

THE USE OF GADGETS AND CHILD DEVELOPMENT AGED 2–5 YEARS IN DUSUN WATULANGKAH AMBARKETAWANG, GAMPING

Lia Dian Ayuningrum^{1*}, Eka Septi Nugrahen², Indah Wijayanti³, Erna Yovi Kurniawati⁴

^{1, 2, 3, 4} Alma Ata University, Yogyakarta

Corresponding Email: ^{1*}liadianayuningrum@almaata.ac.id

ABSTRACT

Children's use of gadgets has become a major concern in recent years, and can have complex effects on their development. In Sleman Regency in 2022, the prevalence of toddlers undergoing growth and development monitoring stood at 51.67%. Therefore, efforts are needed to monitor growth and development in order to detect at an early stage any instances of inappropriate development. To investigate the relationship between gadget use and the development of children aged 2–5 years in Watulangkah hamlet, Ambarketawang, Gamping. This study is a non-experimental quantitative study using a cross-sectional approach. The sampling technique used was non-probability sampling, with a sample size of 42 respondents. The research instruments used were a demographic questionnaire, a gadget usage questionnaire, and the KPSP. The bivariate analysis in this study was the Spearman rank test. Results: The results of the statistical test indicate a relationship between gadget use and the development of children aged 2–5 years, with a p-value of 0.001, a correlation coefficient of 0.626, and an odds ratio of 6.21. Conclusion: There is an association between gadget use and the development of children aged 2–5 years in Watulangkah Hamlet, Ambarketawang, Gamping, Sleman.

Keywords: Children's Use Of Gadgets, Child Development, Gadget.

INTRODUCTION

Child development is a qualitative, systematic and progressive process involving the development of increasingly complex bodily structures and functions in gross and fine motor skills, speech and language, socialisation and independence, and is the result of the maturation of the interactions between various bodily systems (Mulyanti et al., 2021). According to data from the World Health Organization (WHO) in 2020, approximately 149.2 million children under the age of 5 have developmental disorders.

Data from UNICEF in 2020 indicates that 27.5% or approximately 3 million children in Indonesia have developmental disorders. Developmental disorders in children encompass motor, cognitive, and socio-emotional aspects. Data indicates that approximately 5 to 10% of children are estimated to experience developmental delays. According to data from the Indonesian Paediatric Association (IDAI), the prevalence of developmental disorders in children in 2018 was around 5–10%, rising to 30% by 2022. According to data from the 2022 Indonesian Child Profile, the Special Region of Yogyakarta, as the province with the highest percentage of children accessing the internet in Indonesia, recorded a figure of 93.83 per cent; furthermore, the Special Region of Yogyakarta also ranks highest in terms of the percentage of children using mobile phones, at 95.65 per cent.

Addiction to gadgets among young children is already occurring and its negative impact on all aspects of child development outweighs the positive effects. However, gadgets actually

have two sides to them, depending on how they are used; if children use them wisely, they will have a positive impact on their development, but conversely, if they are used irregularly and without restraint, they will have a detrimental effect on their development (Mimin, 2022).

Children's use of gadgets has become a major concern in recent years. Children's use of gadgets has complex effects on their development. Gadget use can enhance children's cognitive skills, such as digital literacy, problem-solving abilities, and the development of fine motor skills. Excessive or unsupervised use of gadgets can lead to sleep disturbances, dependency, and a decline in social communication skills. Children may become overly fixated on screens and interact less with their physical environment and peers (Batubara et al., 2023).

Early childhood refers to children aged 2 to 5 years who are undergoing a period of rapid growth and development, often described as a developmental leap. Children in this stage are also in the play-based learning phase. During this time, children are just beginning to explore the wider world beyond their family environment. Because early childhood encompasses a particularly valuable age range compared to later stages, given the extraordinary development of their intelligence. This period is often referred to as "the golden age" — a phase that occurs only once, cannot be repeated, and is crucial for the development of human potential.

Based on the results of a study conducted at the Posyandu in Watulangkah Hamlet, Ambarketawang village, Gamping Sub-district on 13 March 2025, it was found that of the 53 toddlers, 42 were aged between 2 and 5 years. Interviews were conducted with the Posyandu volunteers, revealing that 5 out of 10 children being weighed were actually playing on gadgets, even though the Posyandu is well-stocked with educational games and traditional games.

METHOD

This study employs a quantitative approach with a non-experimental design of a correlational nature, which aims to explain the relationship between the independent variable and the dependent variable. The study utilises a cross-sectional design, meaning that data collection involved a single data collection point from the research subjects. This study was conducted in May 2025 in Watulangkah Hamlet, Ambarketawang, Gamping, Sleman.

The population in this study consisted of 42 children aged 2–5 years at the Posyandu in Watulangkah, Ambarketawang, Gamping, Sleman, Special Region of Yogyakarta, totalling 42 children. In this study, the researcher employed a non-probability sampling technique. The sampling method used was total sampling. To select the sample, the researcher identified 42 children from the Posyandu register to serve as respondents. The inclusion criteria for this study were: mothers willing to participate as respondents; children aged 2–5 years who are active at the Posyandu in Watulangkah Hamlet, Ambarketawang, Gamping, Sleman; and families owning gadgets such as smartphones, smart TVs, tablets and laptops. The exclusion criteria were: children who were not present at the time of the study and children with disabilities and special needs.

The instruments used were a demographic questionnaire, covering the identities of the mother and child. The mother's details included her name and age. The child's details included their name and age; a questionnaire on gadget usage to determine gadget use; and monitoring of growth and development using the KPSP. The validity of the gadget usage questionnaire had previously been tested by the researcher using the product-moment correlation. The criteria for the test results are that if an r value greater than the table r value ($r_{\text{table}} = 0.396$) and less than α (0.05) is obtained, then the question item is deemed valid. The table r value for the validity test is $r = 0.396$, and the validity test results yielded r values between 0.726 and 0.876. The reliability test for this instrument was conducted by comparing the table r value with Cronbach's Alpha > 0.6 using computer-assisted analysis. The results of the reliability test for this instrument yielded a Cronbach's Alpha value of $\alpha > 0.742$; therefore, the instrument is deemed reliable.

This research has received ethical approval from the Research Ethics Committee of Alma Ata University under letter number KE/AA/V/10112471/EC/2025. This letter was approved in May 2025 and the research was conducted in May 2025.

RESULTS AND DISCUSSION

This section presents the findings obtained from the study and provides an interpretation of the data in relation to the research objectives.

Table 1
Frequency Distribution of Respondents' Characteristics

Variables	Frequency (n)	Percentage (%)
Parents' Characteristics		
Mother's Age		
< 21 years	0	0%
21–35 years	34	81%
> 35 years	8	19%
Father's Educational Level		
Primary Education	4	10%
Secondary Education	33	79%
Higher Education	5	11%
Mother's Educational Level		
Primary Education	0	0%
Secondary Education	32	76%
Higher Education	10	24%
Father's Income		
< Regional Minimum Wage	4	10%
Equal to Regional Minimum Wage	7	17%
> Regional Minimum Wage	31	73%
Mother's Income		
< Regional Minimum Wage	22	53%
Equal to Regional Minimum Wage	17	40%
> Regional Minimum Wage	3	7%
Children's Characteristics		
Child's Age		
2 years	18	43%
3 years	6	14%
4 years	8	19%
5 years	10	24%
Birth Order		
First child	14	33%
Second child	23	55%

Variables	Frequency (n)	Percentage (%)
Third child	5	12%
Child Caregiver		
Father or Mother	25	60%
Grandmother or Grandfather	12	29%
Sibling	0	0%
Babysitter/Caregiver	5	11%
Daycare Center	0	0%
Type of Gadget Used		
Mobile Phone	0	0%
Smartphone	36	86%
Tablet	1	2%
Smart TV	5	12%
Laptop	0	0%
Applications Frequently Watched by Children		
YouTube	37	88%
TikTok	0	0%
Instagram	0	0%
YouTube Kids	5	12%
Posyandu Visits		
8–12 times per year	42	100%
6–7 times per year	0	0%
3–5 times per year	0	0%
Source: Primary Data, 2025		

The characteristics of the respondents presented in Table 4.1 showed that the majority of mothers were aged 21–35 years, totaling 34 respondents (81%), while respondents aged more than 35 years accounted for 8 respondents (19%). Productive maternal age is considered an important factor influencing parenting patterns and parents' ability to provide appropriate stimulation and supervision for children, particularly regarding gadget use. Parents within the productive age group generally have better access to information and technology, which may influence children's exposure to gadgets (Atikah et al., 2019).

Regarding educational background, most fathers had secondary education, totaling 33 respondents (79%), while most mothers also had secondary education, totaling 32 respondents (76%). Educational level is closely related to parents' understanding of child development and their ability to supervise gadget use among children. Parents with higher educational backgrounds tend to have better knowledge regarding the positive and negative impacts of gadget use on children's development (Annisa, 2022).

Based on parental income characteristics, the majority of fathers had an income above the regional minimum wage, totaling 31 respondents (73%), while most mothers had an income below the regional minimum wage, totaling 22 respondents (53%). Socioeconomic conditions may influence the availability of gadgets at home and children's access to digital media.

Families with better economic conditions are generally more able to provide smartphones, tablets, and internet access for their children.

Regarding the characteristics of the children, most were aged 2 years, totaling 18 respondents (43%), followed by children aged 5 years, totaling 10 respondents (24%). Early childhood is considered a golden period of growth and development because rapid brain development occurs during this stage. According to previous studies, children aged 2–5 years are highly sensitive to environmental stimulation, including exposure to gadgets (Mustakim et al., 2020). Based on birth order, most children were the second child in the family, totaling 23 respondents (55%). Birth order may influence parenting patterns and the amount of attention given by parents, as children with older siblings may be more easily exposed to gadgets through observation and imitation.

Most children were cared for directly by their parents, totaling 25 respondents (60%), while 12 children (29%) were cared for by grandparents. The family environment is an important external factor affecting child development. Parents who actively supervise children's daily activities, including gadget use, may reduce the negative impact of excessive screen exposure (Mustakim et al., 2020).

The most commonly used gadget among children was smartphones, totaling 36 respondents (86%). Smartphones are considered practical and easily accessible devices that provide various entertainment features such as videos, games, and educational content. This finding is consistent with previous studies stating that smartphones are the most widely used gadgets among early childhood populations (Yuniarni et al., 2023). In addition, the application most frequently watched by children was YouTube, totaling 37 respondents (88%), while 5 respondents (12%) used YouTube Kids. YouTube is attractive to children because it provides colorful visual content, cartoons, songs, and educational videos. However, unrestricted access to YouTube may expose children to inappropriate content and increase the duration of screen time.

All respondents routinely attended posyandu activities 8–12 times per year (100%). Routine attendance at posyandu indicates that parents have good awareness regarding monitoring children's growth and development.

Children who are dependent on gadgets are likely to experience developmental delays and setbacks. This is because children who are engrossed in playing with gadgets rarely move, which hinders their growth (Sobry, 2017). Children aged 2–5 are more prone to becoming dependent on smartphones, leading them to believe that smartphones are everything to them. This sense of addiction to smartphones means that children easily become bored, restless and angry when separated from their favourite smartphone (Sudirman et al., 2023). Parenting that provides psychosocial stimulation can influence a child's development; this is also one of the parenting styles that carers can adopt (Amelia et al., 2023).

The participation of mothers of young children in posyandu activities is a crucial factor in monitoring their children's development. Children who do not attend posyandu regularly mean that their development cannot be monitored by volunteers or health workers. According to research by Umi Kiptiyah, the frequency of visits to the posyandu influences a child's development. There is a link between the frequency of posyandu visits and the role of parents in stimulating a child's development. It can be concluded that the higher the frequency of visits to the posyandu, the better the role of parents in stimulating their child's development. Conversely, the lower the frequency of visits to the posyandu, the lower the role of parents in stimulating their child's development (Kiptiyah, 2021).

Regular attendance at posyandu reflects parents' awareness of the importance of monitoring their children's growth and development. After the univariate analysis, a bivariate

analysis was conducted to examine the relationship between gadget use and child development among children aged 2–5 years in Dusun Watulangkah, Ambarketawang, Gamping, Sleman. As both variables were measured on ordinal scales, the Spearman Rank correlation test was employed. The results are presented in Table 4.2.

Table 2
Analysis of the Relationship Between Gadget Use and Child Development Among Children Aged 2–5 Years in Dusun Watulangkah, Ambarketawang, Gamping, Sleman Regency, May 2025

Gadget Use	Child Development			Correlation Value	P-Value	Odds Ratio
	A	D	D			
Low	3	0	0	0,626	<0,001	6.21
Moderate	6	5	0			
High	2	22	4			

Source: Primary Data, 2025

Based on the data analysed using Spearman's rank correlation test, the results indicate that there is a significant relationship between gadget use and the development of children aged 2–5 years in Dusun Watulangkah ($P = 0.0001$). The correlation coefficient for the strength of the relationship between gadget use and the development of children aged 2–5 years in Watulangkah Ambarketawang Gamping is 0.626, indicating a strong relationship. The Odds Ratio is 6.21, meaning that high gadget usage carries a 6.21 times greater risk of developmental delays compared to children with low gadget usage.

Early childhood development is influenced by various factors, including the use of technology. Gadget use among young children may have a significant impact on their developmental outcomes. Children tend to spend more time using gadgets and engaging with various game features and digital applications. Continuous and excessive gadget use may hinder children's development if carried out consistently over time (Triastutik, 2018). Children who use gadgets more frequently are at greater risk of experiencing developmental outcomes that are not appropriate for their age. Excessive gadget use may interfere with children's growth and developmental processes (Damayanti et al., 2020).

Children who frequently use gadgets are more likely to experience developmental delays compared to children with lower gadget use (Sudirman et al., 2023). Excessive gadget exposure may limit the stimulation needed for children to achieve optimal developmental milestones according to their age. During gadget use, children tend to engage less in physical and interactive activities such as holding objects, writing, coloring, drawing, walking, running, playing ball, and arranging blocks because they spend prolonged periods sitting still while using gadgets (Yumarni, 2022). Excessive gadget use in children may also produce negative effects, including reduced concentration and increased dependency on gadgets. Many children become addicted to gadgets and gradually lose interest in social interaction with their surrounding environment, which may negatively affect their development (Septyani et al., 2021). The duration and frequency of gadget use among children are highly dependent on parental supervision, as children are not yet capable of fully controlling their own behavior. Therefore, excessive gadget use may contribute to developmental problems in children (Elka Fitri et al., 2022).

The findings of this study are consistent with previous research conducted by Anggi Kusuma, which reported a significant relationship between the intensity of gadget use and child development, with a p-value of 0.001. Similarly, Dwi Elka Fitri found a significant relationship between gadget use and child development, with a p-value of $0.000 < 0.05$ (Kusuma et al.,

2022). In addition, research by Sulistya Oktaviani also demonstrated that gadget use significantly affected child development, with a p-value of 0.000 (Oktaviani et al., 2019). The results of the present study demonstrated a significant relationship between gadget use and the development of children aged 2–5 years in Dusun Watulangkah, Ambarketawang, Gamping, Sleman, with a p-value of 0.0001 and a correlation coefficient of 0.626, indicating a strong relationship. Furthermore, the Odds Ratio value obtained in this study was 6.21, indicating that children with high gadget use had a 6.21 times greater risk of experiencing inappropriate developmental outcomes compared to children with low gadget use. This finding may be explained by the fact that frequent gadget use among children aged 2–5 years reduces children's participation in physical, social, and exploratory activities, thereby limiting developmental stimulation and decreasing children's awareness of their surroundings. Conversely, reduced gadget use may increase developmental stimulation and encourage children to become more responsive to events and interactions in their environment. These findings suggest that higher levels of gadget use are associated with a greater likelihood of developmental deviation in children.

CONCLUSIONS AND SUGGESTIONS

Conclusions

This study demonstrated a significant relationship between gadget use and the development of children aged 2–5 years in Dusun Watulangkah, Ambarketawang, Gamping, Sleman, with a p-value of 0.001, a correlation coefficient of 0.626, and an Odds Ratio of 6.21. High gadget use was associated with a greater risk of developmental deviation among children. These findings indicate that excessive gadget use may negatively affect early childhood development, particularly in language, social, and motor aspects.

Suggestions

Parents are encouraged to supervise and limit children's gadget use by providing balanced developmental stimulation through physical activity, social interaction, and educational play. Health workers and posyandu cadres are expected to strengthen developmental monitoring and parental education regarding the impact of excessive gadget use on child development. Future studies are recommended to involve larger sample sizes and broader variables to obtain more comprehensive findings.

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