

Academic Stress and Internet Addiction among Adolescents: A Baseline Cross-Sectional Correlational Study

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Abstract

Background: Academic stress and problematic internet use are important concerns during adolescence, yet their association may vary across developmental, educational, and psychosocial contexts. The present study examined the relationship between academic stress and internet addiction among adolescents. **Methods:** The broader study used a two-group, pretest–post-test intervention design. For this objective, baseline pretest data from 224 adolescents aged 13–15 years in the experimental ($n = 112$) and control ($n = 112$) groups were pooled. Academic stress and internet addiction were assessed before intervention implementation. Pearson’s correlation examined their linear association; causal and intervention-effect inferences were not made. **Results:** Academic stress scores ranged from 15 to 23 ($M = 17.75$, $SD = 1.51$), whereas internet addiction scores ranged from 62 to 74 ($M = 69.55$, $SD = 2.44$). The correlation between academic stress and internet addiction was negligible and positive but not statistically significant, $r(222) = .031$, $p = .641$, two-tailed. Thus, the proposed hypothesis of a positive relationship was not supported in this sample. **Conclusion:** Contrary to the proposed hypothesis, academic stress was not significantly associated with internet addiction in the present sample. Although the observed correlation was positive, its magnitude was negligible. This finding suggests that academic stress alone may not be sufficient to explain adolescents’ internet addiction scores in this study. Other individual, family, emotional, social, or technology-related factors may contribute to internet addiction. Future research should use longitudinal designs and examine potential moderating or mediating factors, including emotional distress, coping, sleep, family support, and patterns of internet use.

Keywords: Academic Stress, Adolescents, Internet Addiction, Problematic Internet Use, Cross-Sectional Study.

Introduction

The period of adolescence is marked by physical, emotional, social, and academic developments. At this stage, students may face academic pressure due to examinations, excessive burden of academic work, parental expectations, competition amongst fellow mates, and concern about future careers. Moderate levels of stress can drive achievement, while chronic academic stress may negatively affect adolescents' functioning in areas such as emotion, cognition, sleep patterns, motivation and school performance. Furthermore, online access has become a vital component of adolescents' educational provisions, their socialisation, entertainment and communication (Anderson, E. L., et al. 2017; Ding, H. et al. 2023; Soriano-Molina, E., et al. 2025). Evidence also indicates that academic stress is positively associated with mobile-phone addiction among adolescents, partly through psychological

distress (Li et al., 2024). Therefore, examining the relationship between academic stress and internet addiction is important for identifying vulnerable adolescents and developing school-based counselling, stress-management, digital-wellness, and preventive mental-health interventions.

High levels of screen time and problematic use of digital technology among adolescents are associated with poor mental health, suicidal thoughts, anxiety, depression and lower academic performance when compared to non-exposed students, although female students appear more vulnerable than male (Xiao et al. 2025; Soriano-Molina et al., 2025). Digital media addiction leads to psychological distress, sleep and emotional dysregulation, and academic procrastination through the mediators of anxiety and self-control (Qiu et al., 2025; Li et al., 2024). School-based interventions targeting at-risk youth, incorporating parental involvement, peer education, and skills-based approaches, show promise in reducing problematic digital use and improving well-being

Adverse effects of stress among students

Students come across high levels of stress in different areas of their lives. The mixture of a busy life as well as academic pursuits leads to stress and depression among students. Moderate stress is useful and might lead to exceptional performance (Bhooma, K., & Sokhi, R. K., 2019). Academic-related stress in secondary and tertiary students has been related to anxiety, depression, sleep disturbance, poorer physical health, substance use, and reduced academic achievement, in addition to a greater risk of disengagement or dropout (Pascoe et al., 2020). Academic stress has also been correlated with poor mental well-being in adolescents, particularly when it is from family pressure, peer pressure, the education system, and future-related worry (Pascoe et al., 2020). Therefore, academic stress can be understood as a multidimensional problem rather than merely an examination-related difficulty. A study among secondary school students highlights that academic workload, family pressure, worries about future education, and future jobs are significant reasons for academic stress and that lead to psychological and physical well-being of adolescents (García-Ros, R. et al. 2018).

Adverse Effects of Internet Addiction Among Students

The internet has become an essential part of student's life like in communication, academic learning, entertainment, and social interaction. However, when internet usage becomes extreme, poorly controlled, and difficult to reduce despite negative consequences, it may be described as problematic internet use or internet addiction (Fineberg, N. A., et al., 2018). Typical features include preoccupation with online activities, loss of control, unsuccessful attempts to reduce use, withdrawal-like symptoms, neglect of responsibilities, and continued use despite academic, psychological, social, or physical problems (Brand, M. et al. 2019).

Internet addiction must derive from seeking out or perhaps processing information on the Internet. Students can be on that computer for a few hours working away with school without developing an addiction. (Cai et al., 2023). The real problem occurs, however, when the use of the Internet begins to interfere with sleep, study, social relations, mood regulation and/or physical exercise. Evidence indicates that the impacts of problematic internet use in children and adolescents are multidimensional, affecting mental well-being, cognitive functioning and academic performance, sleep quality, social interaction level, and physical well-being (Cai et al., 2023).

Academic stress and Internet addiction

In the period of educational life, adolescence is considered to be a crucial stage because, during this time, adolescents make key academic and career decisions that shape their future (Demir, Y., & Kutlu, M., 2020). Thus, adolescence is considered a critical period for academic and personality development. Numerous risky behaviours can significantly impact academic life during adolescence (Demir, Y., & Kutlu, M., 2020). Risky behaviours such as alcohol or substance use, gang involvement, bullying, life-threatening actions, or property damage have been observed during adolescence. Among these, internet addiction is considered a more significant risk factor. All these factors destructively impact adolescents' social, psychological, and biological development, and they significantly affect their academics and career (Demir, Y., & Kutlu, M., 2020).

Academic stress is another external factor associated with adolescent internet addiction. Academic stress is defined as the pressure exhibited by students when they believe that they need to obtain a large body of knowledge in an inadequate amount of time (Bedewy & Gabriel, 2015). However,

evidence suggests that academic stress originally contributes to adolescent problematic internet use and the excessive use of internet may serve as an emotion regulation strategy that reduces the fans under academic stress (Chen et al., 2025). In a cross-sectional study conducted in 2022, Sriati et al. also found a significant relationship between academic stress and internet addiction among adolescents but indicated that students use the internet as a coping mechanism for dealing with academic stress (Sriati et al., 2022).

Recent studies have shown that academic stress has a positive relationship with problematic internet use among adolescents, and internet use as a maladaptive coping strategy under academic stress (Modecki, K. L., *et al.*, 2022). Adolescents also often use the Internet to regulate their negative emotional states and daily strains, but the coping seems to be ineffective over time, as online support may lead to worse adaptation. One 2024 study, for example, found that internet addiction was associated with lower school engagement, and that psychological distress mediated this relationship (Öztekin, G. G., 2024). A more recent study conducted in 2025 reported that problematic internet use was significantly modelled by academic stress, with effects that were stronger for mixed academic stress and some specific measures of stress. Combined, these results suggest a close relationship between academic stress and problematic internet use in adolescents, with youth often using the Internet for avoidant rather than adaptive coping (Chen, Z. *et al.*, 2025).

Theoretical Framework

General Strain Theory (GST) provides a useful theoretical foundation for explaining the relationship between academic stress and problematic Internet use among adolescents. According to GST, exposure to different forms of strain such as academic pressure, failure to achieve valued goals, negative social relationships, and stressful life events may generate negative emotions, including anxiety, frustration, depression, and anger (Shen et al., 2023). When adolescents lack effective coping resources, they may engage in problematic behaviours as a means of escaping, regulating, or temporarily relieving these unpleasant emotional states (Agnew, 1992; Song & Park, 2019). In this context, excessive or addictive Internet use may function as a maladaptive coping strategy that provides temporary distraction from academic pressure and emotional distress.

The recent research endorses the suitability of GST for applying stress to behavioral addictions. Findings by Song and Park (2019) revealed that stress was positively related to internet addiction at the same time as self-control and mindfulness moderated this effect. Similarly, Shen et al. suggested that negative emotion may be a key psychological factor in the relationship between strain and addiction to the online environment.

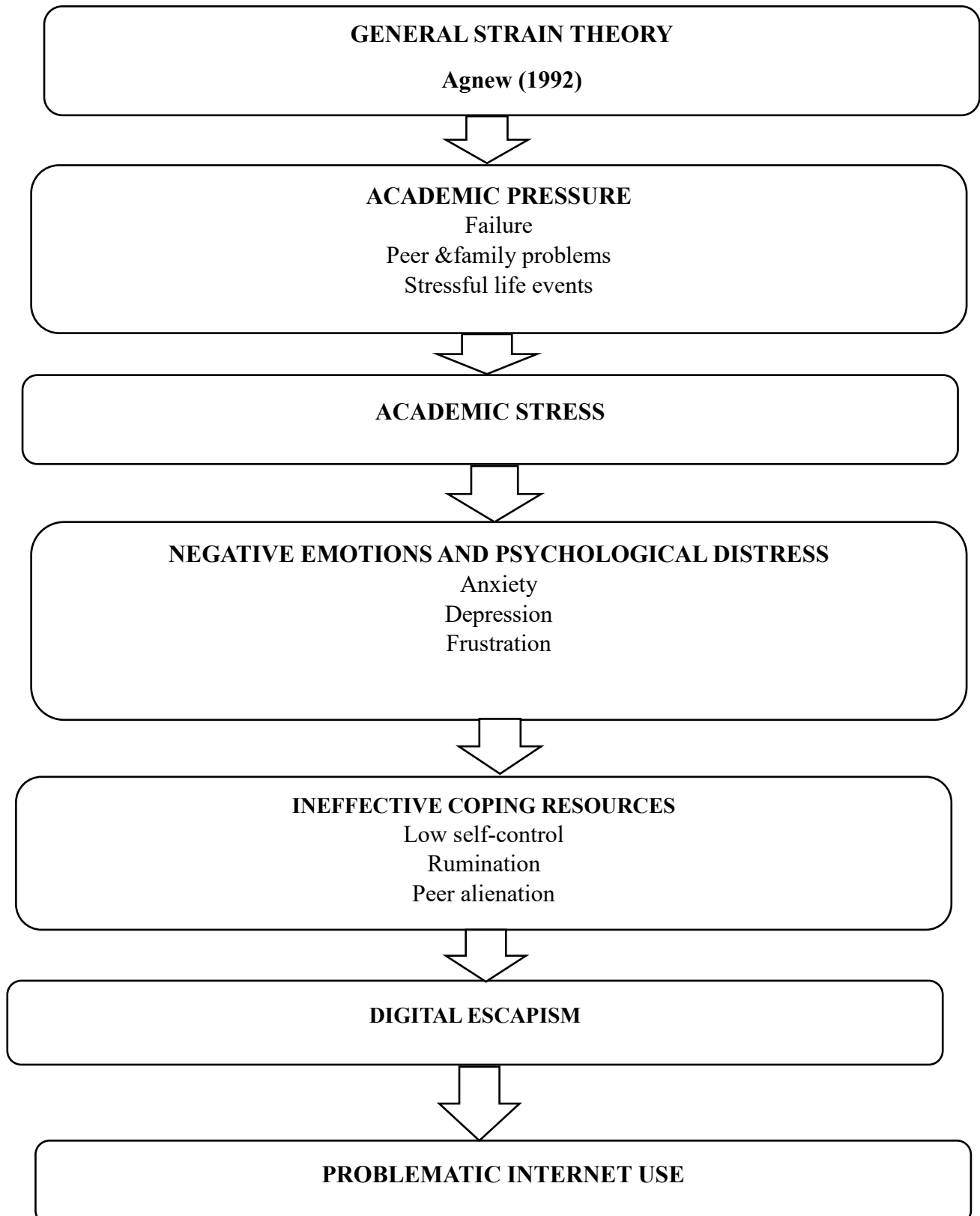
Research limited to adolescents also provides evidence of a positive association between academic stress and problematic internet use. A study conducted on a sample of high-school adolescents determined that academic stress was a significant predictor of Internet addiction, as well as family and peer attachment variables (Ariani et al., 2018). Additionally, academic stress has been found to correlate with problematic smartphone use through depressive symptoms, which mediate the relationship between academic stress and excessive technology use among adolescents (Li et al., 2019). Whereas smartphone addiction and Internet addiction are conceptually distinct, both constitute a set of maladaptive, poorly controlled digital use behaviours that may reflect similar coping processes of stress (Li et al., 2019).

In the study by Zhang et al (2024). observed that mobile-phone addiction was positively predicted by academic stress, and they found that this association was mediated by psychological distress. This indirect relationship was stronger among adolescents who reported higher levels of peer alienation and rumination. In addition, Yang et al (2023). conducted a GST with Chinese adolescents and found academic stress unfavourably related to internet gaming disorder, both directly and indirectly by negative emotions of depression and anxiety. These studies indicate that Internet-related addictive behaviour may develop in part as a strategy for coping with or avoiding emotional distress related to academics.

A recent three-level meta-analysis involving 49 studies, 166 effect sizes, and 189,483 adolescents confirmed a significant positive association between academic stress and problematic Internet use (Chen et al., 2025). The authors also proposed that problematic Internet use may be a maladaptive coping response to academic strain in children. Specifically, GST is a relevant theoretical framework to explain how academic stress contributes to internet addiction either directly or indirectly through

negative emotions, low self-control, rumination, peer alienation, and ineffective coping as potential mediating or moderating variables (Agnew, 1992; Yang et al., 2023; Zhang et al., 2024).

Figure 1. A General Strain Theory Model of Academic Stress, Digital Escapism, and Problematic Internet Use



Note. Based on Agnew's General Strain Theory, academic pressure produces stress and psychological distress; ineffective coping promotes digital escapism, which may subsequently increase students' vulnerability to problematic internet use

Rationale of the Study

The period of adolescence is highlighted by extreme academic demand, excessive digital engagement, and emotional sensitivity. Academic stress and internet addiction negatively impact their sleep, emotional regulation, concentration, and educational functioning. Prior studies have shown a positive relationship between psychological distress and problematic internet use, but research focusing on Indian school adolescents is relatively scarce and context-specific. Establishing this relationship with cross-sectional baseline data can guide school-based screening, preventive counselling, and tailored interventions, free from the risk of misinterpreting correlational findings as intervention effects or causal explanations.

Research Question

What is the nature and magnitude of the relationship between academic stress and internet addiction among adolescents aged 13–15 years studying in Standards VIII–X?

Statement of the Problem

A baseline cross-sectional correlational study to examine the relationship between academic stress and internet addiction among adolescents aged 13–15 years studying in Standards VIII–X in selected private schools.

Objective

To analyze the relationship between Academic Stress and internet addiction among adolescents.

Hypotheses

H₀: Academic stress is not significantly and positively related to internet addiction among adolescents.

H₁: Academic stress is significantly and positively related to internet addiction among adolescents.

Methodology

Research Design

The broader investigation used a two-group, pretest–post-test intervention design. Participants were selected through stratified random sampling, with grade level and gender used to define the strata. The final sample comprised 224 adolescents aged 13–15 years (Standards VIII, IX, X) including 112 participants in the experimental group and 112 in the control group. The present paper addressed a baseline correlational objective using only pretest data collected before intervention implementation. Accordingly, this analysis constituted a cross-sectional correlational analysis nested within the broader intervention study. Pretest scores from both groups were pooled, and Pearson's product–moment correlation was used to estimate the direction and magnitude of the linear association between academic stress and internet addiction. The present analysis did not assess intervention effectiveness or support causal conclusions.

Sampling and Group Allocation

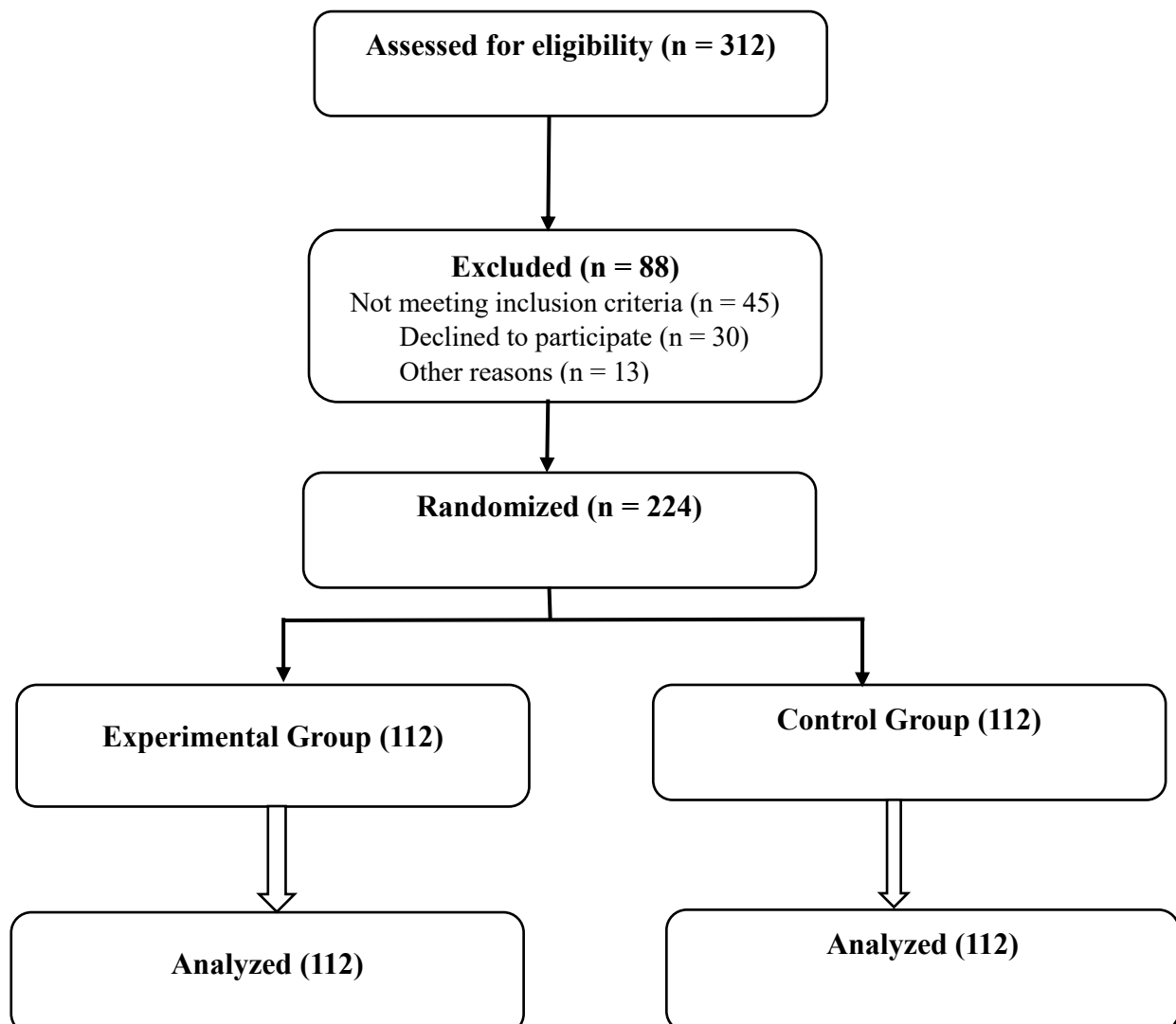
A stratified random sampling procedure ensured proportional representation across grade level and gender. The eligible student population was divided by gender (boys and girls) and grade level (Standards VIII, IX, and X). Participants from each stratum were randomly selected using a sampling procedure determined by the researcher. After the selection of participants, the adolescents were randomly assigned to an experimental group (112) or a control group (112) by drawing lots, assisted in this procedure by a school counsellor, for a sample size of 224. All baseline pretest data were used for the current analysis. Data from the pretest of the experimental and control groups were pooled, and the Pearson product-moment correlation coefficient was used to establish the linear relationship between academic stress and internet addiction.

Table 1 Distribution of Participants by Group, Gender, and Grade Level (N = 224)

Group	Grade	Age	Male (n)	Female (n)	Total
Experimental	VIII	13	19	18	37
	IX	14	19	18	37
	X	15	19	19	38
Subtotal			57	55	112
Control	VIII	13	19	18	37
	IX	14	19	18	37
	X	15	19	19	38
Subtotal			57	55	112
Overall Total			114	110	224

Note. Initial screening pool = 312; final enrolled sample N = 224. Age indicates typical age for each grade (VIII = 13, IX = 14, X = 15)

Figure 2. Participant Flow Through the Randomized Controlled Trial



Note. The flow diagram depicts participant eligibility assessment, exclusions, randomization, group allocation, and inclusion in the final analysis. Of 312 adolescents assessed for eligibility, 88 were excluded, and 224 participants were randomized equally to the experimental and control groups (n = 112 each); all randomized participants were included in the respective group analyses.

Criteria for the choice of the Sample:

Inclusion criteria

- ✓ Adolescents were aged 13-15 years.
- ✓ Adolescents with academic stress (Score 15 and above).
- ✓ Adolescents with internet addiction (Score 65 and above).
- ✓ Provided assent along with parental consent.
- ✓ Only Private school children were part of the present study.

Exclusion criteria

- ✓ Adolescents with severe psychiatric treatment and having medicines will be excluded.
 - ✓ Had a history of severe psychiatric disorders requiring pharmacological treatment
- Outside the specified age range

Measures

Academic Stress Scale

Data were collected using the Academic Stress Scale. **Scale for Assessing Academic Stress (SAAS)** – The SAAS, developed by Sinha, Sharma, and Mahendra (2001), was used. This scale consists of a 30-item self-report measure. The Subject has to answer each item regarding the presence or absence of academic stress symptoms. The subject has to choose a “yes” answer for the presence of academic stress or a “no” answer for the absence of academic stress, scored as (1- the presence of symptoms) and (0-the absence of symptoms) for each item as applies to him/her. In the present study, the instrument demonstrated good internal consistency (Cronbach’s $\alpha = 0.80$).

Internet Usage Scale was prepared by Saini and Kaur in 2017.

The test is used to assess students' internet use or internet addiction. It is more appropriate in Indian conditions. It is available in a five-point scale, and it consists of 20 items. Scoring: Each item is followed by five alternatives ranging from Rarely, Occasionally, Frequently, Often, and always with respective weights of 1, 2,3,4,5. The highest score on the scale is 100, and the lowest is 20. In the present study, the instrument demonstrated good internal consistency (Cronbach’s $\alpha = 0.89$).

Ethical Considerations

The study was conducted in accordance with established ethical guidelines for research involving human participants. Ethical approval was obtained from the Institutional Ethics Committee, Lovely Professional University (IEC-LPU) (Ref. No.: LPU/IEC-LPU/2024/3/2; Date: 12.09.2024). Permission was also secured from the administrations of the participating schools prior to data collection. Written informed consent was obtained from the parents or guardians of all participants, and assent was obtained from the students. Participation was voluntary, and participants were informed of their right to withdraw from the study at any stage without any consequences. Confidentiality and anonymity were strictly maintained throughout the research process, and all data were used solely for academic purposes.

Statistical Analysis

Data were analyzed using SPSS (Version 26). Baseline data were analyzed using descriptive statistics and Pearson’s product-moment correlation to assess the association between academic stress and internet addiction. Assumptions of linearity, normality, and absence of influential outliers were examined before analysis. Statistical significance was evaluated using a two-tailed alpha level of .05, with 95% confidence intervals reported where applicable.

Result

A Pearson product–moment correlation was conducted to examine the association between academic stress and internet addiction among adolescents at pre-test.

Table 2 Descriptive Statistics for Academic Stress and Internet Addiction (N = 224)

Variable	N	Minimum	Maximum	<i>M</i>	<i>SD</i>
Academic stress pretest	224	15	23	17.75	1.51
Internet addiction pretest	224	62	74	69.55	2.44

Note: *M* = mean; *SD* = standard deviation. Scores are based on the instruments used in the present study. Descriptive statistics summarize the observed sample and should not be interpreted as diagnostic classifications.

Table 1 presents the descriptive characteristics of academic stress and internet addiction among 224 adolescents. Academic-stress scores were normally distributed from 15 to 23 and above, with a mean of 17.75 (*SD* = 1.51), suggesting limited variability in the academic-stress responses by participants. The scores on internet addiction ranged from 62 to 74 and above (*M* = 69.55, *SD* = 2.44). Regarding internet addiction, the larger standard deviation means somewhat greater dispersion than for academic stress, but both measures were relatively modest. The results characterize the distribution of scores in this sample only and do not speak to clinical severity, causal directionality, or population-level prevalence.

Table 3 Correlations Between Academic Stress and Internet Addiction (Pretest)

Variables	1	2
Academic Stress		.031
Internet Addiction	.031	

Note. *N* = 224. Values are Pearson correlation coefficients. The correlation between academic stress and internet addiction was not statistically significant, $r(222) = .031$, $p = .641$.

Table 2 represents the correlation between academic stress and internet addiction of adolescents. Pearson’s product–moment correlation was conducted to examine the relationship between academic stress and internet addiction among adolescents. The analysis revealed a very weak positive correlation between academic stress and internet addiction, but the association was not statistically significant, $r(222) = .031$, $p = .641$, *N* = 224. Therefore, the hypothesis proposing a significant positive relationship between academic stress and internet addiction was not supported.

Discussion

The present study examined whether academic stress was associated with internet addiction among 224 adolescents aged approximately 13–15 years. Descriptively, the participants reported mean academic-stress and internet-addiction scores of 17.75 and 69.55, respectively. However, Pearson’s correlation indicated a negligible, positive, and statistically nonsignificant association, $r(222) = .031$, $p = .641$. Accordingly, the hypothesis predicting a positive relationship was not supported by these data.

This result is inconsistent with recent evidence showing that academic stress and problematic use of the internet are positively correlated at the aggregate level. As such, a 2025 levels-3 meta-analysis combining 49 studies found a positive relationship between stress and well-being ($k=166$; $N=189,483$ adolescents) but also indicated that the strength of this association varied according to both the source of stress and the measurement instrument. This high degree of heterogeneity may account for why a relationship was not discovered with the current sample. We also speculate that when academic stress

is associated with emotional distress, inadequate coping, family conflict, or sleep disturbance, it would be more related to problematic internet use rather than exerting a direct negative impact (Chen, Z. et al. 2025).

The General Strain Theory is still a possible framework, yet the current analysis did not evaluate negative emotions or coping processes. A recent study using this framework found that academic-related stress might contribute to problematic gaming indirectly by increasing depression, anxiety, and other emotional difficulties; direct associations also varied based on what type of academic stress was examined. Thus, the relationship between academic stress and internet addiction may not be alike in all adolescents. The nonsignificant result also warns against generalizing internet use as an escape response for everyone. Future studies should address emotional, familial, gender-related, and school-contextual mechanisms using longitudinal and mediation approaches (Yang, X. et al., 2025).

Conclusion

In this sample of 224 adolescents, academic stress and internet addiction were not significantly associated, $r(222) = .031$, $p = .641$, indicating a negligible effect. This null finding does not support the hypothesized direct link and cautions against inferring causality from cross-sectional correlations. Given prior evidence of heterogeneity across stress sources and measures, the association may operate indirectly through emotional distress, coping, sleep, and family or school contexts. Future longitudinal and mediation studies should test these pathways and clarify for whom and under what conditions academic stress relates to problematic digital use.

Limitations

Several limitations have been observed in the present study. The cross-sectional design precludes temporal ordering and causality. The sample was collected from Thane and Raigad districts only and does not represent adolescents of other regions or educational settings. Self-report measures may also have introduced recall, social-desirability, and common-method bias. This analysis used total scores, along with the other constant variables (subdimensions, gender, grade, socioeconomic status, emotional distress, sleep, and coping). Finally, the documented association does not support information on nonlinear or subgroup-specific relations.

Implications

These findings do not indicate that adolescents with high academic stress demonstrated greater internet addiction. Consequently, comprehensive conclusions can be avoided, and look more broadly at-risk factors including emotional distress, sleep, family support, and coping around the time of tests, as well as their patterns of internet use. Screening and prevention programs focusing on the intersections between academic pressure and digital behavior may prove more beneficial when conducted in a developmentally sensitive manner. Future research should recruit larger, more diverse samples and apply validated measures to investigate the utility of longitudinal designs along with mediation or moderation analyses to identify adolescents at elevated risk.

Acknowledgements: We would like to acknowledge all the subjects and researchers who were involved in this study.

Conflicts of Interest: The authors declare no conflict of interest.

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