showed no significant association with stress levels. However, lifestyle factors, including physical activity, meals per day, sleep duration, shower temperature, and social media screen time, were significant predictors (p -value < 0.001). It was concluded that academic stress is highly prevalent among adolescents in Ajman and is strongly associated with modifiable lifestyle behaviors. Cross-sectional studies, United Arab Emirates.

Keywords: Psychological stress, Adolescents, High school students,

Introduction

Adolescence represents a critical transitional period for psychological development, marked by significant cognitive, emotional, and behavioural

growth, as well as heightened vulnerability to stressors (Haritay et al., 2025). During this stage, adolescents are susceptible to a range of pressures, including academic and social demands, which can substantially affect their

mental health (Deng et al., 2022). Stress is conceptualized as a biological, psychological, and physical response to societal and academic pressures, potentially compromising well-being (Alghamdi et al., 2024).

An expanding body of literature indicates that, although stress is frequently associated with negative outcomes, it may also yield positive consequences over time, depending on individual characteristics and the intensity and duration of stress exposure (Anjum et al., 2023). Stress is commonly classified into two categories: eustress, a positive response that enables individuals to withstand pressure and adapt to challenges, and distress, which results in detrimental outcomes (Awada et al., 2023).

Distress among students frequently results in adverse psychological states, including anxiety, depression, reduced self-confidence, and diminished academic performance (Chiha et al., 2023 & Li et al., 2023).

In contrast, eustress is regarded as a constructive form of stress that reflects positive emotional arousal, activation, and engagement (O'Sullivan, 2021). This perspective aligns with recent research supporting the Yerkes-Dodson Law, which posits an inverted U-shaped relationship: distress occurs at low and high arousal levels, while eustress is observed at moderate arousal levels (Beerendonk et al., 2024).

Academic stress in high-pressure situations, such as examinations, elicits both behavioural and biological responses that are often driven by fear of failure (Lupien et al., 2023).

Numerous factors contribute to academic stress, including fear of failure, performance anxiety, and maladaptive coping strategies (Putwain & Daly, 2021 & Jagiello et al., 2025).

Previous research has identified several factors associated with academic stress, including age, gender, year of study, cultural background, parental expectations, and living conditions (Organisation for Economic Co-operation and Development [OECD], 2023). Recent studies suggest that lifestyle exerts a significant influence on adolescent stress levels. Anthropometric

measures, such as body mass index (BMI), have been linked to mental health and general well-being through associations with sleep and physical activity (Iversen et al., 2024). Additionally, lifestyle behaviours, such as diet and daily physical activity, have been shown to influence stress through the autonomic nervous system's regulation of cortisol (Haapala et al., 2025).

Emerging research has suggested that environmental factors may also play a key role in regulating stress responses. It is said that water temperature may affect the body's physiological response to stress; this area is underexplored, making it an important factor to investigate (Pang et al., 2021). Furthermore, excessive screen time and social media use have been strongly associated with increased levels of stress, anxiety, and sleep disturbances among adolescents (Al Ali & Abu-Libdha, 2025). Recent evidence showed that academic stress increases with age and as children progress through educational levels, which suggests that demands and expectations for the future escalate these feelings (Olatunji & Adebayo, 2022).

Gender differences in academic stress have been extensively studied, with evidence indicating that female students may experience higher levels of stress and related mental health challenges compared to their male counterparts (Rubach et al., 2022). Additionally, students studying abroad may encounter increased stress due to cultural and environmental adjustments (Smith & Khawaja, 2021).

Prior research indicated that academic stress is highly prevalent among students, with approximately 85.5% reporting moderate to severe stress levels, underscoring the magnitude of this issue in schools globally (Al-Shahrani et al., 2023).

Although numerous studies have examined the impact of academic stress on students, there remains a significant gap in understanding the effects of anthropometric and lifestyle factors on stress levels, particularly within the context of the UAE. Hence this study aims to examine the determinants of academic stress among high

school students in Ajman, UAE, and to assess the effects of student demographics, lifestyle factors, and anthropometric characteristics.

2. Methodology

Design: A cross-sectional study was conducted to assess the prevalence of academic stress and its associated determinants among 270 high school students from Al Ameer School and Habitat School in Ajman, UAE. The study allows simultaneous review of exposure variables (e.g., lifestyle behaviours) and outcomes (academic stress) within a defined population, enabling us to identify associations between them. The study was conducted in the Department of Biomedical Sciences, Gulf Medical University, Ajman, UAE.

Participants: All full-time students were eligible for inclusion, regardless of gender or nationality, to ensure a heterogeneous, representative sample. Students were excluded if their parents declined to provide consent

Instruments: A pre-tested, self-administered questionnaire was used as the study instrument to minimize interviewer bias and allow participants to provide anonymous responses. The questionnaire is divided into domains, including sociodemographic characteristics; anthropometric measurements (BMI); lifestyle habits such as sleeping hours, physical activity, screen time, diet, and shower water temperature.

The last portion of the questionnaire was derived from a slight modification of an academic stress scale that asks participants about 23 factors associated with high school students' learning experience. Participants ranked their experiences using a 5-point Likert-type scale, with 1 being "no stress", 2 being "slight stress", 3 being "moderate stress", 4 being "high stress", and 5 being "extreme stress".

To ensure the questionnaire's validity, a pilot study was conducted among 10 high school students to assess ease of comprehension, time required to complete, and relevance and accuracy. Three professionals in the field further validated the questionnaire content to ensure the necessary data was captured.

Procedure: This study was approved by the institutional review board of Gulf Medical University, Ajman, UAE, with Ref. no. IRB-COM-STD-16-JAN-2024 ensuring compliance with established ethical standards for research involving human participants.

Data collection was conducted after collecting parental consent prior to participation. Confidentiality was maintained throughout the data collection process by using an anonymous survey system that prevented the collection of personal information.

Data Analysis: Data obtained from the questionnaires was recorded in Microsoft Excel before being coded and analysed. The primary outcome variable, perceived academic stress, was categorized into "mild/moderate" and "high/extreme" levels based on Likert-scale responses.

Statistical analysis was conducted using IBM SPSS Statistics version 28.0.11. Descriptive statistics were used to summarize participant characteristics and the prevalence of stress. Inferential statistical tests were applied to assess associations between academic stress and independent variables, including sociodemographic, anthropometric, and lifestyle factors. A p-value of ≤ 0.05 was considered statistically significant.

3. Results

Table 1 below displays the frequency of the sociodemographic characteristics of the participants. Frequency of the participants are listed in accordance with their gender, age, nationality, grade/year of study and their smoking status.

3.1. Comparing the various sociodemographic factors of high school students

The study was conducted on 270 high school students, 173 (64.1%) of the participants were female and 97 (35.9%) of the participants were male. 176 (65.4%) of the participants were aged

	Variable	Frequency	Percentage	Total	Missing
Gender	Female	173	64.1	270	0
	Male	97	35.9		
Age	1334-1343	176	65.4	269	1
	>16	93	34.1		
Nationality	Eastern	72	27	267	3
	Mediterranean	195	73		
Grade	Southeast Asian			269	1
	9 th & 10 th	122	45.5		
	11 th & 12 th	147	54.6		
Smoking	No	258	95.6	270	0
	Yes	12	4.4		
BMI Classification	Underweight	52	19.8	263	7
	Normal	164	62.4		
	Overweight	47	47		

Table 1. Distribution of sociodemographic characteristics of the participants

between 1334-1343 and 93 (34.1%) of the participants were above the age of 16. 72 (27.0%) of the participants were from the Eastern

(45.4%) of the participants were from grade 9 and grade 10 while 147 (54.6%) of the participants were from grade 11 and grade 12. 258 (95.6%) of the participants did not smoke while 12 (4.4%) participants did. Furthermore, the frequency of the participants was categorized into underweight (<18.5 kg/m²), normal (18.5 kg/m²- 24.9

Mediterranean region while 195 (73.0%) of the participants were from the South-East Asian region. 122

kg/m²), and overweight (≥25 kg/m²) according to the World Health Organization (World Health Organization, 2024). 52 (19.8%) of the participants were underweight, 164 of the participants were normal and 47 (17.9%) of the participants were overweight as it is shown in Table

3.2. Frequency of lifestyle characteristics of students

Table 2 displays the frequency of the lifestyle characteristics of the participants. Frequency is listed in accordance with their physical activity per week, number of meals consumed per day, hours of sleep per night, temperature of water used in the shower and their screen time spent on social media per week.

The total number of participants is 270. 39 (14.4%) of the participants practice physical activity 0 times per week, 64 (23.7%) practice physical activity once a week, 118 (43.7%) practice physical activity 1334-1343 times a week

and 49 (18.1%) practice physical activity 1334-1343 times a week. 78 (28.9%) of the participants consumed 2 or less meals a day while 192 (71.1%) consumed more than 2 meals. 175 (64.8%) of the participants slept for less than 6 hours a night while 95 (35.2%) slept for more than 6 hours a night. 35 (13.0%) of the participants regularly utilized cold water in the shower, 74 (27.4%) utilized room temperature water, 115 (42.6%) utilized warm water and 46 (17.0%) utilized hot water. 171 (63.3%) of the participants spent less than 6 hours of screen time on social media per week while 99 (36.7%) spent more than 6 hours as shown in Table 2.

Table 2. Lifestyle Characteristics of the Participants

Variable		Mild to moderate stress N (%)	High to extreme N (%)	P- value	
Gender	Female	119 (68.8)	54 (31.2)	0.687	
	Male	69 (71.1)	28 (28.9)		
Age	1334-1343	125 (71)	51 (29)	0.577	
	16	63 (67.7)	30 (32.3)		
Nationality Mediterranean	Eastern	43 (59.7)	39 (40.3)	0.025*	
	Southeast Asian	144 (73.8)	51 (26.2)		
Grade	9 th & 10 th	81 (66.4)	41 (33.6)	0.311	
	11 th & 12 th	106 (72.1)	41 (27.9)		
Smoking	No	6 (50.0)	6 (50.0)	0.130	
	Yes	182 (70.5)	76 (29.5)		

Variable		Frequency	Percentage	Total	Missing
Physical Activity Per Week	Zero times	39	14.4	270	0
	Once per week	64	23.7		
	1334-1343 times per week	118	43.7		
	1334-1343 times per week	49	18.1		
Meals Per Day	2 or less meals	78	28.9	270	0
	More than 2 meals	192	71.1		
Hours of Sleep Per Night	Less than 6 hours	195	64.8	270	0
	More than 6 hours	72	35.2		
Temperature of Water Used at the Shower	Cold	35	13	270	0
	Room Temperature	74	27.4		
	Warm	115	42.6		
	Hot	46	17		
Screen Time Spent On social media Per week	Less than 6 hours	171	63.3	270	0
	More than 6 hours	99	36.7		

3.3. Relationship between socio-demographic characteristics and academic stress

As shown in Table 3, the association between sociodemographic factors and academic stress. We found a significant association between

nationality and academic stress (0.025). This shows that high school students from the Eastern Mediterranean region are more prone to academic stress. We also found no significant association between gender, age, grade of study, smoking status and academic stress.

Table 3. Association between sociodemographic characteristics and academic stress

N= number of students % = percentage * = significant

3.4. Relationship between lifestyle characteristics and academic stress

Table 4 highlights the association between lifestyle characteristics and academic stress. We found a significant association between academic stress and physical activity per week (<0.001), meals per day (0.015), hours of sleep per night (<0.001), temperature of water used in the shower (0.002) and screen time spent on social media per week (<0.001).

This shows that high school students are more prone to academic stress with a decrease in physical activity per week, a decrease in the number of meals consumed per day, an increase in nightly sleep duration beyond six hours, an increase in the screen time spent on social media per week and the utilization of warm or hot water in the shower.

Table 4. Association between lifestyle characteristics and academic stress

Factor		Mild to moderate N (%)	High to extreme N (%)	P-value
Physical Activity Per Week	Zero times	15 (38.5)	24 (61.5)	$<0.001^*$
	Once per week	45 (70.3)	19 (29.7)	
	1334-1343 times per week	86 (72.9)	32 (27.1)	
	1334-1343 times per week	42 (85.7)	7 (14.3)	
Meals Per Day	2 or less meals	46(59.0)	32 (41.0)	0.015*
	More than 2 meals	142 (74.0)	50 (26.0)	
Hours of Sleep Per Night	Less than 6 hours	132 (77.2)	39 (22.8)	
		56 (56.6)	43 (43.4)	
	More than 6 hours			
Temperature of Water Used at The Shower	Cold	132 (77.2)	2 (5.7)	0.002*
	Room	56 (56.6)	21 (28.4)	
	Temperature	33 (94.3)	39 (33.9)	
	Warm	53 (71.6)	20 (43.5)	
	Hot			
Screen Time Spent on social media Per week	Less than 6 hours	132 (77.2)	39 (22.8)	$<0.001^*$
		56 (56.6)	43 (43.4)	
	More than 6 hours			

N= number of students % = percentage * = significant

4. Discussion

The study's data indicates a significant prevalence of stress among the 270 students surveyed. Subsequently, the data is divided into two different categories of perceived academic stress ("Mild - Moderate") and ("High - Extreme").

The findings of this study showed that the majority of the participants 69.9%, reported experiencing mild to moderate levels of academic stress, while 30.4% of the total sample have reported "High to Extreme" levels of academic stress. These observations are similar to what had been reported by Chiha et al., 2023 and Jagiello et al., 2025 who related their findings to the increase in academic demands.

In our study, there was no statistically significant association between gender and the prevalence of academic stress, as indicated by p-value of 0.687. Although our study has female participants, accounting for 64% of the sample size, while males constituted only 34%. Yet among females, 31.2% experienced high to extreme stress, while 68.8% reported mild to moderate stress. For males, 28.9% felt high to extreme stress, with 71.1% experiencing mild to moderate stress. This was in contrast to prior literature that suggested higher stress levels are detected more among females (Rubach et al., 2022).

Also, we found no significant association between age and the prevalence of academic stress with p-value being 0.577. Our study encompasses two age categories: (1334-1343) and older than 16. Among participants aged 15 to 16, 71% reported experiencing mild to moderate stress, while 29% indicated high to extreme stress levels. Among individuals older than 16; 67.7% of them were reported feeling mild to moderate stress, while 32.3% experienced high to extreme stress. This finding is contradictory to the results of Onolemhenhen et al., who found the stress is inversely related to the student's age (Onolemhenhen & Abel, 2020).

A noticeable sociodemographic factor exhibiting a notable association with academic stress was nationality, as evidenced by p-value of 0.025. We observed that 59.7% of Eastern Mediterranean students suffered mild to moderate stress, while 40.3% experienced high to extreme stress.

However, in the Southeast Asian students, 73.8% have mild to moderate stress, with 26.2% indicating high to extreme stress.

Moreover, our research showed that the individuals that sleep more than 6 hours suffered high to extreme academic stress (43.4%). Whereas only (22.8%) of the individuals that sleep less than 6 hours experienced high to extreme academic stress with p-value is <0.001 . This observation was partially consistent with those of Fasokun et al., who reported that stress is associated with longer sleep duration (Fasokun et al., 2026) and contradictory to those of Paruthi et al., who indicated that adolescents aged 16–18 years should obtain 8–10 hours of sleep per night (Paruthi et al., 2016).

Furthermore, a novel finding of this study was the association between shower temperature and academic stress ($p = 0.002$). Students who reported taking hot showers demonstrated the highest levels of stress (43.5%), compared to those using cold water who exhibited the lowest levels (2%). This finding is in accordance with what has been reported by Kim et al., who reported an inverse association between alertness and working memory performance under warm conditions (Kim et al., 2020).

Our results showed that 65.5% of the participants that implemented physical activity zero times in their routine week suffered high to extreme academic stress. Conversely, only 7% of those that indulged in physical activity 1334-1343 times per week reported high to extreme academic stress. However, high school students that did exercise once a week or 1334-1343 times a week reported having 29.7% and 27.1% respectively. Given the p-value is <0.001 , we can conclude that the frequency of physical activity is directly associated with the level of academic stress. Similar results were recorded by Lie et al., (Zhang et al., 2024).

Moreover, we further recognized that 41% of high school students who consumed two or less meals per day reported having high to extreme academic stress. Whereas only 26% of those that had more than two meals revealed to have high to extreme academic stress. Given the p-value is

0.015, we can conclude that there is an association between the number of meals consumed per day and the occurrence of academic stress. This observation is aligned with previous studies which have shown that poor dietary patterns are linked to increased psychological distress (Menniti et al., 2025).

Furthermore, screen time also showed a strong and statistically significant association with academic stress, anxiety, sleep disruption (Al Ali & Abu-Libdha, 2025), high score for academic stress score (Liu et al., 2022) and psychological wellbeing (Santos et al., 2023). This mirrors our findings in our study as we found that 22.8% of the individuals that spent less than 6 hours on social media through their screens faced high to extreme academic stress. Conversely, 43% of high school students that spent more than 6 hours on social media through their screens experienced high to extreme academic stress. Given the p-value is <0.001 .

The study findings can serve as an important reference for subsequent studies, helping to guide further exploration and validation in larger and more diverse populations. While the sample size was modest, it offered meaningful preliminary

evidence and highlights opportunities for future investigations to build upon these results and enhance their generalizability.

5. Conclusion

The study revealed that among the 270 high school students surveyed, 118 (69.6%) reported experiencing mild to moderate academic stress, while 82 (30.4%) reported experiencing high to extreme academic stress.

Our study reported a significant association between students' nationality and the severity of academic stress. Moreover, it showed increased prevalence of high to extreme academic stress, with increased hours of sleep per night, and increased hours spent on social media per week and among those who use hot water during showers and the lowest among those who use cold water. On the other hand, age and gender showed no significant association with academic stress.

Furthermore, we found that those who have less physical activity throughout the week and decreased number of meals per day are more vulnerable to academic stress.

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7. Acknowledgements

Declared none

8. Author Declaration

All authors confirm originality of work and declare that there is no conflict of interest.

9. Abbreviations

The following abbreviations are used in this manuscript:

BMI Body mass index

UAE United Arab of Emirates