

THE RELATIONSHIP BETWEEN THE DURATION OF GADGET USE AND EMOTIONAL AND HYPERACTIVITY-INATTENTION BEHAVIOR IN ADOLESCENTS

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ABSTRACT

Backgrounds Adolescence is a physical and mental development period that various factors could influence. **Aims** This research aims to determine the relationship between the duration of gadget use and emotional symptoms and hyperactivity disorder in adolescents. **Methods** This research is a cross-sectional study with a quantitative approach using the Strengths & Difficulties Questionnaire (SDQ) to determine adolescents' emotional and hyperactivity-inattention behavior. This research is a correlational study in which 142 students at SMA Negeri 4 of Wajo Regency selected as research subjects. We analyze research data using the Chi-Square test with a significance level of 5%. **Results** The results of the Chi-Square test indicate that the p-value amount to 0.062 (emotional symptoms) and 0.170 (hyperactivity disorder). Emotional symptoms and hyperactivity-inattention indicate a p-value of >0.05 (more than 0.05). **Conclusion** From this research, there are differences between groups with different duration of gadget use and emotional symptoms, as well as groups with different duration of gadget use and hyperactivity-inattention in adolescents, but they were statistically insignificant.

Keywords: Gadget, Emotional, Hyperactivity, Inattention

ABSTRAK (Bhs. Indonesia)

Latar belakang Remaja merupakan masa perkembangan fisik dan mental yang dipengaruhi berbagai faktor. Tujuan Mengetahui hubungan antara durasi penggunaan gadget dengan perilaku emosional dan hiperaktif-inatensi pada siswa di SMA Negeri 4 Kabupaten Wajo. Metodologi Penelitian ini merupakan studi *cross sectional* dengan pendekatan kuantitatif yang menggunakan *Strengths & Difficulties Questionnaire* (SDQ) sebagai instrumen untuk menentukan perilaku emosional dan hiperaktif-inatensi pada remaja. Penelitian ini merupakan studi korelasional pada 142 siswa SMA Negeri 4 Kabupaten Wajo. Hasil penelitian dianalisa menggunakan uji *Chi-Square* dengan nilai signifikansi 5%. Hasil dari uji *Chi-Square* didapatkan *p-value* untuk aspek gejala emosional sebesar 0.062 dan aspek hiperaktif-inatensi sebesar 0.170. Hal ini bisa dipengaruhi faktor lain seperti kontrol diri dari remaja itu sendiri. Faktor lain yang mempengaruhi yaitu pola asuh orang tua, tempat tinggal, lingkungan sosial, kesehatan mental, dan spiritual. Kesimpulan Dari penelitian ini dapat disimpulkan bahwa terdapat perbedaan antara kelompok dengan durasi berbeda dalam penggunaan gadget dengan perilaku emosional begitu juga dengan hiperaktif-inatensi pada remaja, tapi tidak signifikan secara statistik.

Kata Kunci: Gadget, Emosional, Hiperaktif, Inatensi

Introduction

An adolescent defined as a person aged 10-19 years transitioning from childhood to adulthood. It is marked by biological, psychological, and behavioral changes, including physical maturity and puberty, identity and individuality formation, an increase in independence and responsibility, interaction with peers and the opposite sex, as well as an increase in the curiosity to explore things. Adolescents experience rapid and significant developmental change during this remarkable life cycle stage. Understanding and responding to the unique developmental characteristics of young adolescents is central among the tenets of middle-level education.¹



Puberty initiates a phase of growth and maturation of the reproductive, musculoskeletal, neurodevelopmental, endocrine, metabolic, immune, and cardio-metabolic systems that extends into the third decade. For this reason, adolescence can be considered a sensitive phase, during which the quality of the physical, nutritional, and social environments may change trajectories of health and development into later life. The growth of adolescents is affected by multifactorial, such as genetics, mental, nutrition, and the environment where they grow. Therefore the age and the duration of adolescents' growth are different. During this period, they often conflict with themselves (internal conflict) and the surrounding environment (external conflict). One of the common problems during adolescence is an addiction to the things they love to use or do.²

The source of addiction is not only drugs (narcotics, psychotropics, and addictive substances) but also behavioral addictions such as playing games, social media, and dependence on pornography. Through internet access we can easily find addictive content which also increases the risk of behavioral addiction. A gadget is a device or tool with a specific purpose and function. Based on data from the Ministry of Communications and Information Technology in 2021, there were 89% of Indonesians who had gadgets. One of the most used and owned is the smartphone.³

Based on the 24-Hour Movement Guidelines, a teenager's screen time is 2 hours per day for recreational purposes or other than school needs.⁴ Arlinda Sri Wahyuni (2019) revealed that 103 primary school student respondents used the SDQ, which shows a relationship between the duration and frequency of using gadgets and the emotional and mental state of elementary school children. A study by Rukmana *et al.* (2022) shows that excessive intensity of gadget use affects children's social-emotional development.⁵ Same as a study by Sapardi (2018) says children with deviant development and behavioral problems use gadgets for more than 30 minutes daily.⁶ Symptoms of hyperactivity-inattention could occur at any age.⁷ From previous studies conducted by other researchers, there is limited information on how the duration of gadget use affects the emotional state and hyperactivity-inattention of adolescents aged 15-17 living in rural areas. Therefore we studied the relationship of gadget use duration and emotional symptoms as well as hyperactivity-inattention in adolescents.⁸

Methods

This correlational, cross-sectional study focused on determining the relationship between the duration of gadget use with emotional symptoms and hyperactivity-inattention behavior in adolescents. It was conducted on January 2021 at SMA Negeri 4 Wajo Regency, South Sulawesi. The procedures used adhered to the tenets of the Declaration of Helsinki and were approved by the Ethics Committee of UIN Alauddin Makassar.

(B-3402/Un.06.1-FKIK/PP.00.9/12/2020). The subject of 142 students was drawn by purposive sampling from a population of 554 students from SMA Negeri 4 Wajo Regency using a sample size formula for correlative analytical research, with a minimum correlation considered significant is 0.3, type I error of 2.5%, type II error of 5% and one-way hypothesis resulting minimum of 135 samples.

Subjects were chosen using inclusion and exclusion criteria. Inclusion criteria are students aged 15-17 from SMA Negeri 4 Wajo Regency, who can access gadgets at least 2 hours per day, and with permission from their parents to attempt this research. Exclusion

criteria are students with mental health disorders, students who were sick during the research, students who did not fill out the questionnaire, and had a family with mental disorders. The duration of gadget use grouping based on the screen time recommendation of the Indonesian Pediatric Society for adolescents (12-18 years old) is 2 hours per day.⁹

This research used primary data from a questionnaire distributed to respondents. Informed consent was obtained from all subjects after they were provided with an explanation about the procedure and the confidentiality of the information they gave and allowed to decide whether to continue filling out the questionnaire or not.

To assess emotional symptoms and hyperactivity-inattention behavior, we use the Strengths and Difficulties Questionnaire (SDQ), containing 25 questions that assess the mental-emotional symptoms of adolescents aged 11-17 years. For emotional symptoms and hyperactivity-inattention aspect is classified as normal if the score is 0-5, borderline 6, and abnormal 7-10. Univariate analysis was used to show the distribution of respondents' characteristics as well as the dependent and independent variables. We use the Chi-Square test, and the p-value for this research is <0.05 .¹⁰

Results

Characteristics of Respondent

Based on table 1, it is concluded that most of respondents are female (103/72.5%), 17 years old (71/50%), have smartphone-type gadgets (142/100%), use gadgets 6-7 days a week (119/ 83.8%) and use gadgets for >4 hours in one day (95/ 66.9%).

The Relationship Between the Duration of Gadget Use and Emotional and Hyperactivity-Inattention Behavior in Adolescents

We studied 142 subjects using the Chi-Square test, and the result (table 2) shows that most of the respondents are mentally and emotionally normal based on SDQ results.

The p-value for emotional symptoms is 0.062, and hyperactivity-inattention is 0.170 (>0.05). The analysis result of the relationship of independent variables with dependent variables is that the alternative hypothesis (H_a) is not accepted. It states that there are differences between groups with different duration of gadget use and emotional symptoms, as well as groups with different duration of gadget use and hyperactivity-inattention in adolescents, but they were statistically not significant.

Table

Table 1. Characteristics distribution of respondents

Characteristic of Respondent		N	%
Gender			
Male		39	27,5
Female		103	72,5
Age			
15 years		23	16,2
16 years		48	33,8
17 years		71	50,0
Gadget Type			
Smartphone	Yes	142	100,0
	No	0	0,0
Laptop	Yes	52	36,6
	No	90	63,4
Tablet	Yes	1	0,7
	No	141	99,3
Number of Gadget Usage Days in a Week			
1-3 day		11	7,7
4-5 day		12	8,5
6-7 day		119	83,8
Play Gadget Duration in a Day			
2-4 hours		47	33,1
> 4 hours		95	66,9

Source: Primary Data (2021)

Table 2. The relationship between duration of gadget use and emotional symptoms and hyperactivity-inattention

Strengths and Difficulties Questionnaire		Duration				Total		p-value
		2-4 hour		> 4 hour		n	%	
		N	%	n	%			
Emotional Symptoms	Normal	40	85,1	63	66,3	103	72,5	0,062
	Borderline	3	6,4	14	14,7	17	12	
	Abnormal	4	8,5	18	18,9	22	15,5	
Conduct Problems	Normal	45	95,7	85	89,5	130	91,5	0,350
	Borderline	2	4,3	7	7,4	9	6,3	
	Abnormal	0	0,0	3	3,2	3	2,10	
Hyperactivity	Normal	45	95,7	87	91,6	132	93	0,170
	Borderline	0	0,0	6	6,3	6	4,2	
	Abnormal	2	4,3	2	2,1	4	2,8	
Peer Problems	Normal	38	80,9	79	83,2	117	82,4	0,348
	Borderline	9	19,1	13	13,7	22	15,5	
	Abnormal	0	0,0	3	3,2	3	2,1	
Prosocial Behavior	Normal	44	93,6	86	90,5	130	91,5	0,751
	Borderline	3	6,4	9	9,5	12	8,5	
Total		47	100	95	100	142	100	

Source: Primary Data (2021)

*Chi-Square Test

Discussions

The result is the relationship between the two variables is not statistically significant. There are many contributing factors affecting adolescents' mental and emotional health. Research conducted by Mustamu et al. (2020) shows that parental styles and ideas are an important influencing factors for the mental development of children and adolescents. Poor parenting styles, such as excessive protection and interference, are more likely to increase a child's social anxiety. Adolescents' self-esteem and emotional balance are also negatively correlated with parental orders and reprimands and could cause behavior problems. Excessive protection from parents could cause rebellion among children and adolescents. The era of technology allowed parents and adolescents to access the best information according to parenting so they could create the world and environment that suits them best, where the parent could educate the adolescents and freely discuss with them.¹¹

There have been studies citing gender as a contributing factor to mental development. Adolescent depression is closely associated with female hormonal changes by sensitizing the brain during stress, which means that females are prone due to hormonal factors and more vulnerable to the onset of depression.¹²

Physical and psychological factors from the adolescents and their parents can also be a factor that contributes to mental health problems. Children from socio-economically disadvantaged families, violent homes, and divorce relationships with parents have a significant role in developing mental health problems such as depression. Academic stress, such as bullying, is also a contributing factor due to depression. Stressful life events like a disaster, grief, chronic illness, sexual harassment, and termination of a romantic or platonic relationship are associated with severe depression and poor academic performance. Adolescent sex inequalities have insufficient well-being indicators such as self-rated health, psychosomatic symptoms, and life satisfaction.¹²

Demographic factors have a significant role in mental health development. This research sample was taken from a senior high school in a rural area. Urban and rural areas have different characteristics related to family, peers, and community environments. Teens in urban areas tend to have stronger emotional symptoms, more behavior problems, higher hyperactivity levels, and more peer relationship problems, whereas rural teens tend to be more prosocial. This could be affected by the density of the population. Urban areas have a higher population which can increase stress among residents, while rural areas have a lower population and less emotion which can create more peaceful environments.¹³

This result disagrees with previous research conducted by Surat (2021) regarding the impact of using gadgets which shows that excessive use of gadgets causes depression at a certain age. This also causes mental health problems at a certain age for children and adolescents. They may show depression symptoms within a few days. The excessive use of gadgets can disrupt the users' daily life, resulting in declining mental health, lacking focus on learning or doing their work and affecting socialization and academic performance.¹⁴

Adolescent depression may affect their socialization, family relations, and performance at school, often with potentially serious long-term consequences. Adolescents with depression are at risk for increased hospitalizations, recurrent depression, psychosocial impairment, alcohol abuse, and antisocial behaviors as they grow up.¹⁵ Study conducted by Preety (2018) shows that gadget addiction can cause people to sacrifice their sleep time and possibly cause serious mental health.¹⁶ People who excessively use electronic gadgets could also develop various disorders, such as repetitive strain injury, computer vision syndrome, neck pain, etc.¹⁷

On the psychosocial aspect, gadget addiction could occupy adolescents, causing less tendency to spend time on outdoor activities such as playing games, walking, and doing physical exercise.¹⁸ Previous studies showed patterns and susceptibility of excessive internet use among students create a tendency to stay up late, significantly associated with mental and

physical problems. Using gadgets for more than 2 hours per day harms' adolescents' physical and mental states, such as headaches, sleeping disturbances, backache, visual problems, and depression.¹⁸ Gadget addiction will increase the prevalence of inattention disorder and hyperactivity because gadget addiction affects the excessive release of the dopamine hormone, causing a decrease in the maturity of the Pre Frontal Cortex (PFC).¹⁹

This research indicates that students with borderline and abnormal categories are more in number in the groups of students using gadgets >4 hours per day than those using gadgets 2-4 hours per day. This may cause disturbances in various aspects of adolescents' health, for example, it can contribute to addiction alongside other factors, such as conflict with parents, family functioning, family resilience, teacher's support, attitude toward school life, individual and psychological factors, and social environmental problems.¹⁸ We studied only the duration of gadget use and its relationship to emotional symptoms and hyperactivity-inattention problems and used small sample size. These were other limitations of our study. Further studies are needed with more study subjects and contributing factors.

Conclusions

The research analyzes the relationship between gadget use duration and emotional symptoms and adolescents' hyperactive-inattention behavior. Based on the research result, the conclusion is there are differences between groups with different duration of gadget use and emotional symptoms, as well as groups with different duration of gadget use and hyperactivity-inattention in adolescents, but they were statistically not significant.

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