



Use of Gadgets in Speech and Language Development in Toddlers at PHC Surabaya Hospitals

Michele Stefanie^{a,b,++*}, Nunung Nugroho^{b,c}
and Pauline Meryana^{b,d}

^a Faculty Medicine, Widya Mandala Catholic University, Surabaya, Indonesia.

^b 1 South Kalisari Street, West Tower 6th level Pakuwon City, Mulyorejo Surabaya 60113, Indonesia.

^c Rehabilitation Medical Department, Faculty of Medicine, Widya Mandala Catholic University, Surabaya, Indonesia.

^d Neurology Department, Faculty of Medicine, Widya Mandala Catholic University, Surabaya, Indonesia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To analyze the correlation between the use of gadgets with speech and language development in toddlers at PHC Surabaya Hospital.

Study Design: This study used an analytical observational research design with a Cross Sectional method.

Place and Duration of Study: PHC Surabaya Hospital, Indonesia between August to September 2022.

Methodology: The total samples used was 75 respondents (42 male and 33 female) who met the inclusion and exclusion criteria at PHC Surabaya Hospital. The statistical analysis used was

⁺⁺ Student;

*Corresponding author: Email: michelestefanie29@gmail.com;

Contingency Coefficient test C. The instruments used were the gadget intensity questionnaire and KPSP.

Results: The intensity of gadgets use among toddlers at PHC Surabaya Hospital are majority in high category (52%). The result of the KPSP showed there was 31 respondents (41,33%) had delay. The result of the analysis showed there was a correlation between the use of gadgets and speech and language development ($p = 0,000$) with a moderate strength correlation ($0,4 - 0,6$) and a positive directional ($r = 0,481$).

Conclusion: The higher intensity of using gadgets affects the delay in speech and language development of toddlers at the PHC hospital in Surabaya.

Keywords: Child growth and development; delayed speech and language development; gadgets; toddlers.

1. INTRODUCTION

The toddler period is a very important period of child development, known as the golden period. Speech and language, gross motor movements, fine motor movements, socialization, and independence of children also develop very quickly at the age of 1 to 5 years [1]. To assess children's development, an early detection of growth and development examination can be carried out which aims to see whether there is a developmental deviation from an early age. Several checks that can be carried out, one of which is using the Growth Pre-screening Questionnaire (KPSP) [1,2,3].

Delay in speech and language development is the most common development disorder. The incidence of speech and language development delay reaches 10% in children worldwide [4]. About 40-60% cases of developmental delays are not detected caused by a lack of parental knowledge about child growth and development. It is the responsibility of health workers to identify early and address parental concerns regarding child development. The speed of development each child can be different from others, but if it not by the age it should be, it can be a delay [5]. Delay in the development of speech and language in children can be influenced by various factors both internally and externally such as gender, genetics, chromosomes, congenital diseases, socio-economic, bilingual, stimulation, parenting style, and gadgets [1,6,7,8].

Gadgets are electronic devices that have special functions and purposes [9]. Examples of gadgets such as laptops, computers, smartphones, tablets, games consoles and others. The use of gadgets in children can have both positive and negative impacts. The intensity of gadget use can be assessed from the duration (length of use

in a day) and the frequency (number of uses in a week) [10]. American Academy of Pediatrics states that until 18 months children may not use gadgets, ages 18-24 months are limited to supervised education, and ages 2-5 years are limited to 1 hour per day [11].

Eva, Supiati, and Ulfa divided the intensity of gadget use into high intensity with a duration of more than 75 minutes and more than 3 uses/day, the moderate intensity with a duration of more than 40-60 minutes and 2-3 times usage/day and low intensity with a duration of fewer than 30 minutes and a maximum of 2 times/day [12]. Research by Kadek and Lie divided the use of gadgets as much as 1-3 days/week including the low category, 4-6 days/week including the moderate category, and every day including the high category [10].

2. METHODOLOGY

This research is an observational analytic study with the Cross-Sectional method. The sample in this study were all children under five who visited PHC Surabaya Hospital from August to September 2022. There are inclusion and exclusion criteria, such as children under five, using gadgets, directly parenting children with democratic parenting, do not have congenital abnormalities, do not have other diseases, are on in certain medications, not bilingual, do not have problems during pregnancy and birth, willing to participate in research. The independent variable of this study is the use of the gadget which is measured based on duration and frequency using a questionnaire. The dependent variable of this study is the development of speech and language as seen using the KPSP.

Duration is divided into less or equal to 30 minutes/day (score 1), 31-60 minutes/day (score

2), and more than 60 minutes/day (score 3) while frequency is divided into 1-3 days/week (score 1), 4-6 days/week (score 2) and every day (score 3). The intensity was assessed based on the total duration score and the frequency of being low (score 2), moderate (score 3-4), and high (score 5-6). Speech and language development was assessed using the KPSP. The questions used were about age-appropriate speech and language development. If all questions get the answer "yes" then the child's development is classified as normal, if there is an answer "no" then the child's development is classified as delayed. The data obtained will be analyzed using Contingency Coefficient C test on the Statistical Product and Service Solution (SPSS) version 26 application.

3. RESULTS AND DISCUSSION

3.1 Results

Table 1 dan Fig. 1 shows the characteristics of respondents based on age group. In this study, it was found that the majority of children were in

the age range of 36-48 months with 21 respondents (28%).

Table 2 dan Fig. 2 shows the characteristics of respondents based on gender. In this study, it was found that the majority of children were male with a total of 42 respondents (56%), and female with a total of 33 respondents (44%).

Table 3 dan Fig. 3 shows the characteristics of the respondents based on the use of gadgets. Based on the intensity of gadget use, it was found that 39 out of 75 respondents (52%) were in the high category, 26 respondents (26%) were in the medium category and 10 respondents (13,33%) were in the low category. The duration of gadget use majority is more than 60 days with a total of 33 respondents (44%), followed by 1-30 days (28%), followed by 31-60 days (28%). The frequency of gadget use majority is everyday with 43 respondents (57,33%), followed by 1-3 day/week with 20 respondents (26,67%), and followed by 4-6 days/week with 12 respondents (16%).

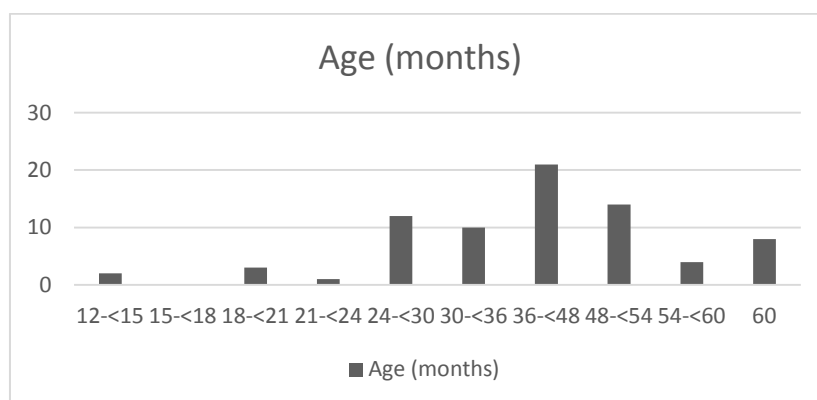


Fig. 1. Distribution of respondents based on age

Table 1. Distribution of respondents based on age

Characteristics	Frequency (n)	Percentage (%)
Age (months)		
12-<15	2	2,67
15-<18	0	0
18-<21	3	4
21-<24	1	1,33
24-<30	12	16
30-<36	10	13,33
36-<48	21	28
48-<54	14	18,67
54-<60	4	5,33
60	8	10,67
Total	75	100

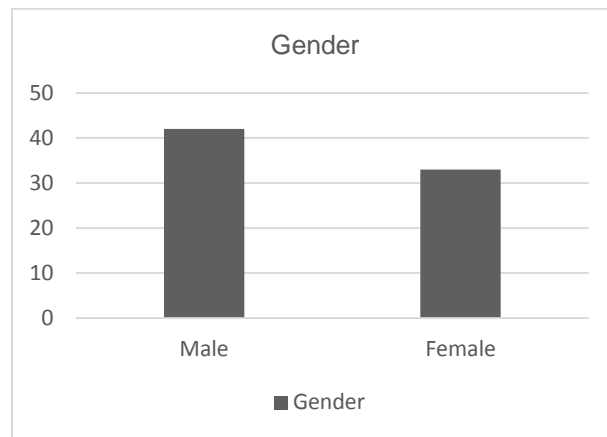


Fig. 2. Distribution of respondents based on gender

Table 2. Distribution of respondents based on gender

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	42	56
Female	33	44
Total	75	100

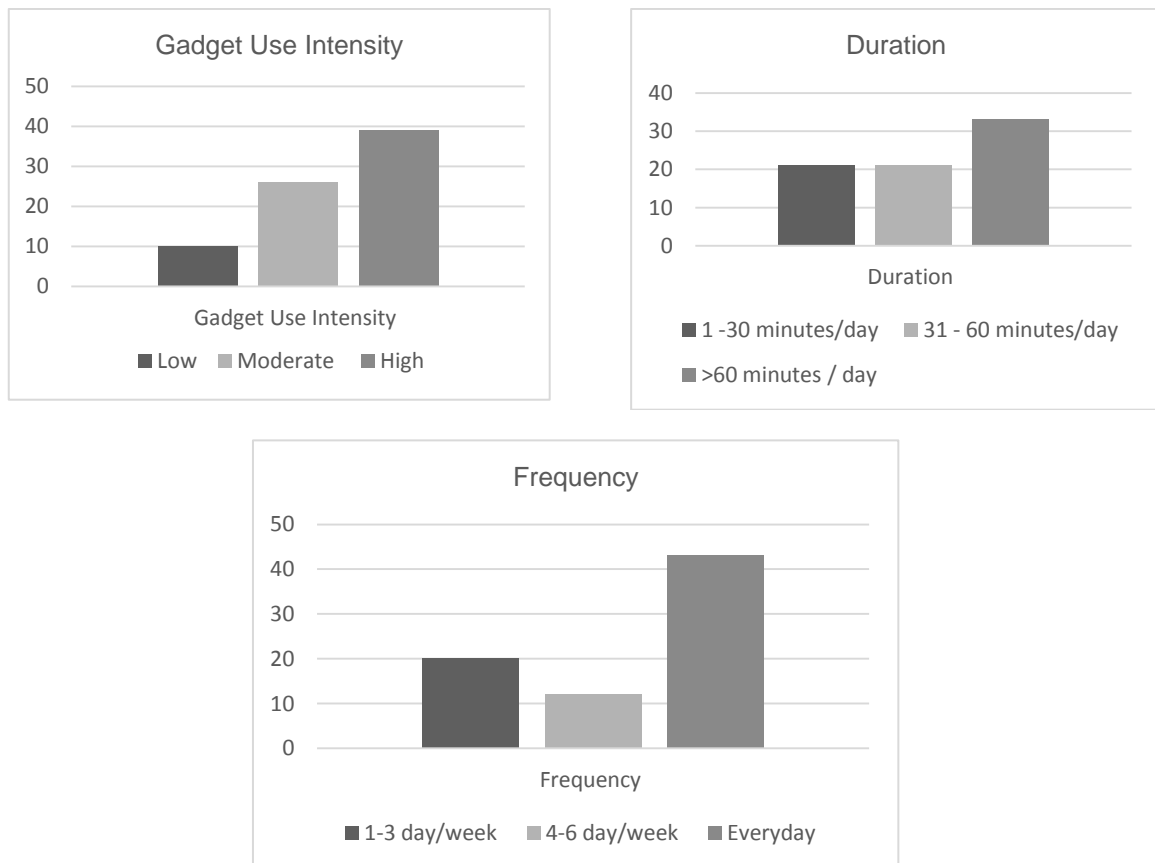


Fig. 3. Distribution of respondents based on gadget use

Table 3. Distribution of respondents based on gadget use

Characteristics	Frequency (n)	Percentage (%)
Gadget usage intensity		
Low	10	13,33
Moderate	26	34,67
High	39	52
Duration (minutes/day)		
1-30	21	28
31-60	21	28
>60	33	44
Frequency (day/week)		
1-3	20	26,67
4-6	12	16
Everyday	43	57,33
Total	75	100

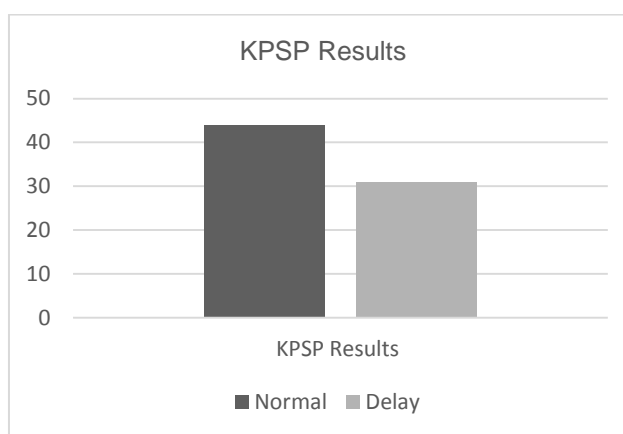


Fig. 4. Distribution of respondents based on KPSP results

Table 4. Distribution of respondents based on KPSP results

Characteristics	Frequency (n)	Percentage (%)
KPSP results		
Normal	44	58,67
Delay	31	41,33
Total	75	100

Table 5. Results of correlation analysis of the intensity of gadget use with speech and language development in toddlers at RS PHC Surabaya

		Speech and language development				Total	p	r	
		Normal		Delay					
		n	%	n	%	n	%		
Gadget intensity	Low	10	100	0	0	10	100	0,000	0,481
	Moderate	21	80,77	5	19,23	26	100		
	High	13	33,33	26	66,67	39	100		
Total		44		31		75			

Table 4 and Fig. 4 shows the characteristics of the respondents based on the results of the KPSP. Based on the data obtained, there were 31 respondents (41,33%) who experienced delays in speech and language development and 44 respondents (58,67%) had normal speech and language development.

Table 5 shows the result of the correlation between the two variables. Most of the respondents had normal speech and language development. Respondents with high-intensity use of gadgets, the majority had a delay in the development of speech and language as many as 26 children (66,67%). Based on the Coefficient Contingency C test, there was a significance with a p-value of 0.000 which indicates that there is a correlation between the gadgets use and speech and language development with moderate strength correlation and positive direction ($r = 0,481$).

3.2 Discussion

Through the Contingency Coefficient C test by SPSS, a significance value of p was 0.000. The significance value of $p < 0.05$ indicates that there is a correlation between the intensity of using gadgets and the development of speech and language in toddlers at PHC Surabaya Hospital. The correlation value of 0.481 indicates that this study has a moderate level (0,4 – 0,6) in a positive direction, which means that the higher the intensity of the use of children's gadgets, the higher the rate of delay in the development of children's speech and language. All children with low intensity of using gadgets have normal speech and language development.

The result of KPSP showed that 31 out of 75 respondents (41,3%) had delays. The prevalence of speech and language delays is higher if compared to research from Anggun PA and Rasi R in children aged 3-5 years at AL-Kamil Kindergarten Surabaya as many as 35% of respondents had delay [13]. This is because, in this study, the majority of the intensity of using gadgets in TK AL-Kamil is in the moderate category, while in this study the majority of respondents' use of gadgets is in the high category.

This research is in line with research by Kadek and Lie which shows that there is a significant correlation between the intensity of using gadgets and delay in speech and language [10]. Husnia, Farid, and Dimas also stated that from

the correlation between duration, onset, and type of exposure to electronic media with language and speech development in children aged 18-36 months, the variable duration of screen exposure to electronic media has a higher correlation value when compared to the two others variable [9]. Research by Yendrizal and Lidya states that there is a significant correlation between gadget addiction and children's language development in Mutiara Bunda PAUD and children with gadget addiction have 0.041 times higher risk of experiencing language development delay [14]. Dyah R stated that children can be said to be addicted to gadgets if the frequency of use is more than 3 times/day with a duration of 30-75 minutes in one use and there is an effect of gadget addiction on children's language development, the higher the level of gadget addiction, the smaller the increase of language development in children [15].

Dyah R also stated that every 30 minutes using of gadgets in children under five can increase the risk of experiencing a delay in speech and language development, while the duration of use above 60 minutes/day can cause language delays [15]. This is in accordance with data from Table 2 which shows that children who had a delay in speech and language development have moderate and high intensity of using gadgets (with a duration of more than 30 minutes/day and/or a frequency of more than 3 days/week), whereas in all children with a duration of using gadgets under 30 minutes/day have normal speech and language development.

The use of gadgets causes only one-way communication, so that children become passive listeners, tend to be silent, and only hear and receive stimulation without any feedback [9]. This is in line with the study of Sukmawati which states that children with high-intensity use of gadgets can cause a delay in language and speech development due to a lack of motivation in learning to speak, rarely practice speaking, and a lack of encouragement from parents in motivating their children to speak [16]. The high intensity of using gadgets will also affect the independence and socialization of children because it can make children lazy to do activities and focus on using gadgets and interact less with other people and the surrounding environment. As a result, the learning process in communicating will be hampered, starting from limited practice, so the child's motivation to speak is reduced and affects the development of speech and language [10,15,16].

Two-way interaction and communication with the surrounding environment are important for the development of speech and language. Lack of stimulation provided by parents will affect children's development. The majority of toddlers at PHC Hospital have a high intensity of using gadgets, therefore it is hoped that parents can play an active role in supervising and limiting the use of gadgets in children. Growing motivation and inviting children to talk and spend time with their peers instead of playing with gadgets can be very helpful. Restrictions and parental controls on the use of gadgets will have a positive impact on children such as can avoid gadget addiction, increasing vocabulary, accessing information, and becoming educational entertainment for children [16,17]. In addition, it is hoped that health workers can educate the society about child development and carry out early detection to prevent developmental disorder.

4. CONCLUSION

Based on the research, there is a correlation between the use of gadgets and the development of speech and language in toddlers at PHC Surabaya Hospital. The higher intensity of using gadgets affects the delay in speech and language development.

CONSENT

Informed consent to fill out the gadget intensity questionnaire and KPSP has been given to all respondents.

ETHICAL APPROVAL

This research has been approved by the Ethics Committee of Widya Mandala Catholic University Surabaya. All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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