

# Screen Time for Preschool Children: Learning from Home during the COVID-19 Pandemic

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## Abstract

Because of the COVID-19 pandemic, the Indonesian Government enacted a study at home policy for all students. This policy also applied to preschool children aged 2 to 6 years old. The purpose of the research was to examine the duration and impact of digital media use by preschool children in urban areas in Indonesia during weekdays and weekends. Data were collected using a validated questionnaire called the Surveillance of digital-Media hAbits in earLy childhood Questionnaire (SMALLQ<sup>®</sup>). A total of 951 parents or guardians (17-70 years old) who had preschool children volunteered to complete the questionnaire online. Preschool children have been using screen media since infancy, and the time they spend on-screen time is more than 1 hour per day. The digital media most used were mobile phones (91.6%), followed by television (86.1%) and computers (61%). The parents realized the impact and the importance of limiting time of screen media, but it difficult to prevent their children from using it, especially when learning from home. Hence, there is a need different approach to learning from home, especially to manage the duration of screen time for preschool children.

## Keywords

screen time, pre-school child, Indonesia, school from home

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## Introduction

The COVID-19 Pandemic has required most students to learn from home. The Ministry of Education in Indonesia instituted a policy of learning from home from 24 March 2020 until the end of 2020. Furthermore, the process of studying now includes video conferences and online discussions, and assignments are sent online as well. This phenomenon even applies to preschool children, as they tend to use screen media more frequently because of the ubiquity of mobile technologies and increased access to technology. Furthermore, their outdoor activities have been limited by the pandemic.

According to the American Academic of Pediatrics<sup>1</sup> the standard duration for using screen media for preschool children (2-6 years old) is 1 hour per day. There are unwelcome consequences from using screen media for extended periods. Sedentary behaviors, screen addiction, increased obesity and metabolic conditions and poor sleep and eyesight can come from excessive daily

indulgence in digital media. Some descriptive studies conducted in several Asian countries in the last 5 years reported that young children experienced significant amounts of screen time from television, computers and other forms of mobile digital devices, even before primary school.<sup>2-5</sup>

Yet the research into the effects of such exposure to screen media on the health and development of preschool children in Asia and elsewhere cannot match the increased use of such technologies.<sup>4</sup> Moreover, learning

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from home in Indonesia mostly involved using screen media such as television, mobile phones, tablets, and laptops, and the duration of using screen media is longer than 1 hour among preschool children. The purpose of this research was to determine the amount of time that preschool children (2-6 years old) in Indonesia used digital media and the impacts of that use.

## Methods

This paper is based on a multicentre study. It involved urban cities in Asian Countries, such as in Singapore, Malaysia, Indonesia, Taiwan, Thailand, China, India, South Korea, Egypt, United Arab Emirates, and Japan. However, this paper presents the data for Indonesia. A total of 951 parents or guardians (17-70 years old) who had preschool children volunteered to complete the questionnaires online. The subject gave informed consent and anonymously.

An online content validated questionnaire bundle, Surveillance of digital-Media hAbits in earLy chiLdhood Questionnaire (SMALLQ<sup>®</sup>) is organized into sections (I) screen media use; (II) non-screen media behavior, play, sleep and eyesight; and (III) particulars of parents and child was used for data acquisition.<sup>6</sup> This instrument was developed from guidelines from the World Health Organization.<sup>7</sup> Validation of the instrument followed WHO guidelines for adaptation of instruments. SMALLQ<sup>®</sup> was forward translated and back translated by an expert panel. Then it was pre-tested, followed by cognitive interviews and revision based on the test results.

The screen media used in this research were televisions, computers (desktops and laptops), gadgets (mobile phones and tablets), Blu-ray/DVD/CD/video recording players and games on computers or devices. Some questions were added about the child's posture while using the screen media. Data were collected online, and participants were identified using the snowball technique. The questionnaire was shared on social media for 1 month, from 15 June to 15 July 2020. The data were analyzed using statistical software SPSS V 23, using the chi-square test and logistic linear analysis.

## Results

Most of the respondents were mothers (40.3%), while fathers were 11.6% (see Table 1). Most of the children were 2 years old (52.8%), followed by those 5 years old (13%), 4 years old (12.5%) and 6 and 3 years old (each around 10%).

The digital media used most by respondents and their children were mobile phones (91.6%), followed by televisions (86.1%) and computers (61%). The first time most children used television, they were 1 year old (31.3%) or infants (27.7%). The first time most used gadgets (mobile phones and tablets) they were still infants (24.2%), then at age two (23.2%). Most of the preschool children used digital media less than 3 hours on weekdays, and they used it for learning purposes (35.6%), entertainment (26.7%), open application including social media (39.2%), and communication (40.5%). During weekends or public holidays, they used the media for learning purposes (35.2%), entertainment (21.2%), social media (36%), and communication (35.5%).

Meanwhile, the time that parents monitored their child's use of digital media was less than 25% to 20.1% on weekdays and 15.4% on weekends. However, the highest rate at which parents were with their children while using screen media was more than 75%. On weekdays, 21.6% of parents spent this much time, while 29.7% did so on weekends. Most parents introduced screen media to their children to improve their knowledge and skills (61.5%), followed by entertainment (55.7%) and communication (34.4%). Meanwhile, the greatest reason parents used screen media with their children was to keep them calm/not fussy (31.6%). This was followed by distracting or diverting the child's attention (37.3%) and to put the child to sleep (12.8%).

Parents knew that using screen media had impacts on their children besides their postures. They also reported poor sleep (60.2%), poor eyesight (60.1%), lack of physical exercise and play (62.5%), opening inappropriate content (62.2%), addiction (64.4%), and lack of interaction between children and parents (62.5%). Moreover, most parents were aware of the rules for screen digital media and children: limiting the use of digital media (56.6%), limiting screen time (55.6%), introducing only high quality and proper content (58.9%) and accompanying the children while they used digital media (58.3%). Even though parents already knew the impact of using digital media and were aware of their effects on children, only about half of the parents practiced the rules.

Two impacts of using digital media were the reduction of the children's night time and quality of. However, the survey results showed that the duration of sleep was at least 8 hours per night (51% of children had this much time during the week, and 50.3% had it on weekends), and the quality of sleep was still good (57.2% during the week and 55.8% on weekends). The quality of sleep was identified as good if it was easy for the child to fall asleep at bedtime, and there was no disturbance during sleep.

**Table I.** Characteristics of Respondents.

Category	Response (n)	Percent
Child's age		
2	502	52.8
3	102	10.7
4	119	12.5
5	124	13.0
6	104	10.9
Parent/guardian respondent		
Mother	383	40.3
Father	110	11.6
Grandmother	29	3.0
Grandfather	4	0.4
Guardian	39	4.1
Not applicable	386	40.6
Digital media used (respondent could checked more than 1)		
Television	819	86.1
Computer	580	61.0
Mobile devices	871	91.6
Video game devices	93	9.8
Blue-ray/DVD/CD	148	15.6
Intelligent/technology toy	487	51.2
Child's first exposure		
Fixed screens (television. desktop computer)		
< 1 year	263	27.7
1 year	298	31.3
2 years	210	22.1
3 years	91	9.6
4 years	42	4.4
5 years	30	3.2
6 years	15	1.6
Not applicable	2	0.2
Mobile screen (smartphone. tablet)		
< 1 year	230	24.2
1 year	187	19.7
2 years	221	23.2
3 years	130	13.7
4 years	61	6.4
5 years	61	6.4
6 years	38	4.0
Not applicable	23	2.4
Time spent on digital media (weekday)		
Education		
<3 hours	339	35.6
3-5 hours	98	10.3
5-8 hours	62	6.5
>8 hours	50	5.3
Not applicable	402	57.7
Entertainment		
<3 hours	254	26.7
3-5 hours	145	15.2
5-8 hours	127	13.4
>8 hours	123	12.9
Not applicable	302	31.8

(continued)

**Table I. (continued)**

Category	Response (n)	Percent
Open application (including social media)		
<3 hours	373	39.2
3-5 hours	28	2.9
5-8 hours	21	2.2
>8 hours	13	1.4
Not applicable	516	54.3
Communication		
<3 hours	385	40.5
3-5 hours	49	5.2
5-8 hours	24	2.5
>8 hours	21	2.2
Not applicable	472	49.6
Time spent on digital media (weekend)		
Education		
<3 hours	335	35.2
3-5 hours	92	9.7
5-8 hours	58	6.1
>8 hours	30	3.2
Not applicable	436	45.8
Entertainment		
<3 hours	202	21.2
3-5 hours	134	14.1
5-8 hours	147	15.5
>8 hours	167	17.6
Not applicable	301	31.7
Open application (including social media)		
<3 hours	342	36.0
3-5 hours	27	2.8
5-8 hours	28	2.9
>8 hours	16	1.7
Not applicable	538	43.4
Communication		
<3 hours	338	35.5
3-5 hours	50	5.3
5-8 hours	40	4.2
>8 hours	31	3.3
Not applicable	492	51.7
Time spent with parent while child used digital media		
Weekday		
<25%	191	20.1
25-50%	182	19.1
50-75%	104	10.9
>75%	205	21.6
Not applicable	269	28.3
Weekend		
<25%	146	15.4
25-50%	146	15.4
50-75%	104	10.9
>75%	282	29.7
Not applicable	273	28.7

(continued)

Table 1. (continued)

Category	Response (n)	Percent
Child's purpose for using digital media		
Improve knowledge and skills	588	61.5
Entertainment	530	55.7
Communication	327	34.4
Parent's purpose for using digital media		
Keep child occupied	301	31.6
Distract or divert child's attention	354	37.3
Put the child to sleep	122	12.8
Concern about impact of digital media		
Poor sleep	572	60.2
Poor eyesight	574	60.1
Lack of physical exercise and play	594	62.5
Exposure to inappropriate contents	591	62.2
Addiction	612	64.4
Lack of parent-child interaction	594	62.5
Knowledge of guidelines on digital media use by children		
Limit digital media use		
Not aware	17	1.8
Not aware but practicing	60	6.3
Aware but not practicing	170	17.9
Aware and practicing	368	38.7
Not applicable	336	35.3
Limit screen time		
Not aware	14	1.5
Not aware but practicing	73	7.7
Aware but not practicing	163	17.1
Aware and practicing	366	38.5
Not applicable	335	35.2
Introduce only high quality and proper content		
Not aware	14	1.5
Not aware but practicing	46	4.8
Aware but not practicing	81	8.5
Aware and practicing	479	50.4
Not applicable	331	34.8
Accompany while using digital media		
Not aware	16	1.7
Not aware but practicing	49	5.2
Aware but not practicing	77	8.2
Aware and practicing	476	50.1
Not applicable	333	35.0
Duration of the child's night time		
Weekday		
<8 hours	75	7.9
8 hours	166	17.5
>8 hours	319	33.5
Not applicable	391	41.1

(continued)

Table 1. (continued)

Category	Response (n)	Percent
Weekend		
<8 hours	76	8.0
8 hours	122	12.8
>8 hours	357	37.5
Not applicable	396	41.6
Quality of sleep		
Weekday		
Unsatisfactory	3	0.3
Below average	20	2.1
Average	147	15.5
Above average	118	12.4
Excellent	279	29.3
Not applicable	384	40.4
Weekend/public holiday		
Unsatisfactory	3	0.3
Below average	23	2.4
Average	120	12.6
Above average	125	13.1
Excellent	286	30.1
Not applicable	394	41.4

## Discussion

This study aimed to examine the duration and impact of digital media use by preschool children (2-6 years old) during weekdays and weekends in urban areas in Indonesia. Most children of the survey participants were introduced to digital media by the age of 2. A previous study had shown that parents introduced their children to digital media for entertainment and educational purposes<sup>8</sup> as did this one.

Besides that, this study found that the amount of screen time among children was more than the American Academy of Pediatrics recommendation of 1 hour per day.<sup>1</sup> The research from Common Sense Media<sup>9</sup> showed similar results. It showed a sharp increase in the prevalence of children in America exposed to gadgets at home, from 52% in 2011 to 75% in 2013. There also were impacts on children's screen time, which increased 300% in those same 2 years. Moreover, the current situation of the COVID-19 pandemic also is a reason that parents are introducing digital media to their children earlier. The need for gadgets such as cell phones and laptops has become necessary to support their studies, including preschool children.

Based on research from Linebarger and Vaala,<sup>10</sup> the ability to learn and use language for communication is greatest for children under 3 years old. Because early childhood has been exposed to digital media, most children can learn languages through screen media. However,

the studies on this are few. Whereas the language learning process in children depends on the child's attributes, the stimulation characteristics of screen media, the various environmental contexts where a child uses screen media and media content resemble infants' and toddlers' real-life experiences.<sup>10</sup>

Likewise, in this study, children were exposed to media before the age of 3, but that did not mean that the children's language skills improved. Studies by Lin et al<sup>11</sup> and Barr et al<sup>12</sup> had the opposite results. Viewing screen media (television) for longer times increased the risk of delaying cognitive, language and motor development and led to poorer executive function.<sup>11,12</sup> Tomopoulos et al<sup>13</sup> presented similar results that the duration of media exposure at age 6 months was associated with lower cognitive and lower language development at age 14 months.

This research also showed that parents clearly understood the impact of excessive screen time, and they agreed if it need assisted and accompanied when their children used screen media. However, our study found that about 40% of parents supervised their children just under 50% of the time on weekdays and weekends. In line with that, 38% of parents had implemented rules to limit the amount of time their children used digital media.

Another impact already seen by our respondents was the decline in the quantity and quality of sleep. Although most respondents claimed their children had good-quality sleep, they also reported that their children did not have good-quality sleep. Carter et al<sup>14</sup> found that the amount of screen time was associated with inadequate quantity of quantity, low quality of sleep and excessive daytime sleepiness to a significant degree. Other studies showed that screen time in children was correlated with migraine,<sup>15</sup> sedentary lifestyle,<sup>16</sup> less physical fitness<sup>17</sup> and increased daytime tiredness.<sup>18,19</sup>

Regulations to limit the screen time are essential for children's health. Such regulations are highly relevant under conditions of the pandemic, which could be guideline for children to use screen media for e-learning.

## Conclusion

Preschool children have been using screen media since infancy, and the time they spend on screen time is more than the American Academy of Pediatrics recommendation. Besides, parents have realized the impact of using screen media and the rules for limiting it, but they find it difficult to prevent their children from using such media, especially when learning from home. Hence, there is a need for a different approach to learning from home, especially to manage the amount of time preschool children use screen media.

## Author Contributions

All authors participated in substantial contributions in this article. IHS conceived the idea, designed and conducted the study, wrote the manuscript. SA conducted the study. SN designed and conducted the study. BPH conducted the study, wrote the manuscript, and the revision.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Ethical Statement

This study was approved by the Research and Community Engagement Ethical Committee Faculty of Public Health Universitas Indonesia with ethical approval number: 109/UN2.F10.D11/PPM.00.02/2020.

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