ORIGINAL ARTICLE

Relation of Academic Stress Levels and Internet Addiction in Adolescents: A Cross-Sectional Study

Aat Sriati[1], Mamat Lukman[2], Habsyah Saparidah Agustina[1]

[1] Department of Mental Health Nursing, Faculty of Nursing, Universitas Padjadjaran, 45363 Bandung, Indonesia
[2] Department of Community Health Nursing, Faculty of Nursing, Universitas Padjadjaran, 45363 Bandung, Indonesia

ABSTRACT

Introduction: The number of internet users increases every year. Some users have experienced internet addiction problems due to prolonged internet use, especially among teenagers, to cope with academic stress. The purpose of this study was to analyze the correlation between academic stress and internet addiction in adolescents. **Methods:** The cross-sectional technique was utilized in this study, which included 378 students from five public high schools in Garut, West Java, Indonesia. Probability sampling with proportionate stratified random sampling was utilized as the sampling approach. The instruments used are the Internet Addiction Test (IAT) and the Educational Stress Scale for Adolescents (ESSA). The Spearman ranking correlation test was used to examine the data. **Results:** The results showed that the amount of time spent on the internet on weekdays was <6 hours/day (67.7%), while on weekends it increased to >6 hours/day (71.2%). Internet use in adolescents was normal (51.1%), and of mild dependence (39.7%). The adolescents had moderate stress levels (76.5%) and high stress levels (19%). Academic stress and internet addiction are significantly associated among adolescents (p-value 0.01). **Conclusion:** Academic stress, it may be concluded, is significantly related with internet addiction in adolescents. This research makes the following recommendation to build cooperation between the school, especially for the guidance and counselling teacher, with the parents in educating teenagers at school and home.

Keywords: Stress, Adolescents, Internet addiction

Corresponding Author:
Habsyah Saparidah Agustina, M.Kep
Email: habsyah.s.agustina@unpad.ac.id
Tel: +62 81320086754

INTRODUCTION

The progress of science and technology during the industrial revolution 4.0 has made internet technology develop very rapidly. The internet enables individuals to access and obtain information more quickly and easily (1). Indirectly, the internet provides convenience, but it can cause individuals to have a high level of internet addiction and tend to show symptoms of addiction (2). Excessive internet use can have a detrimental effect on its users (3).

The total of internet user from the age group of 25 to 29 years and 35-39 years was 24 million, the adolescent age group 15 to 19 years was 12.5 million users, and ages 10 to 15 years was 768 thousand (4). Internet users are increasing from year to year. Statistical data in Asia, especially Indonesia, show internet users continue to have a significant increase. According to the Association of Indonesian Internet Service Providers, the country's internet user population reached 132.7 million (51.7%)

in 2016, compared to a population of 256.2 million. This is up from 2014, which reached 34.9% of the population (5). The bulk of Indonesian internet users reside on the island of Java., to be exact, around 86.3 million (65%) and occupy the first position, while the island of Sumatra is in second place with 20.75 million (15.7%). The island of Sulawesi is in the third position with 8.45 million (6.3%). As a result, the internet has become an integral component of adolescents' everyday lives (6).

Previous research conducted by Xu et al., found that high school adolescents did not have good self-control, poor self-regulation and low cognition compared to adolescents who had taken college (7). This statement is supported Kuss et al. who found high school adolescents have a desire to be free like adults (8). The results of a search of several works of literature show that adolescent internet addiction is impacted by two aspects: internal and external factors. Internal factors include loneliness, low self-esteem, and personality neuroticism.

Several studies have shown that internet addiction can lead to psychopathological behavior. A study conducted in Iran found that the internet-addicted group tended to show symptoms of psychological disorders, such

as depression, obsessive compulsion, interpersonal sensitivity, anxiety, hostile behavior (attitude), anxiety/ phobia, paranoia and psychoticism. This disorder showed higher in the internet-addicted group than the group who were not addicted to the internet.

Individuals with internet addiction tend to show psychological disorders such as depression, obsessive compulsions, and hostility. Research also showed a significant influence between internet addiction on depression and loneliness and the lack of correlation between internet addiction and self-esteem (9). This statement is also in line with the other research which stated that, in adolescence, it is tough to disconnect from the internet, and social engagement in the real world is difficult, which results in a hostile attitude owing to a lack of emotional control (10).

Then the external factor that contributes to adolescents developing an internet addiction is academic stress. Academic stress is a combination of students' perceptions of knowledge that must be obtained but is not supported by sufficient time to get it (11). This is supported by Nakalema and Ssenyonga (2014) who stated that most significant sources of academic stress in adolescents are the final semester exam, the large number of assignments, competition in the classroom, a decrease in the amount of study time, difficulties in understanding the material, and a busy study schedule (12).

Based on the problems above, our research is focused on internet addiction and academic stress. Therefore, the purpose of this study was to analyze the correlation between academic stress and internet addiction in adolescents.

MATERIALS AND METHODS

This study used correlation analysis with cross-sectional approach (13). The data were processed using a cross-sectional approach (14) and analyzed to determine the relationship between academic stress and internet addiction (15). The population was students from five State Senior High Schools in Garut, West Java Province, aged 15-18 years, totaling 6840 students. Based on the calculation of the Slovin formula, each class was represented by three students in grades year 1, year 2, and year 3. Sampling was done by using the probability sampling technique using proportional stratified random sampling and obtained 378 students. The inclusion criteria for this research sample were students aged 15-18 years who were willing to become respondents. The period of study was September to November 2018.

The Internet Addiction Test (IAT), created by Young , was used to assess internet addiction (16), translated into Indonesian and passed the Meirianitha validity test on a sample of junior high school teenagers with a Cronbach's

alpha value of 0.933 (17). Normal (0–30), mild dependency (31–49), moderate dependence (50–79), and internet addiction (80–100) are the classifications. Meanwhile, the Educational Stress Scale for Adolescents (ESSA) was employed to assess academic stress. Sun et al. developed this and scholars at the official institution "English Translation Center LDC UMP" translated it into Indonesian (18). It was categorized into low-stress levels (0 – 21), medium (22 – 42) and high (43 – 64). The analysis used is univariate analysis, which consists of percentage and frequency distribution, bivariate analysis using Spearman rank correlation test.

The Health Research Ethics Commission, Faculty of Medicine, Universitas Padjadjaran Bandung granted ethical permission for this study under the number 1405/ UN6.KEP/EC/2018.

RESULTS

The results of this study are described in three tables. Table I describes the characteristics of the respondents. The largest percentage of adolescents have moderate stress levels (76.5%). Table II describes internet addiction showing that adolescents who use the internet are most significantly in the normal category (51.1%). Table III depicts the relationship between academic stress and internet addiction showing that the Spearman rank (RS) value is between 0.200 – 0.399, This reveals a modest relationship between academic stress and internet addiction but is said to be very significant (p-value 0.01).

Table I: Description of the Characteristics of Senior High School Teens in Garut, West Java Province

Category	Frequency (f)	Percentage (%)
Class:		
Year 1	154	40.74
Year 2	96	25.4
Year 3	128	33.86
Gender:		
Male	142	37.6
Female	236	62.4
Live together		
Both biological parents	295	78.0
Not with both biological parents	83	22
The purpose using the internet		
Social Networking & communication	478	49.7
Looking for information	252	26.2
Others (online gaming, online shopping, online gambling, and pornography)	232	24.1
Most often used for		
Social networks & communication	250	73.1
Looking for information	66	19.3
Others (Online games & Online shopping)	26	7.6
Duration (weekday)		
≥ 6 hours / day	122	32.3
< 6 hours/day	256	67.7
Duration (weekends)		
≥ 6 hours / day	269	71.2
< 6 hours / day	109	28.8
Academic Stress Level		
Low (0 - 21)	17	4.5
Medium (22 - 42)	289	76.5
High (43 - 64)	72	19.0

Table II: Description of Internet Addiction in Senior High School adolescents in Garut Regency, West Java Province

Internet Addiction	n	%
Normal (0 - 30)	193	51.1%
Mild Addiction (31 - 49)	150	39.7%
Moderate Dependence (50 - 79)	34	9.0%
Internet Addiction (80 - 100)	1	0.3%
Total	**378**	**100%**

DISCUSSION

The study's findings indicate the prevalence of academic stress in high school adolescents and the link between academic stress and internet addiction. In Table I, it is known that the characteristic tendencies of high school youth in Garut are women aged 16 years and living with their parents. The use of the internet aims to communicate, find information and social networks. Teenagers use the internet more on weekends with a duration of > 6 hours/day.

Middle adolescents are psychologically able to build values, norms, and morality, and think rationally about their problems. Besides that, they tend to want to break away from their parents, in contrast to late adolescents who have more stable emotions, interests, and concentration. Meanwhile, unstable emotions can cause the risk of internet addiction behavior. Therefore, internet addiction can occur at any age and in any socioeconomic condition. However, the primary attention of research is more on the adolescent age (19). Based on a literature search, some differences discuss gender and its relationship with internet addiction. According to certain research findings, there is no difference in internet addiction based on gender characteristics. However, adolescent boys and girls show different patterns of behavior and motivation in using the internet. Male adolescents are more likely to use the internet for recreational purposes, such as playing online games while women are more likely to use social media and seek information (20).

In addition to seeking information, social media is also used to interact, socialize, and make friends online. Therefore, social media has both positive and negative impacts on teenagers. This statement is supported by another research which states that social media has a significant influence on adolescent psychology, such as growing anxious when they cannot access social media. Social media can provide positive things among teenagers, including adding insight, interacting and socializing, increasing self-esteem, and providing mutual support. In contrast, the negative things that can be caused include increasing the risk of cyberbullying and depression if you lose contact with friends on social media (21).

Table I shows that more than half of high school youth in Garut experience moderate stress levels, and less than half experience high-stress levels. These findings indicate that academic stress is experienced by high school youth. This happens because of academic stressors, which are the main stressors for students. Adolescents are prone to stress due to the transition from teen children to adulthood marked by biological, psychological, and social changes. This statement is confirmed by another research that states adolescents with an age range of 14-19 years are teenagers who are easily stressed. This is due to the fact of attending Junior High and Senior High at that age. In addition, research by Dhull and Kumari found that adolescent females face greater academic stress than males (23). The findings of this study corroborate those of Backovi et al., who discovered that adolescent females face greater academic stress than boys do, since girls rely more on their feelings to cope with academic pressure (24). In contrast, boys are generally more rational in dealing with an academic stress problem.

Academic stress in adolescents comes from the tasks they have, the hope to be the best in the class, as well as the demands from parents. This is in line with research which found that academic stress can arise as a result of academic demands, such as school exams, questions in class, subject results, what the teacher teaches, competition with classmates, and struggle to reach the expectations of teachers and parents. This is also supported by research conducted by Emond et al. (25), who discovered that academic stress can arise not only as a result of the numerous assignments and competition in the classroom, but also as a result of the pressure and expectations of parents who want their children to succeed academically.

Table II shows that most high school youth in Garut are in the normal category in internet use. Less than half of them have mild dependence, and very few experience moderate dependence and internet addiction. Advances in technology today have a significant influence on

Table III: Relationship between Academic Stress and Internet Addiction in High School in Garut, West Java Province.

Academic Stress	Internet Addiction				Total	RS	p-value
	Normal	Depends Mild	Depends Medium	Internet Addiction			
Low	15 (88.2%)	2 (11.8%)	0 (0%)	0 (0%)	17 (100%)		
Medium	161 (55.7%)	111 (38.4%)	16 (5.5%)	1 (0.3%)	289 (100%)	0.331	0.000
High	17 (23.6%)	37 (51.4%)	18 (25%)	0 (0%)	72 (100%)		

RS: spearman rank correlation; The relationship is declared significant if p-value <0.05, very significant if p-value < 0.01

society, especially teenagers. Teenagers can easily access the internet anywhere and anytime. This is supported by increasingly sophisticated facilities such as smartphones and the increasing number of spots that provide free Wi-Fi.

The degree of internet addiction among students is normal; this might be related to a variety of factors, one of which is the family's economic condition. Economic position of the family was shown to be a significant predictor of internet addiction (29). Good economic conditions were found to be inversely related to internet addiction. This is supported by previous studies from Greece and research conducted in Bangladesh, 2016, also in line with the findings of this study (30,31).

Pawłowska, Zygo, Potembska, Kapka-skrzypczak, and Dreher compared the level of youth dependence on the internet in urban and rural areas (22). The study results found that there was a significant difference between urban and rural youth internet use. Rural youth in general only use the internet for information seeking purposes such as searching for school assignments. At the same time, social interaction is still very good with peers in real life. While urban adolescents are more efficient, they use the internet for all aspects, including making friends.

According to Table III, a significant association exists between academic stress and internet addiction among Garut adolescents, with a p-value of 0.01 and RS <0.05. It is demonstrated that there is a link between academic stress, bad emotions, internet addiction, and different forms of strain, including stress and unfavorable social relationships, which can result in deviant behavior. Jun and Choi's research evaluated the connection between academic stress mediated by negative emotions and internet addiction (26). This study suggests that adolescents who are subjected to scholastic stress may be at risk for internet addiction, particularly when negative emotions are present.

According to Wang et al., the risk factors for adolescents experiencing internet addiction are related to stress, bad relationships with teachers and friends and experiencing conflict in the family (27). This is in line with Bakken et al. who stated that groups of adolescents aged 14 to 19 years' experience internet addiction to avoid stress and responsibilities (28).

CONCLUSION

Academic stress and internet addiction were shown to be associated with high school students in Garut, West Java, according to the study's findings. Thus, the higher the stress level of high school students, the greater the prevalence of internet addiction. For this reason, it is necessary to collaborate between community mental health nurses, schools, and parents to conduct health education regarding academic stress and internet addiction.

ACKNOWLEDGEMENTS

REFERENCES

1. Anggraeni M, Husain A, Arifin S. Hubungan tipe kepribadian introvert dengan kecanduan internet pada siswa Kelas X di SMAN 1 Banjarmasin. Berkala Kedokteran Unlam. 2014;10(1):1–8.
2. Young KS, de Abreu CN, editors. Internet addiction: A handbook and guide to evaluation and treatment. Internet addiction: A handbook and guide to evaluation and treatment. Hoboken, NJ, US: John Wiley & Sons, Inc.; 2011. xvii, 289–xvii, 289.
3. Hanyun H. Social media generation in Urban China. Vol. 30, The Chinese University of Hong Kong. 2011. 72–73.
4. APJII. Buletin APJII: Memeratakan Akses Internet Di Negara Kepulauan. Buletin APJII. 2016. p. 7.
5. APJII. Buletin APJII: Memeratakan Akses Internet Di Negara Kepulauan. Buletin APJII. 2016. p. 7.
6. Rakhmawati W, Kosasih CE, Widiasih R, Suryani S, Arifin H. Internet addiction among male adolescents in Indonesia: A qualitative study. American Journal of Men's Health. 2021 May;15(3):15579883211029460.
7. Xu J, Shen L, Yan C, Hu H, Yang F, Wang L, et al. Personal characteristics related to the risk of adolescent internet addiction: a survey in Shanghai, China. BMC Public Health. 2012;12(1):1106.
8. Kuss DJ, van Rooij AJ, Shorter GW, Griffiths MD, van de Mheen D. Internet addiction in adolescents: Prevalence and risk factors. Computers in Human Behavior. 2013;29(5):1987–96.
9. Horzum mehmet barış, Ayas T. Relation between depression, loneliness, self-esteem, and internet addiction. Education. 2013 Jan;133:283–290.
10. Suryani S, Sriati A, Septiani N. Lived experiences of adolescents with internet addiction. Nurse Media Journal of Nursing; Vol 10, No 2 (2020): (August 2020)DO - 1014710/nmjn.v10i231161 . 2020 Aug;
11. Bedewy D, Gabriel A. Examining perceptions of academic stress and its sources among university students: The perception of academic stress scale. Health Psychology Open. 2015 Jul;2(2):2055102915596714.
12. Nakalema G, Ssenyonga J. Academic stress: Its causes and results at a Ugandan University. African Journal of Teacher Education. 2014;3(3).
13. Sari SP, Everink IH, Amir Y, Lohrmann C, Halfens

RJ, Moore Z, et al. Knowledge and attitude of community nurses on pressure injury prevention: A cross-sectional study in an Indonesian City. International wound journal. 2021 Aug;18(4):422–31.

14. Sukartini T, Nursalam N, Arifin H. The determinants of willingness to care for people living with HIV-AIDS: A cross-sectional study in Indonesia. Health & social care in the community. 2021 May;29(3):809–17.

15. Nursalam N, Sukartini T, Arifin H, Pradipta RO, Mafula D, Ubudiyah M. Determinants of the Discriminatory Behavior Experienced by People Living with HIV in Indonesia: A Cross-sectional Study of the Demographic Health Survey. The Open AIDS Journal. 2021;15(1):1–9.

16. Young KS, de Abreu CN, editors. Internet addiction: A handbook and guide to evaluation and treatment. Internet addiction: A handbook and guide to evaluation and treatment. Hoboken, NJ, US: John Wiley & Sons, Inc.; 2011. xvii, 289–xvii, 289.

17. Meirianitha NND. Uji reliabilitas instrumen internet addiction test dan prevalens kecanduan internet pada pelajar Sekolah Menengah Pertama Kota Denpasar. 2016.

18. Sun J, Dunne M, Hou J, Xu A. Educational stress scale for adolescents: Development, validity, and reliability with Chinese students. Journal of Psychoeducational Assessment. 2011;29(6):534–46.

19. Kuss DJ, van Rooij AJ, Shorter GW, Griffiths MD, van de Mheen D. Internet addiction in adolescents: Prevalence and risk factors. Computers in Human Behavior. 2013;29(5):1987–96.

20. Xu J, Shen L, Yan C, Hu H, Yang F, Wang L, et al. Personal characteristics related to the risk of adolescent internet addiction: a survey in Shanghai, China. BMC Public Health. 2012;12(1):1106.

21. Ahn J. The Effect of Social Network Sites on Adolescents' Social and Academic Development: Current Theories and Controversies. Journal of the American Society for Information Science and Technology. 2011;64(July):1852–63.

22. Pawłowska B, Zygo M, Potembska E, Kapka-skrzypczak L, Dreher P. Prevalence of Internet addiction and risk of developing addiction as exemplified by a group of Polish adolescents from urban and rural areas. 2015;22(1):129–36.

23. Dhull I, Kumari S. Academic stress among adolescents in relation to gender. International Journal of Applied Research. 2015;1(11):394–6.

24. Backović D V., Živojinović JI, Maksimović J, Maksimović M. Gender differences in academic stress and burnout among medical students in final years of education. Psychiatria Danubina. 2012;24(2):175–81.

25. Emond M, Eycke K Ten, Kosmerly S, Robinson AL, Stillar A, Blyderveen S Van. The effect of academic stress and attachment stress on stress-eaters and stress-undereaters. Appetite. 2016;100:210–5.

26. Jun S, Choi E. Academic stress and Internet addiction from general strain theory framework. Computer in Human Behavior. 2015;49:282–7.

27. Wang H, Zhou X, Lu C, Wu J, Deng X, Hong L. Problematic internet use in high school students in Guangdong Province, China. PLOS ONE. 2011 May;6(5):e19660.

28. Bakken IJ, Wenzel HG, Gutestam KG, Johansson A, Oren A. Internet addiction among Norwegian adults: a stratified probability sample study. Scandinavian journal of psychology. 2009 Apr;50(2):121–7.

29. Hassan T, Alam MM, Wahab A, Hawlader MD. Prevalence and associated factors of internet addiction among young adults in Bangladesh. Journal of the Egyptian Public Health Association. 2020 Dec;95(1):1-8.

30. Islam MA, Hossin MZ. Prevalence and risk factors of problematic internet use and the associated psychological distress among graduate students of Bangladesh. Asian Journal of Gambling Issues and Public Health. 2016 Dec;6(1):1-4.

31. Andreou E, Svoli H. The association between internet user characteristics and dimensions of internet addiction among Greek adolescents. International Journal of Mental Health and Addiction. 2013 Apr 1;11(2):139-48.