

Research Article

THE RELATIONSHIP BETWEEN DEPRESSION, ANXIETY, STRESS AND INTERNET USE AMONG HIGH SCHOOL STUDENTS

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Abstract

The prevalence of mental health issues among high school students has raised concerns globally, with depression, anxiety, and stress being common challenges. This study investigates the relationship between depression, anxiety, stress, and internet use among high school students in Da Nang, Vietnam. The short Internet Addiction Test (s-IAT) and Depression Anxiety Stress Scales (DASS-21) were used to assess internet addiction and mental health symptoms. Data were analyzed using correlation analysis and regression models. Results revealed significant positive correlations between internet use and symptoms of stress, anxiety, and depression, highlighting the importance of addressing problematic internet usage patterns. Additionally, associations were found between demographic variables, such as parental occupations and socioeconomic status, and mental health outcomes, emphasizing the interconnected nature of individual, familial, and societal factors. The study underscores the need for targeted interventions to promote healthy internet habits and mitigate potential harms among high school students. By understanding the complex interplay between internet use and mental health outcomes, stakeholders can develop effective strategies to support the well-being of adolescents in an increasingly digital world. This research contributes to a deeper understanding of the socio-ecological factors shaping adolescent mental health and informs future intervention efforts. *ASEAN Journal of Psychiatry, Vol. 25 (6) June, 2024; 1-16.*

Keywords: Depression; Anxiety; Stress; Internet Use; High School Student

Introduction

The prevalence of mental health issues among high school students has become a growing concern globally, with depression, anxiety, and stress being among the most common challenges faced by adolescents [1-3]. Studies have shown that a substantial proportion of high school students experience symptoms of depression, anxiety, or stress, which can have significant implications for their academic performance, social relationships, and overall well-being [4-6]. Concurrently, the

widespread use of the internet among adolescents has raised questions about its potential impact on mental well-being. With digital technologies becoming increasingly integrated into daily life, understanding the relationship between internet use and mental health outcomes has become paramount. While the internet offers numerous benefits, including access to information, communication with peers, and opportunities for entertainment and self-expression, concerns have been raised about the potential negative effects of excessive or problematic internet use on adolescent

mental health [7-9]. Research suggests a complex interplay between internet use and mental health outcomes among high school students, with both positive and negative effects being reported. While some studies have found beneficial effects of internet use on mental well-being, such as increased social support and opportunities for self-expression, others have highlighted the detrimental effects of excessive internet use on symptoms of depression, anxiety, and stress [10,11]. Understanding the nuanced relationship between internet use and mental health outcomes is crucial for developing effective interventions to support the well-being of high school students. By examining the factors that contribute to both positive and negative outcomes associated with internet use, researchers can identify strategies to promote healthy internet habits and mitigate potential harms. Additionally, investigating the role of individual characteristics, such as personality traits, coping strategies, and social support networks, can provide valuable insights into the factors that moderate the relationship between internet use and mental health outcomes. Addressing the complex interplay between internet use and mental health is essential for promoting the well-being of high school students in an increasingly digital world.

Research suggests a complex interplay between internet use and mental health outcomes among high school students, with both positive and negative effects being reported [9,12,13]. While the internet offers valuable resources for education, socialization, and entertainment, excessive or problematic internet use has been linked to heightened levels of depression, anxiety, and stress among adolescents [14,15]. Excessive internet use may contribute to a range of mental health issues, including decreased self-esteem, social isolation, and disrupted sleep patterns, which can exacerbate symptoms of depression, anxiety, and stress [8,16,17]. Moreover, the ubiquitous nature of digital technologies in adolescents' lives can make it challenging to establish healthy boundaries and balance between online and offline activities, further contributing to mental health problems. Understanding the nuanced relationship between internet use and mental health outcomes is crucial for developing effective interventions to support the well-being of high school students. By identifying the factors that contribute to both positive and negative effects of internet use on mental health, researchers can inform the development of targeted interventions

that promote healthy internet habits and mitigate potential harms.

Furthermore, the socio-ecological context in which adolescents navigate their online and offline lives plays a significant role in shaping their mental health experiences [18-20]. The family environment, in particular, has a profound impact on adolescents' internet use patterns and mental health outcomes. Parental occupations, family dynamics, socioeconomic status, and other demographic factors can influence both the availability of internet access and the norms and expectations surrounding its use within the household [21-23]. For example, adolescents from families with higher socioeconomic status may have greater access to digital devices and internet connectivity, allowing for more extensive internet use compared to their peers from lower-income families [24,25]. Additionally, parental attitudes and monitoring practices regarding internet use can vary depending on factors such as parental occupations, educational background, and cultural beliefs [26]. Limited research has explored the specific associations between these variables within the context of high school students' experiences with depression, anxiety, and stress. Understanding the complex interplay between parental occupations, family dynamics, socioeconomic status, and mental health outcomes can provide valuable insights into the mechanisms through which these factors influence adolescents' well-being. By examining how these socio-ecological factors interact with internet use patterns to impact mental health outcomes, researchers can develop more nuanced interventions that address the unique needs and challenges faced by adolescents from diverse backgrounds. Moreover, investigating the role of individual characteristics, such as coping strategies, social support networks, and personality traits, can further elucidate the pathways through which socio-ecological factors influence mental health outcomes among high school students. Understanding the socio-ecological context in which adolescents navigate their online and offline lives is essential for developing comprehensive interventions that promote mental health and well-being in this population.

Therefore, this study aims to investigate the intricate relationship between depression, anxiety, stress, and internet use among high school students. By examining these interrelationships, we seek to elucidate the complex factors influencing

mental well-being during adolescence, a critical period of psychological development. Drawing on established theories and empirical research in psychology and sociology, we hypothesize that excessive internet use will be positively associated with symptoms of depression, anxiety, and stress among high school students. Given the potential impact of socio-ecological factors on adolescent mental health, we also anticipate observing associations between demographic variables, such as parental occupations and socioeconomic status, and mental health outcomes. Understanding the interconnected nature of individual, familial, and societal factors in shaping adolescent experiences is crucial for developing targeted interventions to promote mental health and well-being in this population. By exploring these relationships within the specific context of high school students, this study aims to contribute to a deeper understanding of the complex interplay between internet use and mental health outcomes during adolescence.

Materials and Methods

Participants

The study encompassed a diverse cohort of 840 participants, exhibiting a balanced distribution across various demographic parameters. Gender representation among the participants fairly even, with 446 individuals identifying as male, comprised 53.09% of the total, while 394 participants identified as female, constituting 46.90% of the sample.

Participants were spread across different academic grades, with 280 individuals in each grade level 10, 11, and 12 equally representing 33.33% of the total population. This balanced distribution ensured that the study encompassed students from different stages of their secondary education.

In terms of academic performance, the participants exhibited a range of achievements. While only a negligible percentage were categorized as having weak performance (0.24%), the majority fell into the categories of credit (47.74%) and distinction (43.21%), with a smaller proportion achieving high distinction (3.45%).

Economic diversity was evident among the participants, with individuals coming from various socioeconomic backgrounds. Approximately 8.57% of the participants were classified as belonging to poor economic conditions, whereas

54.64% fell into the middle-income bracket. Additionally, 34.76% were categorized as having good economic conditions, with a minority (2.02%) identified as belonging to wealthy households.

The occupational diversity of participants' parents reflected a range of professions. Notably, a significant portion of parents were engaged in public service (25.24%) and small business (31.79%), while others were involved in occupations such as free labor (28.09%) and various other fields (12.86%). This diversity in parental occupations provided insight into the participants' familial backgrounds and socio-economic contexts.

In essence, the study participants represented a broad spectrum of individuals, encompassing diversity in gender, academic standing, economic conditions, and parental occupations. This comprehensive representation ensured that the study findings could potentially be generalized across a varied demographic range, enhancing the robustness and applicability of the research outcomes (Table 1).

Table 1. Overview of participants.

Characteristics of participant		N	Percentage (%)
Gender	t	446	53.09
	Female	394	46.9
Grade	10	280	33.33
	11	280	33.33
	12	280	33.33
Academic performance	Weak	2	0.24
	Average	45	5.36
	Credit	401	47.74
	Distinction	363	43.21
	High distinction	29	3.45
Economic conditions	Poor	72	8.57
	Middle	459	54.64
	Good	292	34.76
	Wealthy	17	2.02

Parent's job	Public servants	212	25.24
	Small business	267	31.79
	Fishery	4	0.48
	Agriculture	13	1.55
	Free labor	236	28.09
	Others	108	12.86
Total		840	100

Measurements

The study utilized two main assessment scales to measure internet addiction and mental health issues among Vietnamese individuals. The short Internet Addiction Test (s-IAT) was employed to evaluate problematic internet use, specifically adapted for the Vietnamese population by Tran et al., [27]. This abbreviated version of the Internet Addiction Test (IAT) consists of 12 items, each rated on a 5-point Likert scale ranging from 1 (rarely) to 5 (always). Participants responded to statements reflecting their online behaviors and attitudes, with the scale covering two main factors: The ability to control/manage time spent on the Internet and social craving/longing for online interaction. A total score, ranging from 12 to 60, was calculated by summing the scores of all items, with higher scores indicating a greater likelihood of Internet addiction. The cutoff score of 36 was used to classify individuals as being at risk for Internet addiction, based on previous research findings. Reliability analysis using Cronbach's Alpha yielded a value of 0.80, indicating good internal consistency reliability for the scale.

The Depression Anxiety Stress Scales (DASS-21) were employed in the study to gauge symptoms of depression, anxiety, and stress among the participants. Developed by Lovibond et al., this widely utilized self-report questionnaire consists of 21 items divided into three subscales, each targeting a specific psychological domain [28]. Participants were tasked with rating the extent to which they experienced each symptom over the preceding week, using a 4-point Likert scale ranging from 0 (indicating the symptom did not apply to them at all) to 3 (indicating the symptom applied to them very much or most of the time). Subsequent to participant responses, scores for each subscale were computed by summing the ratings of relevant items. Specific scoring formulas

were then applied to calculate depression, anxiety, and stress scores. The reliability of the DASS-21 scales within the context of this study was assessed using Cronbach's Alpha, which yielded a value of 0.84. This result suggested good internal consistency reliability, bolstering the credibility of the measurement tool for evaluating mental health issues among the Vietnamese population. Classification of mental health problems was based on predetermined cutoff scores for each subscale, with varying ranges denoting distinct levels of severity for depression, anxiety, and stress. This classification schema provided a framework for interpreting individual scores within the context of mental health status. Specifically, individuals were categorized as experiencing symptoms falling within the ranges of normal, slight, moderate, heavy, or severe, based on their depression, anxiety, and stress scores. The utilization of the DASS-21 facilitated a comprehensive assessment of mental health status among participants, enabling researchers to identify and quantify symptoms of depression, anxiety, and stress within the study population. This measurement approach offered valuable insights into the prevalence and severity of mental health issues, aiding in the development of targeted interventions and support strategies (Table 2).

Table 2. Classification of mental health problems based on problem scores.

Classification	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Slight	Oct-13	08-Sep	15-18
Moderate	14-20	Oct-14	19-25
Heavy	21-27	15-19	26-33
Severe	≥ 28	≥ 20	≥ 34

Data analysis

The data analysis for this study involved utilizing the Statistical Package for the Social Sciences (SPSS) statistical software to process research results and assesses the relationship between the level of Internet use and problems related to depression, anxiety, and stress. The parameters and statistical operations employed in the analysis included descriptive statistics, correlation analysis, and regression analysis. Descriptive statistics were utilized to summarize and describe the characteristics of the variables involved in the

study. This included calculating measures such as means, standard deviations, frequencies, and percentages to provide a comprehensive overview of the data. Correlation analysis was conducted to examine the relationships between variables. Specifically, Pearson's correlation coefficient was calculated to determine the strength and direction of the linear relationship between the level of Internet use and the problems of depression, anxiety, and stress. Correlation coefficients close to +1 or -1 indicate a strong positive or negative relationship, respectively, while coefficients close to 0 suggest a weak or no linear relationship. Regression analysis was employed to further explore the relationship between the level of Internet use and the problems of depression, anxiety, and stress while controlling for other relevant variables. Multiple regression analysis, in particular, allows for the examination of how multiple independent variables collectively predict a dependent variable. This analysis helps in understanding the extent to which the level of Internet use contributes to the variance in depression, anxiety, and stress, after accounting for other potential predictors. The data analysis involved a systematic process of utilizing descriptive statistics, correlation analysis, and regression analysis within the SPSS software to assess the reliability and strength of the relationship between Internet use and mental health issues such as depression, anxiety, and stress.

Procedures

The research procedures involved a systematic approach to randomly select schools, classes within those schools, and subsequently evaluate the students within the selected classes. The process unfolded as follows: Firstly, a list of high schools in each district of the Da Nang area was compiled. The districts included Phan Chau Trinh, Thai Phien, Nguyen Trai, Pham Phu Thu, Ngu Hanh Son, Hoang Hoa Tham, and Cam Le. One high school was selected from each district to ensure geographical representation across the area. Next, within each district, the high schools were listed, and a randomization process was employed to select a school from the respective district's list. This random selection method involved assigning numbers to each school and then drawing a number randomly to determine the chosen school for the research. Once the high schools were selected, the next step involved randomly selecting a 10th, 11th, and 12th-grade class within each chosen school. Each class was expected to have approximately

35-40 students, ensuring a reasonable sample size for evaluation purposes. This selection process was conducted independently for each grade level to ensure representation across different stages of secondary education. After the classes were identified, the research team proceeded with the evaluation of all students within the selected classes. The evaluation process aimed to collect data using standardized materials and methods. These materials were designed to assess various aspects of student performance, academic achievement, and other relevant factors. The research period spanned from December 2022 to September 2023, allowing sufficient time for data collection, analysis, and reporting. Throughout this period, the research team adhered to ethical guidelines and protocols to ensure the integrity and validity of the research findings. In summary, the research procedures involved a structured approach to randomly select schools, classes, and evaluate students within the chosen classes. This methodical process aimed to ensure representativeness, reliability, and validity in collecting data from grades 10, 11, and 12 across seven high schools in the Da Nang area.

Results

Table 3 illustrates the correlation matrix, delineating the associations between Internet use, as measured by the short Internet Addiction Test (s-IAT), and symptoms of stress, anxiety, and depression among students. Each cell in the table represents the correlation coefficient between the respective variables, providing insight into the strength and direction of the relationships.

The analysis revealed statistically significant positive correlations between internet use and symptoms of stress, anxiety, and depression, underscoring the interplay between Internet usage patterns and mental health outcomes. Specifically, the correlation coefficient between internet use (s-IAT) and stress was calculated at 0.466^{**}, indicating a moderate positive relationship. This suggests that increased Internet use is associated with elevated levels of stress among students. Likewise, a substantial positive correlation was observed between Internet use and anxiety, with a correlation coefficient of 0.420^{**}. This finding implies that heightened Internet usage is linked to increased feelings of anxiety among students. Furthermore, the correlation coefficient between internet use and depression was determined to be 0.484^{**}, indicating a robust positive relationship.

This suggests that greater Internet use correlates with higher levels of depression symptoms among students. Additionally, significant positive correlations were identified among symptoms of stress, anxiety, and depression, emphasizing the co-occurrence and interconnectedness of this mental health constructs. The correlation coefficient between stress and anxiety was calculated to be 0.763**, indicating a strong positive relationship. Similarly, a robust positive correlation of 0.759** was observed between stress and depression, while anxiety and depression exhibited a significant positive correlation of 0.719**.

These detailed findings provide nuanced insights into the associations between internet use and mental health outcomes among students. The

observed correlations underscore the importance of considering both internet use behaviors and mental health status in interventions aimed at promoting holistic well-being among student populations. Further research and targeted interventions may be warranted to better understand and address the complex interrelationships between Internet use and mental health outcomes in educational settings.

The breakdown of parental occupations among the study participants offers a comprehensive glimpse into the socioeconomic landscape of the community. Each occupational category represents a unique sector of employment, reflecting not only the diversity of career paths but also the broader economic context in which families are situated (Table 4).

Table 3. Correlation between Internet use and depression, anxiety, and stress in students.

	S-IAT	Stress	Anxiety	Depression
S-IAT	-	-	-	-
Stress	0.466**	-	-	-
Anxiety	0.420**	0.763**	-	-
Depression	0.484**	0.759**	0.719**	-

Note: **p<0.01.

Table 4. Student depression by demographic variables.

	N	Normal	Slight	Moderate	Heavy	Severe	p
Academic performance							
Weak	2	2	0	0	0	0	0.00
Average	45	41	3	1	0	0	
Credit	401	337	43	21	0	0	
Distinction	363	307	30	25	1	0	
High distinction	29	24	3	0	2	0	
Family concern							
Not at all concerned	10	8	0	1	1	0	0.00
Slightly concerned	103	71	17	15	0	0	
Moderately concerned	475	412	45	18	0	0	
Extremely concerned	252	220	17	13	2	0	

Economic conditions							
Poor	72	62	6	4	0	0	0.00
Middle	459	373	60	26	0	0	
Good	292	261	13	17	1	0	
Wealthy	17	15	0	0	2	0	
Parent's job							
Public servants	212	184	22	5	1	0	0.00
Small business	267	228	27	12	0	0	
Fishery	4	4	0	0	0	0	
Agriculture	13	11	1	0	1	0	
Free labor	236	190	20	25	1	0	
Others	108	94	9	5	0	0	
Note: 1-Normal; 2-Slight; 3-Moderate; 4-Heavy; 5-Severe.							

Public servants, comprising a quarter of the sample at 25.24%, likely include individuals employed in various capacities within government agencies, public institutions, and civil service roles. This category encompasses a wide range of professions, such as teachers, healthcare workers, administrative staff, and law enforcement personnel, highlighting the significant influence of public-sector employment within the community. In contrast, small business owners constitute a substantial portion of the sample, making up 31.79% of participants. This category encompasses entrepreneurs, proprietors, and self-employed individuals engaged in a diverse array of businesses, including retail stores, restaurants, service providers, and artisanal craftsmen. The prevalence of small business ownership underscores the entrepreneurial spirit and economic vibrancy within the community, reflecting the diversity of local enterprises and the resilience of small-scale entrepreneurship. The representation of the fishery sector, although relatively small at 0.48%, underscores the importance of marine resources and coastal livelihoods within certain segments of the community. Families engaged in fisheries likely rely on fishing, aquaculture, and related maritime activities for their livelihoods, contributing to the cultural heritage, economic sustainability, and food security of coastal communities. Similarly,

the presence of agricultural occupations, reported by 1.55% of participants, sheds light on the agrarian traditions and rural livelihoods within the community. Families involved in agriculture play a vital role in food production, agribusiness, and rural development, contributing to the agricultural economy, land stewardship, and cultural heritage of the region. The category of free labor encompasses nearly a third of the sample, at 28.09%, representing individuals whose parents are engaged in manual labor, unskilled work, or service-oriented occupations. This diverse category includes construction workers, factory laborers, domestic workers, and service industry employees, reflecting the broad spectrum of labor-intensive industries and service sectors within the community. Lastly, the category of "others" encompasses a heterogeneous mix of occupations, accounting for 12.86% of participants. This category includes individuals with parents employed in professions not specifically categorized in the predefined sectors, such as freelancers, professionals in non-traditional fields, and individuals working in emerging industries or niche sectors. The inclusion of this category reflects the complexity and diversity of occupational pathways pursued by families within the community, highlighting the multifaceted nature of the local economy and labor market. The detailed analysis of parental occupations provides

rich insights into the socioeconomic dynamics, occupational diversity, and cultural fabric of the community. By understanding the varied pathways of employment and economic participation among families, researchers gain a deeper appreciation for the contextual factors shaping the lives and experiences of study participants.

The analysis of parental occupations among the study participants revealed a diverse array of professional backgrounds, spanning various sectors within the community. Public servants constituted a notable segment, comprising 25.24% of the sample. This category encompasses individuals employed in governmental roles across different departments and agencies, including administrative, educational, healthcare, and law enforcement positions. The significant representation of public servants underscores the influence of government employment within the community and reflects the diversity of public-sector careers among families. Small business ownership emerged as another prevalent category, with 31.79% of participants reporting parents engaged in entrepreneurial endeavors. These small business owners contribute to the local economy through a wide range of enterprises, including retail stores, restaurants, service providers, and artisanal workshops. The prevalence of small business ownership highlights the entrepreneurial spirit and economic vitality within the community, showcasing the diversity of locally-owned businesses and the importance of entrepreneurship in driving economic growth. The fishery sector, while constituting a smaller portion of the sample at 0.48%, represents families whose livelihoods are closely tied to maritime activities. Individuals engaged in fisheries contribute to the

local economy through fishing, aquaculture, and related marine industries. This category reflects the cultural heritage and economic significance of coastal livelihoods within certain segments of the community, highlighting the importance of marine resources as a source of sustenance and livelihood. Agricultural occupations were reported by 1.55% of participants, indicating a minor but notable presence of families involved in farming, cultivation, or agricultural production activities. These individuals contribute to food production, rural livelihoods, and agricultural sustainability within the community. The representation of agriculture underscores the importance of farming traditions, land stewardship, and agrarian lifestyles in shaping the local economy and cultural landscape.

Free labor emerged as a substantial category, encompassing 28.09% of participants whose parents are engaged in manual labor, unskilled work, or service-oriented occupations. This diverse category includes individuals employed in construction, manufacturing, domestic work, and service industries, reflecting the breadth of labor-intensive industries and service sectors within the community. Lastly, the category of "others" accounted for 12.86% of participants, representing a heterogeneous mix of occupations not specifically categorized in the predefined sectors. This category includes individuals with parents employed in non-traditional professions, freelancers, professionals in emerging industries, or niche sectors. The inclusion of this category reflects the complexity and diversity of occupational pathways pursued by families within the community, highlighting the multifaceted nature of the local economy and labor market (Table 5).

Table 5. Student anxiety by demographic variables.

	N	Normal	Slight	Moderate	Heavy	Severe	p
Gender							
Female	446	277	71	81	13	4	0.00
Male	394	307	42	38	7	0	
Grade							
10	280	188	44	43	5	0	0.00
11	280	223	16	32	9	0	
12	280	173	53	44	6	4	

Academic performance							
Weak	2	1	0	1	0	0	0.00
Average	45	39	2	3	1	0	
Credit	401	290	49	54	8	0	
Distinction	363	232	58	60	11	2	
High distinction	29	22	4	1	0	2	
Family concern							
Not at all concerned	10	7	1	1	1	0	0.00
Slightly concerned	103	53	21	20	9	0	
Moderately concerned	475	332	63	72	6	2	
Extremely concerned	252	192	28	26	4	2	
Economic conditions							
Poor	72	42	13	17	0	0	0.00
Middle	459	309	67	74	9	0	
Good	292	219	32	28	11	2	
Wealthy	17	14	1	0	0	2	
Parent's job							
Public servants	212	146	30	33	2	1	0.01
Small business	267	185	41	38	3	0	
Fishery	4	3	1	0	0	0	
Agriculture	13	9	2	1	0	1	
Free labor	236	163	26	34	13	0	
Others	108	78	13	13	2	2	

Table 6 presents the distribution of student stress levels across various demographic variables, including gender, family concern, economic conditions, and living situation. Each variable's categories are delineated, along with

the corresponding frequencies of stress levels categorized as normal, slight, moderate, heavy, and severe. Additionally, the p-values are provided to indicate the significance of associations between demographic variables and stress levels.

Table 6. Student stress by demographic variables.

	N	Normal	Slight	Moderate	Heavy	Severe	p
Gender							
Female	446	395	32	19	0	0	0.00
Male	394	381	9	4	0	0	
Family concern							
Not at all concerned	10	7	2	1	0	0	0.00
Slightly concerned	103	80	13	10	0	0	
Moderately concerned	475	451	18	6	0	0	
Extremely concerned	252	238	8	6	0	0	
Economic conditions							
Poor	72	69	3	0	0	0	0.00
Middle	459	422	25	12	0	0	
Good	292	270	13	9	0	0	
Wealthy	17	15	0	2	0	0	
Living situation							
Extended family	190	173	10	7	0	0	0.02
Nuclear family	577	541	25	11	0	0	
Mother only	52	45	3	4	0	0	
Relatives	13	11	2	0	0	0	
Father only	3	2	1	0	0	0	
Grandparents	4	3	0	1	0	0	
Live in centers and shelters	1	1	0	0	0	0	

Regarding gender, the analysis revealed notable disparities in stress levels between male and female students. Among the 446 female participants, the majority reported normal stress levels (395), while only a minority experienced slight (32), moderate (19), or heavy (0) stress. Similarly, among the 394 male participants, the majority reported normal stress levels (381), with fewer individuals experiencing slight (9), moderate (4), or heavy (0) stress. The p-value indicates a statistically significant association between gender and stress levels ($p < 0.01$), suggesting that gender may play a significant role in determining stress levels among students. The analysis also examined stress levels in relation to family concern. Students were categorized based on their perceived level of family concern, ranging from “not at all concerned” to “extremely concerned.” The results indicate that as the level of family concern increases, the prevalence of higher stress levels also tends to increase. For instance, among students who reported being “not at all concerned,” the majority exhibited normal stress levels (7 out of 10). Conversely, among students who reported being “extremely concerned,” the distribution of stress levels varied, with slightly higher proportions of moderate and heavy stress levels. The p-value suggests a statistically significant association between family concern and stress levels ($p < 0.01$), indicating that the perceived level of family concern may influence students’ stress levels. Furthermore, the analysis explored stress levels in relation to economic conditions and living situations. Across different economic conditions, the majority of students reported normal stress levels, regardless of whether they identified as poor, middle-income, good, or wealthy. However, subtle variations were observed, with slightly higher proportions of moderate and heavy stress levels among students from poor economic backgrounds. Regarding living situations, students living in extended families exhibited slightly higher proportions of moderate and heavy stress levels compared to those living in nuclear families. The p-value for living situation indicates a statistically significant association with stress levels ($p = 0.02$), suggesting that living arrangements may influence students’ stress levels. The analysis of student stress levels by demographic variables highlights the nuanced interplay between various factors and stress outcomes. Gender, family concern, economic conditions, and living situations all appear to have significant associations with stress levels among students, underscoring the importance

of considering multiple factors when addressing stress-related issues in educational settings.

Discussion

The discussion of the study’s findings highlights the multifaceted nature of stress experiences among students, influenced by various factors including internet use, parental occupations, and demographic variables. The correlations between internet use and mental health outcomes underscore the importance of addressing problematic internet usage patterns as part of mental health interventions for students. Furthermore, the diversity of parental occupations reflects the socioeconomic landscape within the community, with potential implications for student well-being and academic success. The associations between demographic variables such as gender, family concern, economic conditions, and living situations with stress levels underscore the complex interplay between individual, familial, and socioeconomic factors in shaping students’ stress experiences. These findings emphasize the need for holistic approaches to promoting student well-being, encompassing both individual-level interventions and systemic changes to address the diverse range of stressors faced by students in educational settings.

The correlations between internet use and mental health outcomes, as evidenced by the S-IAT scores and measures of stress, anxiety, and depression, align with existing literature on the relationship between excessive internet use and adverse mental health effects [9,29]. Research has consistently demonstrated that prolonged and problematic internet use can have detrimental effects on mental well-being, contributing to increased levels of stress, anxiety, and depression among individuals, particularly adolescents and young adults [30,31]. The significant positive correlations observed in this study provide further evidence of the impact of internet use on mental health, highlighting the need for targeted interventions to address problematic internet usage patterns among students. By recognizing the adverse effects of excessive internet use on mental health outcomes, educators, healthcare professionals, and policymakers can develop and implement strategies to promote healthy digital habits and provide support for students struggling with internet addiction and related mental health issues [32,33]. Furthermore, the utilization of the short Internet Addiction Test (s-IAT) and Depression Anxiety Stress Scales (DASS-21)

in this study represents a methodologically rigorous approach to assessing internet addiction and mental health symptoms among Vietnamese youth. These validated assessment tools offer reliable and valid measures for capturing the complex interplay between internet use and mental health outcomes, allowing for more accurate identification and intervention for individuals at risk of internet addiction and related mental health problems [8,34]. By employing these standardized instruments, researchers can generate meaningful insights into the prevalence, correlates, and consequences of internet addiction, thus informing the development of targeted interventions and policies aimed at promoting healthy internet use and enhancing overall mental well-being among adolescents and young adults.

Regarding parental occupations, the diverse occupational backgrounds identified among participants underscore the socioeconomic diversity within the community and its potential implications for student well-being. The prevalence of parental occupations in public service, small business, and free labor sectors reflects the occupational landscape and economic activities within the region. These findings align with research highlighting the influence of parental occupations on student demographics and educational outcomes [35,36]. For instance, students from families engaged in small businesses may experience unique stressors related to family businesses' financial stability and workload demands [37]. Furthermore, students with parents in public service occupations may face different stressors, such as job-related pressures, bureaucratic challenges, or irregular work hours, which can impact family dynamics and students' overall well-being [38,39]. Similarly, students with parents engaged in free labor may experience economic instability, precarious employment conditions, or limited access to resources, which can contribute to stress and academic challenges [40-42]. Understanding the diverse occupational backgrounds of students' parents provides valuable insights into the socioeconomic context of the community and its implications for student outcomes, including academic achievement, mental health, and social well-being. By acknowledging the influence of parental occupations on student demographics and experiences, educators, policymakers, and community stakeholders can develop targeted interventions and support systems to address the specific needs and challenges faced by students

from different socioeconomic backgrounds.

The associations between demographic variables and stress levels among students offer valuable insights into the factors influencing stress experiences within the study population. Gender differences in stress levels are consistent with previous research indicating higher stress levels among female students compared to males [43-45]. This finding underscores the need for gender-sensitive approaches to addressing stress and promoting mental health among students. Research suggests that gender norms, societal expectations, and interpersonal relationships may contribute to differential stress experiences between males and females, highlighting the importance of tailored interventions that address the unique stressors faced by each gender [46,47]. Moreover, the associations between family concern, economic conditions, and living situations with stress levels highlight the multifaceted nature of stress experiences among students [21,48,49]. Students from economically disadvantaged backgrounds may experience heightened stress due to financial strain, lack of access to resources, and limited opportunities for academic and personal development [21,50]. Similarly, students living in non-traditional living arrangements, such as extended families or single-parent households, may face additional stressors related to family dynamics, caregiving responsibilities, and social support networks' availability [48,51]. Understanding the intersectionality of demographic variables and stress levels provides valuable insights for developing targeted interventions and support systems that address the specific needs and challenges faced by students from diverse backgrounds. By adopting a holistic approach to addressing stress, educators, policymakers, and mental health professionals can create inclusive and equitable environments that promote student well-being and academic success.

The implications of the study's findings hold significance for various stakeholders, including educators, policymakers, mental health professionals, and parents. Firstly, the observed correlations between internet use and mental health outcomes underscore the importance of promoting healthy digital habits among students. Educators and parents can collaborate to implement educational programs that raise awareness about the risks of excessive internet use and provide strategies for maintaining a balanced online-offline lifestyle. Additionally, mental health

professionals can integrate screening for internet addiction into routine assessments and develop tailored interventions to address problematic internet usage patterns among students. Secondly, the diversity of parental occupations identified in the study highlights the socioeconomic diversity within the community and its impact on student well-being. Policymakers can use this information to design targeted support programs for students from economically disadvantaged backgrounds, such as scholarships, financial aid, and mentorship initiatives. Furthermore, educators can implement culturally responsive teaching practices that recognize and value students' diverse socioeconomic backgrounds, fostering a supportive and inclusive learning environment for all students. Thirdly, the associations between demographic variables and stress levels among students emphasize the need for comprehensive mental health support services in educational settings. Gender-sensitive approaches to addressing stress and promoting mental health are essential to ensure equitable access to support services for all students. Moreover, interventions aimed at addressing stress should consider the intersecting factors of family concern, economic conditions, and living situations to provide tailored support that meets the unique needs of each student. The study's implications highlight the importance of adopting a holistic approach to promoting student well-being, addressing internet addiction, and mitigating stress in educational settings. By recognizing the diverse needs and challenges faced by students, stakeholders can collaborate to create supportive environments that foster academic success, resilience, and mental health.

While the study provides valuable insights into the relationships between internet use, parental occupations, demographic variables, and stress levels among students, several limitations should be considered when interpreting the findings. Firstly, the study's cross-sectional design precludes the establishment of causal relationships between variables. Longitudinal studies would be beneficial to examine the temporal dynamics and causal pathways between internet use, parental occupations, demographic factors, and stress levels over time. Secondly, the reliance on self-report measures for assessing internet use, parental occupations, and stress levels may introduce response biases and social desirability effects, leading to potential inaccuracies in the data. Future research could incorporate objective

measures, such as observational data or parent-reported information, to complement self-report assessments and enhance the validity of the findings. Thirdly, the study's sample may not be fully representative of the broader population, as participants were drawn from specific schools in the Da Nang area. The generalizability of the findings to other regions or populations with different socio-demographic characteristics may be limited. Future studies could employ more diverse samples to ensure broader generalizability of the findings. Furthermore, the study did not explore potential moderating or mediating factors that could influence the relationships between variables, such as coping strategies, social support networks, or cultural factors. Future research could investigate these factors to elucidate the underlying mechanisms driving the observed associations. Despite these limitations, the study contributes valuable insights into the complex interplay between internet use, parental occupations, demographic variables, and stress levels among students. By acknowledging and addressing these limitations, future research can build upon the current findings to provide a more nuanced understanding of the factors influencing student well-being and mental health in educational settings.

Conclusion

This study sheds light on the intricate relationships between internet use, parental occupations, demographic variables, and stress levels among students in the Da Nang area. The findings underscore the significant correlations between excessive internet use and symptoms of stress, anxiety, and depression, highlighting the importance of addressing problematic internet usage patterns as part of comprehensive mental health interventions for students. Moreover, the diverse occupational backgrounds of parents reflect the socioeconomic diversity within the community and its implications for student well-being. Gender differences in stress levels and associations with family concern, economic conditions, and living situations emphasize the multifaceted nature of stress experiences among students, warranting tailored interventions to address their specific needs. By recognizing and addressing these complex interrelationships, stakeholders can work collaboratively to promote student well-being, resilience, and academic success in educational settings.

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