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How Adolescent's Self-Esteem Affects Internet Addiction Tendency During COVID-19 Pandemic in Takengon, Central Aceh

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ABSTRACT

During COVID-19 pandemic, most people do their activities at home by using the internet. Adolescents who are in identity formation stage also use the internet for education, entertainment, and other activities. The usage of the internet may cause negative effects, one of which is addiction. There are no studies about internet use in adolescents in Takengon, one of the cities in Central Aceh. This research aims to discover the effect of adolescent's self-esteem on internet addiction tendency during COVID-19 pandemic in Takengon. This study is conducted on 215 students of X High School Takengon with the age range of 14-18 years old. This research used quantitative method, in that a questionnaire is shared online to the participants. The instruments used for this research are Rosenberg Self-Esteem Scale (RSES) and Internet Addiction Test (IAT). The results of this research show that self-esteem has a negative impact on internet addiction tendency. The effect of self-esteem on internet addiction tendency is 14.1%. This indicates that individuals with high self-esteem have a lower level of internet addiction tendency.

Keywords: Self-esteem, internet addiction, adolescents, COVID-19 pandemic, Takengon

1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the newly discovered corona virus. One of the precautions that can be done is by doing physical distancing with other people [1]. This pandemic has an impact on adolescents [2].

Adolescence is a period where individuals begin to search for their identity [3]. Adolescence is also a period of transition from childhood to adulthood that includes: (a) biological changes, which are characterized by growth acceleration, hormonal changes, and sexual maturity shown through puberty; (b) cognitive changes, which are identified with having a more abstract, idealistic and logical thinking; and (c) socio-emotional changes, adolescents begin to desire the freedom to become independent, have more problems with parents, and desire to spend time with friends [4].

This stage is part of the path of life and is not an isolated development. Friendship is very important at this stage, and mood swings will be more dramatic than that of in childhood. During this time, adolescents tend to have low self-esteem [4].

Self-esteem can be defined as: (a) global or trait self-esteem, the way a person sees their character; (b) self-evaluations, the way an individual evaluates their abilities and traits; and (c) feelings of self-worth, temporary

emotional states that arise from the individual's experience of success or failure [5].

Self-esteem may have a positive or negative impact. Those who have low self-esteem often have problems in their lives, whereas those who have high self-esteem usually have a positive attitude toward themselves and others, are usually happier, more active, expressive, sociable, popular and healthier [6].

Individuals who have low self-esteem usually are incapable of communicate socially with other people. Hence, they use the internet to escape the pressure in life [7].

The term internet refers to anything associated with web-based service that individuals use, such as social media, online entertainment, which can be accessed in all types of devices, computer, and other technology devices [8]. The internet can be used for a variety of purposes, such as education (teaching, learning, and research), business (conference meetings), recreation (games, online gambling, and pornography), and to contact people via messages, calls, social websites, chat applications, and emails [9]. However, if used excessively, the internet might use a negative impact, that is addiction [10], [11]. Internet addiction is the uncontrolled and destructive use of internet technology [8].

Based on the results of a study conducted by [6], it is revealed that there is a significant negative correlation between self-esteem and internet addiction. Studies in Indonesia also has reported these findings [12], [13].

However, the researchers have noticed that studies in Indonesia are dispersed only in several regions. Therefore, the researchers are interested in conducting this research in Takengon, Central Aceh.

Aceh is one of the four regions in Indonesia that uses the internet the least. Approximately, 50% of the population has never used the internet [14]. Specifically, Central Aceh is the district with the most blank spot (unreachable) internet access (B. Sahidi, personal communication, January 3, 2021).

Takengon is the capital of Central Aceh, with an area of 4,454.04 km² and a population of 212,495 people (with 16,704 of them are 15-19 years of age). Central Aceh is a district with the fourth lowest population of 23 other districts [15]. Takengon is also called "Negeri di Atas Awan" because of the height that reaches 2,600 masl (F, personal communication, January 13, 2021). In Takengon, adolescents tend to explore new places in the mountains and forests. Every year, boat and horse races are also held (R, personal communication, December 29, 2020). The number of competition activities is one of the reasons that causes the intensity of Internet use by adolescents in Takengon is low (B. Sahidi, personal communication, January 3, 2021). Moreover, doing activities outside of the house, such as sports and arts, can greatly increase the level of self-confidence in adolescents in Takengon (B. Sahidi, personal communication, January 3, 2021). The high level of self-confidence of an individual indicates that their self-esteem is high [16].



Figure 1 Description of Takengon, Aceh Tengah (Source: <https://www.google.com/maps/place/Takengon> ; & private photo collection)

However, according to the data of Badan Pusat Statistik Central Aceh Regency, there was an increase of 15.7% in Internet use from 2018 to 2019 and 11.65% in 2019 to 2020. The fact that the Internet use was low but steadily increasing every year has interested the researchers to observe whether the level of internet addiction in Takengon is high or not. The researchers are also interested in observing how self-esteem level in adolescents during the COVID-19 pandemic. In addition, the researchers also noticed that the research done in Takengon is still limited. R (personal communication, December 29, 2020) has also said that the research in Takengon is few. Therefore, the researchers are interested in conducting research on the effect of adolescents' self-esteem on internet addiction during the COVID-19 pandemic in Takengon, Central Aceh.

1.1. Related Work

1.1.1. Self-Esteem

Self-esteem is known as a common characteristic that is singular and relatively stable, such as the personality or intelligence that forms a trait [17]. Positive self-esteem contributes to the strength and flexibility to control one's life and grow from mistakes without fear of rejection. Negative self-esteem causes an individual to feel unworthy, incapable, and incompetent to live. This condition weakens the individual and causes them to not realize their potential [16].

Individuals with low self-esteem usually cannot socially communicate with others. They prefer to use the Internet to escape the stress of interpersonal relationships [7]. Therefore, individuals with low self-esteem tend to be more addicted to the Internet than those who have high self-esteem [18].

The level of self-esteem has a great consequence for every aspect of one's existence. For instance, how we work, how we cope with others; and personally, with whom we tend to fall in love, how we interact with our partner, children, and friends [19].

The development of self-esteem can rise and fall in the process of human life [20]. Self-esteem commonly begins to decline during adolescence and starts to increase after 20 years of age until 60, then it falls again in the 70 to 80 years of age [4].

1.1.2. Internet Addiction

IAD was introduced by Kimberly S. Young in 1996. Young used the symptoms of pathological gambling disorder on DSM-IV as a reference for observing the signs of clinical addiction of the Internet [21]. IAD is generally defined as an uncontrollable desire to use the Internet, which causes acute nervousness and aggression during the time without using the Internet and progressive decline in social life [22]. The symptoms of internet addiction are generally indicated with spending time online excessively time online

excessively for 40 to 80 hours per week. Sleep patterns are also disrupted due to the excessive time spent online that users often take caffeine pills, feel tired, have a poor diet, lack of exercise, decreased performance at work/school [23]. A research in Indonesia [24] also supports the statements above.

The consequences of internet addiction on internet users are health problems, problems at school or work, problems with family, and abandoning other activities with friends/spouse [25]. One of the causes of those problems in life is low self-esteem [6].

Based on activities done on the internet, internet addiction can be divided into three subtypes, namely: (a) excessive gaming, includes all online activities on all types of devices for playing games or gambling; (b) online sexual preoccupations, where individuals view, download, and trade pornography online or engage in discussions on adult fantasies in a space; and (c) e-mail/text messaging, online chatting makes an individual ignore the real world, and rarely make time for their friends or family [11].

During the COVID-19 pandemic, more children and adolescents spend their time using the Internet to study, play online games, shop online, watch films, use social media, and chat. These activities are often done to reduce stress and anxiety or to relieve stressed mood [26].

1.2. Our Contribution

This paper provides the latest research in Takengon, Central Aceh during the COVID-19 pandemic. This study also contributes to adolescents and parents so that they would pay attention to the self-esteem of adolescents who use the Internet.

1.3. Paper Structure

This paper has five parts. First, the description of the variables observed in this study. Second, the explanation of the theories used in this research, which are internet addiction, adolescents, and self-esteem. Third, the description of the methods used. Fourth, the description of the findings and discussion of this research. Fifth, the description of conclusion and suggestion for future research.

2. METHODS

The number of participants in this study was 215 students with 14-18 years of age. All the participants were domiciled in Takengon. The researchers used convenience sampling, that is finding participants according to the research criteria. The data were collected from 16 November 2020 to 21 November 2020.

Rosenberg Self-Esteem Scale (RSES) is an instrument used to measure self-esteem variable. This instrument uses Likert's scale, which ranges from 1 (strongly disagree) to 5 (strongly agree). RSES consists of 20 questions (10 positive questions and 10 negative questions). The higher the score, the higher the level of an individual's self-esteem [27].

The result of the reliability test using the Rosenberg Self-Esteem Scale (RSES) instrument shows the alpha Cronbach result of .894. The result of the analysis shows that out of the 20 statements, there is 1 item that has a value smaller than 0.2. Therefore, the item is discarded once. After the disposal, the reliability test result shows a Cronbach alpha of .900.

The Internet Addiction Test (IAT) is the most used instrument in internet addiction research. The IAT consists of a 20-item questionnaire that measures the characteristics and behavior related to internet use including compulsiveness, escapism, and addiction. The questions also assess the personal, work, and social function problems caused by internet use [8].

Participants provide answers to each question by giving a number from 1 to 5, using Likert's scale. The final score of the answer can determine the level of an individual's internet addiction. A score of 20-39 indicates that the individual is a normal internet user, a score of 40-69 indicates that an individual often has problems because of the Internet and a score of 70-100 indicates that an individual has significant problems in their life because of the Internet [28]. According to [6], internet addiction has three dimensions, they are withdrawal and concealment, social and personal consequences, and excessive use.

The first dimension, withdrawal & concealment, is a negative symptom indicated by an addiction to the Internet (for example, having negative emotion whenever they are offline). The second dimension, social & personal consequences, includes problems that arise from problematic internet use (for example, social, work, academic, and physical problems). The third dimension, excessive use, consists of other symptoms caused by excessive internet use (for example, the duration of staying online) [6].

The withdrawal and concealment dimension comprises 9 questions, each of which is a positive item. After the validity test is conducted, no items are discarded. An example of a question item for this dimension is "how often do you feel stressed, unenergetic, or nervous when you are offline, and those feelings disappear once you are back online?"

The social and personal consequences dimension consists of 7 questions, each of which is a positive item. After the validity test is performed, no items are discarded. An example of a question item for this dimension is "how often does your job performance or productivity become declined because of the Internet?"

The excessive use dimension contains 4 questions, each of which is a positive item. An example of a question item for this dimension is "how often do you stay online longer than you intended to?" After the validity test is conducted, there is one item with a value below 0.2, thus, the item must be discarded. After the disposal, the Cronbach alpha coefficient is 0.575 < 0.7, which means that the excessive use dimension is unreliable. However, the remaining three items have the validity score above 0.2, which means the items are valid and can be used [29].

This research was conducted online, by filling in the questionnaire made by using Google Form and sharing it

through social media. The data was processed with SPSS v.15. The data processing began with data input. Then, the researcher performed the variable normality test, the item validity and reliability test, and the descriptive data test. Subsequently, the total of variables IV and DV was processed with linear regression.

3. FINDINGS AND DISCUSSIONS

The participants consist of 50 males (23.3%) and 165 females (76.7%). The dominant age in this research is 15-year-olds (40.5%) and the least is 18-year-olds (0.5%). The longest time spent by the participants to use the Internet outside of learning is 5-8 hours / day (88 people, 40.9%).

Table 1 Participants characteristic

Characteristic	Frequency	Percentage
Gender		
Male	50	23.3%
Female	165	76.7%
Age		
14	5	2.3%
15	87	40.5%
16	71	33.0%
17	51	23.7%
18	1	0.5%
Time spent aside from studying		
<2 hour/day	22	10.2
>8 hour/day	19	8.8
2 - 4 hour/day	86	40.0
5 - 8 hour/day	88	40.9

The hypothetical mean value of the self-esteem variable is 3 and the empirical value is 3.644. With the empirical mean that is higher than the hypothetical mean, it can be concluded that the self-esteem of the subjects is high. Based on the level of

self-esteem, most participants are at a high level, with the number of 183 people (85.1%) and the least are at the moderate level, with the number of 5 people (2.3%).

Table 2 Participant's level of self-esteem

Self-Esteem	Frequency	Percentage
Low	27	12.6
Average	5	2.3
High	183	85.1
Total	215	100.0

The hypothetical mean of the internet addiction variable is 3, whereas the empirical value in the withdrawal & concealment dimension is 2.435. With the empirical mean that is smaller than the hypothetical mean, it can be deduced that the internet addiction in the withdrawal & concealment dimension of the subjects is low. The data on the social and personal consequences dimension has an

empirical mean value of 2.705. The empirical mean value is smaller than the hypothetical mean value, which means that the social and personal consequences dimension is low. The data on the excessive use dimension has an empirical mean value of 2.843. The empirical mean value is smaller than the hypothetical mean value, which means that the excessive use dimension is low.

Table 3 Score category

Variable	Hypothetical	Empirical	Category
SE	3	3.644	High
IA- WC	3	2.435	Low
IA- SPc	3	2.705	Low
IA- EU	3	2.843	Low

Based on the level of internet addiction, most participants are at the medium category, with the number of 165 people

(76.7%) and the least are the severe category, with the number of 8 people (3.7%).

Table 4 Participant's level of internet addiction.

Internet Addiction	Frequency	Percentage
Mild	42	19.5
Moderate	165	76.7
Severe	8	3.7
Total	215	100.0

The normality test used in this study is One-Sample Kolmogorov Smimov. The result of the data processing shows that the self-esteem variable obtains a Z value of 0.997 and a value of $p > 0.05$, which means that the data are

distributed normally. The result of the internet addiction variable reveals a Z value of 0.999 and a value of $p > 0.05$, which means that the data are distributed normally.

Table 5. Normality statistic

Variable	Sig.	Distribution
Self-Esteem	0.273	Normal
Internet Addiction	0.272	Normal

Based on the result of the simple linear regression test, the value of F is 34,989, $t = -5,915$, $p < 0.05$, which proves that there is a significant negative effect between self-esteem and internet addiction. This result indicates that individuals who have high self-esteem have a low level of internet addiction.

The coefficient of determination in this study is 14.1%. This means that the effect of self-esteem on internet addiction is 14.1%, and the remaining 85.9% is influenced by other factors outside of this study. The simple linear regression equation in this study is $Y = 3.986 - 0.363X$.

Table 6 Linear regression

R ²	t	F	Sig
.141	-5.915	34.989	0.000

Furthermore, the researchers also tested additional data. First, the researchers tested the variable difference between the internet addiction and age. The result of the test shows that there is no significant difference between internet addiction based on age ($F = 0.937$, $p > 0.05$). According to the researchers, this is possible because they chose the subjects with an age range of 14-18 years old, so the age gap is not too big. This study shows a different outcome from [6], which has participants with 14-83 years of age, and has claimed that there is a significant difference between internet addiction and age.

Second, the researchers conducted a variable inferential test between internet addiction and gender. The result shows that there is no significant difference between the level of internet addiction based on gender ($t = 0.073$, $p > 0.05$). This is not in line with the research done by [4] that has stated that men tend to show more signs of internet addiction. According to the researchers, this happens possibly because the number of male participants in this study is relatively small, that is 50 people (23.3%), when compared to women (165 people, 76.7%). Furthermore, the fact that the use of the Internet is a necessity during this time, participants cannot be considered addicted to the Internet because of the excessive use. It might just be a necessity for studying.

Third, the researchers tested the variable inferential test between self-esteem and age. The result shows that there is

no significant difference between internet addiction based on age ($F = 0.441$, $p > 0.05$). This is not in accordance to the statement in [6], which has stated that self-esteem usually decreases in adolescents. According to the researchers, this happens because the participants' self-esteem can be considered as high in this study and the age range of the participants is not far apart. Therefore, the comparison of the level of self-esteem and age is limited. Moreover, self-esteem would not change drastically during the COVID-19 pandemic. However, if several individuals have experienced a change in their self-esteem level, it might be caused by a new behavior pattern, such as the habit of using the Internet from morning to the afternoon, or even to night time.

Fourth, the researchers conducted the variable inferential test between self-esteem and gender. The result shows that there is a significant difference between self-esteem based on gender ($t = -3.267$, $p < 0.05$). This result is in accordance to the statement [17], which has stated that there is a difference in male and female's self-esteem. However, according to researchers, this might occur due to the number of male participants that is lower than that of the female. In addition, it is a possibility that the difference is caused by the cultural belief. In Takengon, men have more power than women.

With several results found in other regions, it has been revealed that there is no difference in the effect of adolescents' self-esteem on internet addiction before or during the COVID-19 pandemic. In this study, the researchers have chosen the subjects in Takengon, which is classified as the green zone for the COVID-19 pandemic. Moreover, the researchers have noticed that there are still many students who go out to meet their friends. This region is also a small area, hence, making it easy to meet with relatives. Therefore, the level of self-esteem and internet addiction in Takengon has not changed.

This research has several limitations. First, the researchers were unable to observe the process of filling in the questionnaire directly because this research was conducted online and was distributed via Google Form. Therefore, the researchers could not know whether the participants answered in a serious manner or not. Second, this research is a self-report study, so it is possible that the participants did not answer the questionnaire truthfully. Third, this research is limited to one school only, so the results can have a different outcome if generalized more broadly. Fourth, the internet use might be for school purposes (for example, using YouTube to learn mathematic calculation), so, the duration of internet use would increase. Fifth, there is no accurate data of self-esteem level and internet addiction before the COVID-19 pandemic in Takengon, Central Aceh. Sixth, the researchers included all level of internet addiction in the data analysis, while the participants who had identified as moderate and high internet addiction were 80,4%. In relation to this research limitation, we use the term "tendency" for internet addiction, which means that we included all participants who have low to high level of internet addiction.

3

4. CONCLUSIONS

Based on the results of the main data, it can be concluded that adolescents' self-esteem has a negative effect on internet addiction during the COVID-19 pandemic in Takengon, Central Aceh. The results indicate that individuals with high self-esteem have a lower level of internet addiction tendency. Therefore, the results proved that the hypothesis of this research is confirmed.

The researchers also would like to provide several suggestions for the next research. First, to give more attention to the written instruction on the online questionnaire so that the respondents would be able to comprehend the questions and answer correctly. Second, to choose the subjects for the data with a different age range so that the difference between self-esteem level and internet addiction can be observed. Third, to use other variables besides self-esteem to discover the cause of internet addiction. Fourth, to use the qualitative method to reinforce the research results. Fifth, to perceive the use of the Internet specifically, such as finding the use of YouTube, whether it is to watch films or to discover topics related to the school subject.

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