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Article

Correlation between Smartphone Addiction Risk with Anxiety Level of Elementary Schooler in Surabaya

M. Ahda Naufal Aflahudin[1], Nining Febriyana[1,2,3], Lilik Djuari[3,4], Rizal[5]

[1]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia
[2]Departement of Psychiatry, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia
[3]Dr. Soetomo Hospital, Surabaya, Indonesia
[4]Departement of Public Health, Faculty of Medicine, Universitas Airlangga
[5]Dr· Fauziah Bireuen General Hospital, Aceh, Indonesia

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*) Corresponding Author
m.ahda.naufal.aflahudin-2017@fk.unair.ac.id

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ABSTRACT

Introduction: Smartphone addiction is an individual's dependence on using a smartphone repeatedly and excessively, regardless of the negative consequences it causes. Depending on the frequency and duration of smartphone use, unwanted effects can occur, one of which is anxiety disorders. The purpose of this study was to analyze the correlation between the risk of smartphone addiction and anxiety level in elementary school children. **Methods:** This study used an analytic design with a cross-sectional approach. The population in this study were children who owned smartphones at Khadijah Ahmad Yani Elementary School in Surabaya in grades 5 and 6. The total sample of the study was 72 respondents from 224 students in grades 5 and 6 using consecutive sampling. The independent variable in this study was the risk of smartphone addiction and the dependent variable in this study was anxiety. The data was obtained from modified Smartphone Addiction Scale-Short Version (SAS-SV) and Zung Self-rating Anxiety Scale (ZSAS) instruments and analyzed using Spearman's correlation. **Results:** There was 43.1% of the sample that had a risk of smartphone addiction and 9.7% of the sample had anxiety. There was a positive correlation between smartphone addiction and anxiety in elementary schooler of Khadijah Ahmad Yani Elementary School Surabaya ($p = 0.001$ and $r = 0.377$). **Conclusion:** Children who were at risk of smartphone addiction had a higher likelihood of experiencing anxiety.

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Introductions

Addiction can be viewed as a chronic condition, which is associated with strong repetitive motivation to do an activity, where the results of doing the activity have a significant potential for unwanted negative impacts [1]. Smartphone addiction is an individual's dependence on using a smartphone repeatedly and excessively regardless of the negative consequences it causes [2]. Anxiety disorders are a group of psychiatric disorders that most commonly occur in children and adolescents, where 10-20% of children experience anxiety disorders [3]. One study of 965 primary care patients showed that 19.5% had at least 1 anxiety disorder, 7.6% had generalized anxiety disorder, 6.8% had panic disorder, and 6.2% had social anxiety disorder [4]. Anxiety disorders are conditions that greatly affect the quality of life and psychosocial function [5] where Generalized Anxiety Disorder (GAD) substantially interfere with the quality of life of sufferers [6]. Mental disorders in children are an important issue in public health due to the prevalence, early-onset, and impact on the child, family, and community [7]. Thus, psychological dependence as well as excessive use of technology can lead to undesirable outcomes and should be considered against increased productivity [8].

The author hypothesized that there was a correlation between the risk of smartphone addiction and the level of anxiety at Khadijah Ahmad Yani Elementary School in Surabaya. The purposes of this study were to identify the risk of smartphone addiction and the level of anxiety, and also analyze the correlation between the risk of smartphone addiction and the level of anxiety in students at Khadijah Ahmad Yani Elementary School Surabaya. We hope that this research becomes a reference for other researchers to determine the impact of smartphone addiction on elementary school children and in reducing and preventing smartphone addiction and anxiety in children, especially at Khadijah Ahmad Yani Elementary School Surabaya.

Methods

This was an analytical study using a cross-sectional approach. The population in this study were children who owned smartphones at Khadijah Ahmad Yani Elementary School in Surabaya in grades 5 and 6. The total sample of the study was 72 respondents from 224 students in grades 5 and 6 using the consecutive sampling technique. The study inclusion criteria were students in grades 5-6 at Khadijah Ahmad Yani Elementary School in Surabaya who had a smartphone. The study exclusion criteria were the samples not willing to be involved in the research, physically ill, or currently undergoing long-term treatment. The independent variable in this study was the risk of smartphone addiction and the dependent variable in this study was anxiety. This study used primary data collected by a questionnaire filled out directly by the respondents from selected elementary school students accompanied by the school teacher. Data was taken on 29 February 2019 and included demographic and identity data, risk of smartphone addiction, and anxiety level. The data was obtained from modified Smartphone Addiction Scale-Short Version (SAS-SV) and Zung Self-rating Anxiety Scale (ZSAS) instruments and analyzed using Spearman's correlation.

Results

This study obtained 85 respondents, with 72 respondents who met the inclusion and exclusion requirements. All research subjects were grade 5 students because grade 6 students had no activities at school after undergoing school exams.

Table 1. Duration of smartphone use per day in participants at Khadijah Ahmad Yani Elementary School, Surabaya

Duration of smartphone use per day	Total (n)	Percentage (%)
30-60 minutes	13	18,1
1-2 hour(s)	30	41,7
2-4 hours	16	22,2
4-6 hours	5	6,9
> 6 hours	8	11,1

Table 2. Smartphone usage at Khadijah Ahmad Yani Elementary School, Surabaya

Smartphone usage	Total (n)	Percentage (%)
Recreation	53	73,6
Social Media	17	23,6
Communication	27	37,5
Education	24	33,3
Others	11	15,3

Table 1 shows that the majority (41,7%) of the participants used smartphones for 1-2 hours while table 2 shows that the number of subjects who used smartphones for recreation is the largest (73.6%).

Table 3. Correlation of smartphone addiction risk with anxiety level of the sample at Khadijah Ahmad Yani Elementary School Surabaya in February 2020

	Not Experiencing Anxiety	Experiencing Anxiety
No risk of smartphone addiction	41	0
Risk of smartphone addiction	24	7

Spearman's Correlation	0,377
Significance	0,001
N	72

All respondents who experienced anxiety had a risk of smartphone addiction, and we can see in table 3 that the r value was 0.377 and statistically significant ($p < 0.05$). The correlation between the two variables was positive so it could be interpreted that the subject who was at risk of addiction to a smartphone was more likely the subject to experience anxiety. The correlation between these two variables was a positive correlation with low power ($0.3 < r < 0.5$).

Discussion

While the duration of smartphone use was different in each individual, in this study we found that 41.7% of the sample used a smartphone for 1-2 hours per day. This showed that most of the subjects used the smartphone for the recommended duration, which is between 1-2 hours [9]. Young adolescents still have a high level of compliance with the rules and norms that exist in society [10], however, 40.2% of the subjects used a smartphone for more than 2 hours per day. Even so, adolescents still use smartphones for quite a long time, apart from academic and entertainment demands, this is due to adolescents' interest in using smartphones as gadgets due to the features and technology that can be

accessed [11]. The increase in the duration of smartphone use is in line with Erikson's theory, wherein in the development phase, children aged 9-11 years are still in the industrial phase and have higher social needs [12].

Increased duration, as well as frequency, are signs of an addiction. Anxiety disorders and other unwanted negative effects due to smartphone use depend on the duration and frequency of use [13]. Another study conducted on elementary school children aged 8-11 years in Medan found that children who use gadgets for more than 10 hours per week have an abnormal mental-emotional condition, where smartphone-shaped gadgets are the most widely used [14]. The incidence of anxiety disorders was also found to be increasing in the use of smartphones as communication devices for more than 2 hours per day in a cohort study conducted with respondents from the United Kingdom, where the screen time was measured when the subject was 16 years old and anxiety was measured when the subject was 18 years old [15].

The study also showed that the subjects who used smartphones for recreational activities were 73.6%. Only 33.3% of the subjects used smartphones as learning media. This can happen because of the easy access to entertainment via smartphones compared to other media. The results of this study are in line with previous research studies. One of them is where the use of smartphones as entertainment devices is the most frequent use of smartphones by Chengalpattu Medical College students in India [16]. Other studies also showed that the most widely used applications on smartphones by elementary school children in South Korea were game applications, applications for messages, and applications for watching videos; with the most used game application, followed by notifying and watching videos. The use of other application categories is still below the frequency of using the applications that have been mentioned [17].

The percentage of the sample in this study who experienced mild anxiety was 9.7% and those who did not experience anxiety were 90.3%. The findings of this study are different from the findings of the study by [18] which found that 45.8% of smartphone users experience anxiety when not holding their smartphone. This can be due to differences in research instruments and sample demographics where the previous research [18] was conducted in South Korea with the participating sample being students with an average age of 21 years old while the subjects of this study were elementary school children, most of whom were 11 years old.

Erikson stated that at the age of 5-13 years, children will enter the industrial phase, where children begin to find satisfaction after doing something productive. He said that this phase is the most socially decisive phase, where children will learn to work together with others and the development of a work ethic culture occurs in this phase [12]. Therefore friends and social relationships are very vital at this phase, and one of the ways children establish social relationships in the present era is with the chat feature and also social media applications on smartphones. This is also what can make most of the sample of this study do not experience anxiety or if experiencing anxiety, it is only mild anxiety, because the use of smartphones here has the purpose of meeting the social needs of children.

At the age of 10-12 years, children enter a latent period, where according to Sarnoff's theory, a child has 4 essential processes at this stage of the period, namely: the capacity to symbolize; repression mechanism; development of verbal conceptual memory

organization; and persistence in behavior so that the child will become a calmer person, easy to teach, and easy to mold [19]. In this latent period, children are more obedient than in other periods, so they can reduce the negative impact of the smartphone itself if they have been given education and examples of good smartphone use by the school and their parents and apply good smartphone use. This is what the author suspect causes the anxiety rate in this study to be low at 9.7%.

In this study, we suspect the reason why the incidence of anxiety is only 9.7% of the sample, possibly was because the level of smartphone addiction is not yet severe, whereas in this study the level of smartphone addiction is still not differentiated. We speculate that in a more advanced stage level of addiction and with the increasing encouragement of smartphone use, anxiety disorder will be more common. This is in line with the literature where the duration can be used as an indicator of smartphone addiction [13].

Even so, duration alone cannot be used as a benchmark, because the use of a smartphone itself is very multifunctional. The use of a function in smartphones will have a different effect on users compared to other functions. For example, using a smartphone to study will have a different impact than using it as a source of entertainment. Another study also showed that the effects of smartphone use have different correlations, the results depend on the pattern of smartphone usage itself. General smartphone usage has been associated with less negative mental conditions and more positive mental conditions, but absent-minded smartphone usage is related to more negative mental conditions and less positive mental conditions [20].

The result of Spearman's correlation test obtained a correlation coefficient of 0,377 and was statistically significant ($p < 0,05$). This is in line with the results of previous similar studies, even though the selected target demographics are different. The correlation between the two variables is positive so it can be interpreted that the subject with a risk of addiction to smartphones is more likely to experience anxiety. The strength of the correlation between the two variables is in a low category ($0,3 < r < 0,5$). The strength of the correlations between the risk of smartphone addiction and the level of anxiety among students of Khadijah Ahmad Yani Elementary School in Surabaya is in a low category. This may be due to other factors, such as parenting styles and parental supervision of their child's smartphone use. Parents can avoid permissive parenting which is more lenient in letting their children do what they want. Child factors such as social relationships in real life also influence the impact of smartphone use. A child who is active in real-life social relationships will tend to use a smartphone as a means of communication as a complement and strengthen communication in the real world without having an addiction and the negative impact that follows [21].

All of these subjects were elementary school children, most of whom were less than 12 years old. Based on age, the subject is still classified as a child and will enter early adolescence. Early adolescence is a transitional phase and the beginning of puberty, so it requires direction and supervision from parents or older people such as siblings and teachers, including in the use of smartphones. Supervision and control of gadget use will be more effective if it has the support of the family environment as a whole, involving parents and other family members [22]. Optimal social support from the environment, especially from parents, can be done to avoid feeling anxious in children so that children can develop

into someone who feels cared for and appreciated by their closest people [21].

Research Limitation

This study was conducted through a questionnaire filled out directly by the respondents, not through interview methods, it's vulnerable that respondents were not careful in answering questions from the questionnaire. The age of the respondents was early adolescence where there might be some difficulty in understanding the questionnaire given. To minimize, the researcher explained how to fill out the questionnaire and encouraged students to ask if they had difficulty understanding the statements contained in the questionnaire. The study was cross-sectional, as the methods examine the time dimension. Future research with a larger number of samples is needed to get a better and more comprehensive insight into the correlation between temperament and internet addiction level in adolescents. Other limitations in this study were: The subjects consisted of only grade 5 students; the stage of addiction risk was not differentiated; there was no difference in the duration of smartphone use in terms of function/type of smartphone user in the sample.

Conclusion

Based on the results of research that have been conducted on the correlation between the risk of smartphone addiction and the level of anxiety at Khadijah Ahmad Yani Elementary School in Surabaya, the following conclusions can be drawn: It was found that some samples had a risk of smartphone addiction, a minority of samples were in a mild anxiety condition and the majority do not experience anxiety, and there is a low correlation between the risk of smartphone addiction and the level of anxiety at Khadijah Ahmad Yani Elementary School in Surabaya.

The authors intend to provide suggestions for further studies which are expected to improve the limitations of this study, such as the research subjects should be more diverse, the risk level of smartphone addiction should be distinguished in the samples, the duration of smartphone usage should be distinguished in terms of function/type of smartphone user in the sample.

The author's advice to parents or guardians of children as caregivers is to minimize the negative effects of smartphone use on children by reducing the duration and intensity of smartphone use and monitoring smartphone use in their child's everyday life.

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Ethical Clereance

This study has received ethical permission from the Ethics Commission of Faculty of Medicine Universitas Airlangga with No. 114 / EC / KEPK / FKUA / 2020.

Conflict of Interest

The authors declare that there is no conflict of interest.

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