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Screening Behavioural Disorders of Children Affected by Screentime with Real Computer Vision Technology

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ABSTRACT

Introduction: In the development cycle of early childhood, several internal and external factors can influence changes such as disruption, delay or improvement. One of the external factors highlighted in this study is the application of screen time. Screen time in early childhood is highly recommended not to exceed 1 hour/day. This study aims to analyse the impact of screen time on behavioural disorders in the communication and personal social aspects of children aged 0-3 years at the Menur 6 Kartasura Children's Posyandu, using computer vision technology to monitor children's behaviour. **Methods:** The study used a quantitative study with a cross-sectional design. Statistical tests used the T-test. The number of samples is the total of the population aged 1-3 years as many as 24 respondents. The instruments used were interviews and observations with the ASQ-3 guidelines that had been developed in the form of computer real vision technology. **Results:** The results of the study showed that in the communication aspect there were 6 children in the category of needing stimulus and 18 children in the normal category, while in the personal social aspect there were 7 children in the category of needing stimulus and 17 others in the normal category. The analysis test of excessive screen time application is related to behavioural disorders, such as addiction, delayed language development, and social-emotional disorders. **Conclusion:** However, for behavioural aspects such as communication and personal social, there is no relationship between them. This finding emphasises the importance of parents' role in managing children's screen time to support optimal development.

***Keywords**: screentime, communication, personal social,*

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INTRODUCTION

In the periodisation of human growth and development, there is a period known as *the golden age*, which is in the age range of 0-3 years, generally at this time children easily capture information through their five senses, thus creating active, energetic characteristics, and have a high imagination but tend to be difficult to concentrate because at that age there is ongoing physical, mental, intellectual, and emotional development of children (Setyarini et al., 2023). This *golden age* period is very effective for optimising the many potential intelligences that children can have in order to create quality human resources. *Screentime* in early childhood is highly recommended for no more than 1 hour per day.

According to milestone development, there are 5 domains that are expected to be achieved in the course of child development, namely aspects of communication, personal social, gross motor, fine motor, and cognitive, so if there is a delay in accordance with the age reached, the greater the risk of emotional, social, and academic dysfunction. (Misirliyan et al., 2023) Delays can be triggered by several factors, one of the biggest factors that trigger in this age of technological development is screentime.

The way each parent facilitates their child's growth and development must be different, some

from an early age until toddler age are given full opportunities to play, and some parents provide screen time opportunities for children from an early age. Many parents use gadgets and television to support play or just distract children's attention to play outside, interesting applications and features make children calmer and parents can do activities easily. However, some parents are often ignorant of the impact that can be caused, because excessive screentime activities can have an influence on the emotional and developmental processes of children (Gustian Sobry, 2017).

Based on the research article Influence of Gadget (Srinahyanti et al., 2019) explains that screen time in children has positive and negative impacts, the benefits can encourage creative expression and critical thinking in children without exposing them to real-world boundaries. While the negative impact of screentime is considered more than the positive impact, including addiction, lack of concentration, speech delay and radiation exposure.

Integration of SUSENAS and RISKESDAS in 2018, in the analysis of early childhood development in Indonesia, it has been found that out of 10 children there are 6 to 7 children who have achieved development in accordance with the stages of development at their age, which means that the remaining 3 have developmental delays.

According to RISKESDAS data in 2018 69.9% of preschool children in Indonesia are known to experience social development disorders, where children show anti-social attitudes, which if left unchecked will lead to behavioural disorders in adulthood. Then it is known according to the Indonesian Pediatric Association (IDAI), there are 5-8% of preschool children in Indonesia who experience language delays and disorders, this will also have an impact on future behaviour, where children will experience speech and communication disorders.

Based on the results of previous research conducted at Posyandu Melati Karang Besuki, Mulyorejo Health Centre area, 24 respondents (62.5%) were found to be in normal development and 15 respondents (37.5%) with developmental delays. It was found that 56.42 times greater, toddlers whose gadget usage duration was more than 1 hour had a suspect development category (Setyarini et al., 2023).

Knowing the increase in screentime intensity, a mechanism that can be associated with developmental delays is also found, it is believed that screentime can replace time or reduce opportunities for interaction and play with parents, peers, and the environment.

This study aims to analyse the impact of screentime on behavioural disorders in the aspects of communication and personal social aspects of children aged 0-3 years at Posyandu Anak Menur 6 Kartasura, using ASQ-3 guidelines that have been developed in computer vision technology to monitor children's behavioural development.

METHODS

The research conducted was quantitative in nature by using a *cross sectional* design where observation and data collection were carried out at once (*point time approach).* Statistical analysis using t-test analysis test.

The research was conducted at Posyandu Menur 6 Makamhaji, Kartasura sub-district, in October 2024, respondents who came in the form of a population with a total of 52 consisting of parents and children. A sample of 24 respondents was selected based on the age of early childhood, namely, age 1- 3 years. The independent variable is the intensity of the use of screentime in early childhood with an age range of 1-3 years. While the dependent variable is early childhood behavioural development disorders with aspects of communication and personal social.

Data collection was conducted directly with interview and observation instruments by the researcher to the child's parents, using the ASQ-3 (Ages and stages quisionnaries) which has been modified in the form of real vision computer technology. The communication and personal social aspects instrument was validity tested and found to be valid, having a total of 12 valid questions with validity coefficients of 0.000 and 0.004, and a reliability value of 0.412. this indicates that this measurement is very reliable.

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RESULTS

Table 1. Characteristics of respondents age

Variable	Category	Total	Percent (%)
Age (month)	0-12 months	1	4,2
	12- 24 months	7	29,2
	24-36 months	16	66,7
	Total	24	100,0

Based on the results of the respondent characteristic data above, age 0-12 months (4.2%), 12-24 months (29.2%), 24-36 months (66.7%). So it shows that most of the respondents are children aged 24-36 months amounting to 16 respondents (66.7%).

Table 2. Gender characteristics of respondents

Variable	Category	Total	Percent (%)
Gender	Male	10	41,7
	Female	14	58,3
	Total	24	100,0

Based on the results of the respondent characteristics data above, male respondents were (41%), and female respondents were (58.3%). So it shows that most of the respondents are female children with 14 respondents (58.3%).

Table 3. Characteristics of *screentime* intensity in children

Variable	Category	Total	Percent (%)
Gender	Low	14	58,3
	High	10	41,7
	Total	24	100,0

Based on the results of the respondent characteristics data above, respondents with low *screentime* intensity were found to be (58.3%) and low *screentime* intensity were (41.7%), thus showing that children with low *screentime* intensity are more than high.

Table 4. Score Characteristics of *Age and Stages Questionnaires* 3 Communication Aspects

Variable	Category	Total	Percent (%)
ASQ3 (Communication)	Need stimulus	6	25,0
	Normal	18	75,0
	Total	24	100,0

Characteristics of respondents in the aspect of communication measured using the ASQ3 questionnaire with scores of children needing stimulus (25.0%), and normal children (75.0%).

Table 5. Age and Stages Questionnaires score characteristics 3 Social personal aspects

Variable	Category	Total	Percent (%)
ASQ3 (Social Personal)	Need stimulus	7	29,2
	Normal	17	70,8
	Total	24	100,0

Characteristics of respondents in personal social aspects measured using the ASQ3 questionnaire with scores of children needing stimulus (29.2%), and normal children (70.8%).

Table 6. Data Normality Test

	Saphiro Wilk	
Communication and personal social behaviour development questionnaire with ASQ 3	Statistic	Sig
	,818	,001
	,926	,079

Based on the results of the normality test data above, using *Shapiro-wilktest* with the number of data 24 respondents (<50), conducted using the ASQ 3 child behaviour development level questionnaire data that has been developed with *Computer Real Vision* technology in the aspects of communication and personal social in children aged 1-3 years. Then tested with SPSS data obtained a value of 0.079 which means (*sig>0*.05), then the data is declared normally distributed, then further data analysis will be tested with the T-test. The *impaired* sample t test

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is part of a comparative hypothesis test, this test aims to determine whether there is a difference in the average of two samples that are paired or related.

Table 7. Paired Sample Correlations Communication and Personal social

Pair	N	Correlations	Sig
Communication & Social persona	24	,145	,498

Table 7 shows the results of the correlation test between the two sample data of communication and personal social. The correlation coefficient value is 0.145 with a significance value of 0.498.

Table 8. Independent sample test of communication, personal social and screentime intensity

		Sig (2-tailed)
Communication	Equal Variances assumed	,001
	Equal variance not assumed	,006
Social persona	Equal Variances assumed	,776
	Equal variance not assumed	,777

DISCUSSION

Early childhood behaviour is in the heteromonous stage, namely in the age range of 2-6 years according to Piaget, early childhood has a character that is still very unstable, easily carried away by influences, and in moral education they really need guidance, training processes and habituation so that habits can be created to have a good attitude. In the development of attitudes and behaviour of early childhood in character education refers to a predetermined reference, the Ministry of Education in the *grand design of* national character education, has determined the grouping of character configurations, namely heart, mind, spirit, and sport that need to be grown and developed in the attitudes and behaviour of early childhood.

Screentime in children is thought to affect the emergence of several problems in children. One of the problems that can arise due to the high intensity of screentime in children is behavioural problems. Increased use of screen media will show symptoms of delays in behavioural development in children at an early age. Excessive screentime or in the high category can be identified by the use of screens by children with a time of 1 hour to more than 1 hour per day, while the low category is less than 1 hour per day.

In the results of analysis and distribution in Tables 4 and 3 data obtained, that in Posyandu Menur 6 Makamhaji, Sukoharjo there were 58.3% of children who had low screentime intensity and 41.7% had high screentime intensity. The results of the questionnaire using ASQ3 with communication aspects show that there are 25% of children who experience communication delays and in personal social aspects 29.2% of children experience delays. Children who experience delays should be given stimulation to improve their communication and personal social aspects.

The paired sample correlation results in Table 7 test the correlation between the two sample data of social communication and personal. The correlation coefficient value of 0.145 with a significance value of 0.498 was obtained. The sig value of 0.498 > probability 0.05, it can be stated that there is no correlation between communication and personal social variables at the stage of child behaviour development, or it can be concluded that these two aspects can stand alone without affecting each other.

The results of the independent samples t-test analysis of communication, in Table 8 to determine whether there is a significant difference from children who have low or high intensity of

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screentime with communication aspects, and the results obtained p <0.05 which means that there is a significant difference between high-low levels of screentime intensity on the development of early childhood communication apparatus behaviour.

Then the results of the independent samples t-test analysis of personal social in Table 9, to determine whether there is a significant difference from children who have low or high intensity of screentime with personal social aspects, and the results obtained p> 0.05 which means that there is no significant difference between high-low levels of screentime intensity on the development of early childhood communication apparatus behaviour.

Research in this aspect of communication is in line with Setyarini et al, (2023) which states that excessive screentime intensity can affect communication aspects in children, and in line with the results of research by Indra Yeni (2019) explaining that screentime can inhibit linguistics in children and toddlers. In personal social aspects, this study also has the same results as Setyarini et al, (2023) which explains that children who use electronic devices for more than one hour or with high intensity tend to have delayed social development, as well as Novianti & Garzia's research which states that children who play gadgets with an intensity of more than 1 hour in one day, experience delays in social development and are also supported by Ra et al, (2018) which states that the use of high gadget activities can form a person who is apathetic to the environment and increase aggressive attitudes.

CONCLUSION

According to the results of the research that has been done, it is found that screen exposure or *screentime* has an influence on the development of children's behaviour, it is important for parents to understand the negative and positive impacts of using *screentime* on children. although there are technological advances, which may be considered helpful in controlling children, must still provide limits in the provision of *screentime*. the time of giving *screentime* to children must be accompanied by rules and assistance from parents, a maximum of 1 hour per day or better not at all, in order to minimise the negative impacts that will come, it would be better, if parents fill their children's time by holding activities outside, can play with parents or play with peers, this will be more beneficial because it will support the development of children's behaviour from various aspects.

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