

Parents' Understanding of the Safety and Comfort in Using Gadgets for Children

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ABSTRACT

The utilization of technology among children has significantly increased since the outbreak of the Covid 19 pandemic. Therefore, the use of gadgets among children requires special attention from parents, since under incorrect ergonomic circumstances, it could endanger the health of children. This webinar was designed with parents in mind, giving them valuable information on how to use kid-friendly technology. Additionally, a pre- and post-test was assigned to evaluate parents' knowledge about ergonomic conditions (safety and comfort) when using gadgets, both before and after the webinar. The results indicated a substantial increase in parental knowledge among the webinar participants as well as the heightened desire and willingness to apply the right ergonomic conditions for their children's gadget use at home.

Keywords: Ergonomic, Gadget used, Children, Safety, Comfort.

1. INTRODUCTION

The use of gadgets has become commonplace in the modern era, and the COVID-19 pandemic has made human life even more dependent on gadgets. Shopping and learning activities are carried out online using devices from the comfort of one's own home. The use of devices such as cell phones (cell phones) is not only for adults or teenagers in the digital era. Children at the elementary school level to toddlers also use smartphones. Based on a report from the **Badan Pusat Statistik or BPS (2022)**, as many as 33.44% of young children aged 0-6 years in Indonesia will be able to use cell phones in 2022. Meanwhile, 24.96% of young children in the country will also be able to access the internet. In detail, 52.76% of children aged 5-6 years have used cell phones. Meanwhile, the proportion in children aged 0-4 years was recorded at 25.5%. On the other hand, 39.97% of children aged 5-6 years can access the internet. Meanwhile, only 18.79% of children aged 0-4 years in Indonesia access the internet.

With everyone now utilizing gadgets in their everyday lives, from children to adults, with many young children already having their own devices, it is impossible to separate gadgets from human existence. The benefits of gadgets for human life are numerous. For instance, social media sites like Instagram, Facebook, and Twitter allow users to connect with a large number of people and establish friends from around the world. YouTube is another option that can be utilized for entertainment and add insight. There are more applications that can be downloaded quickly from the Playstore; in fact, downloading programs from the Playstore is so simple that even children in kindergarten can perform it. Although there are many advantages to using electronics, if not used responsibly, there are also drawbacks. The numerous capabilities that devices offer can also be a child's doorway to many things that are inappropriate for their age and can obstruct a child's growth **(Rahayu, 2021)**.

According to a statement from the head of the Child Protection Agency, his institution has dealt with 17 cases of children who are addicted to devices since 2013. Gadget addiction is not just something that affects adults; many children also experience it. Similarly, since 2016, the National Commission for Child Protection has dealt with 42 instances of children who were addicted to gadgets **(Kominfo, 2018)**.

According to the Canadian Academy of Pediatricians, children aged 0-2 years should not be exposed to technology at all, children aged 3-5 years should be limited to one hour per day, and children aged 6-18 years should be limited to two hours per day. According to Rowan in **(Anggraeni, 2019)**, excessive use of gadgets poses health risks. In addition, the impact of using gadgets indiscreetly would also impact the social and emotional development of children instead of the risk of body discomfort **(Suhana, 2017)**.

Eye health is very vulnerable to disruption in inappropriate use of gadgets **(Sheikh et al, 2020)**. According to **Wu, et al. (2020)** research, gazing at a computer too long can result in neck pain and itchy or painful eyes. Eye diseases such as myopia make children's eyes unable to relax, so the use of glasses is highly recommended by doctors. Treatment with surgical procedures such as LASIK can only be done when the child is at least 18 years old. In addition, the wrong body position when using gadgets can cause health problems, especially MDS **(McCauley, 2012; Pravitasari, et al., 2022)**. Body proportions may change and spinal deformities may occur. This is because children's bodies are constantly changing **(Stack et al, 2016)**. The effect of gadgets on children is very critical, therefore the role of parents in accompanying and supervising the use of gadgets is important.

However, we can still find in society many parents who readily give gadgets to their children; they prefer to give gadgets to their children instead of seeing their children cry, or as a substitute for their child's caregivers because parents are too busy working. Based on this knowledge, the researchers held a webinar for parents and educators to increase understanding of how the digital world can be safe and comfortable for children. Especially in terms of gadget use, ergonomic conditions, and proper posture when using gadgets in children.

2. METHODOLOGY

To achieve the goal of increasing parents' understanding of the risks of using gadgets in their children, we are conducting webinars targeting parents, kindergarten/elementary school teachers and their equivalent, as well as home educators. Webinars were published for approximately 2 weeks on social media and invitations were sent to several Kindergarten/Elementary Schools. Figure 1 is the e-poster of webinar publication that brought in speakers who are experts in their fields.



Figure 1. The E-Poster of Webinar Publication

The design of the research flow is shown in Figure 2. Participants who register for this webinar must first complete a pre-survey to determine the purpose and understanding of the material to be presented during the webinar. This pre-survey is also used to learn about children's habits when it comes to using gadgets at home.

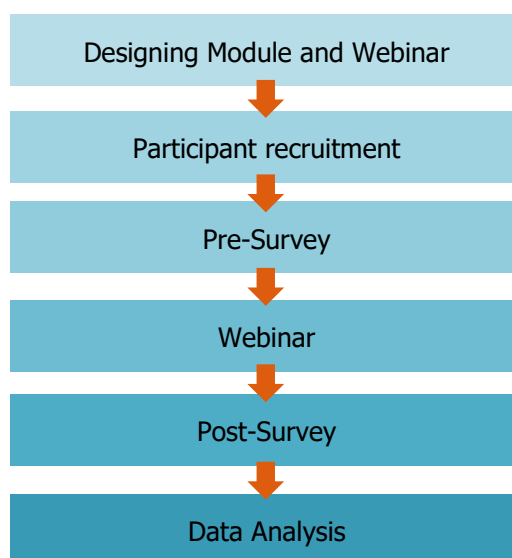


Figure 2. Research Flow

Despite 87 individuals signing up for this webinar, only 80 people actually attended. Prior to the event's conclusion, participants are prompted to complete a post-survey in order to be eligible for door prizes and to receive a certificate. This is done in order to fully collect the post-survey data. About 100% of the 80 attendees who were present completed the post-survey. The differences between the pre- and post-surveys were then examined to determine whether ergonomic knowledge had improved.

Table 1. Participants Profile

Question Item	Response type
Gender	M/F
Address/ Origin	Short answer
Age	
Profession	
Last Education	

Table 2. Characteristics in Using Gadget for Childrens

Question Item	Response type
1. Do you give digital devices/gadgets to your children?	Yes/No
2. What is the most common type of digital devices/gadgets do you provide?	More than one option (TV, Smartphone, Tablet, Laptop, PC, Others)
3. Is the gadget given every day?	Yes/No
4. How long is the average use of the gadget a day? (minute)	Open short answer
5. If you pay attention, what position do you most often hold the gadget?	More than one option (Sit on the chair, Sit on the floor, Lying down, Prone/lying face down, Others)
6. Does the given gadget have a device holder/ tripod? (if No, then the gadget is assumed to be directly held by the hand)	Yes/No

Table 3. Characteristics in Using Gadget for Childrens

Question Item	Response type
1. Did you know that getting used to the wrong body position can result in injury and has the potential to disrupt the balance of the children body and brain?	Yes/No
2. Do you know the maximum limit for using gadgets (screen time) for children?	Yes/No
3. Do you know the proper body position for using gadgets in children?	Yes/No
4. Do you know the correct hand position when using gadgets on children?	Yes/No
5. Do you know the right eye distance in using gadgets on children?	Yes/No
6. Do you know the guidelines for take a break while using the gadget?	Yes/No

The dummy table for the questionnaire design is given by Table 1 to Table 4 (has been translate in English). Meanwhile, an example of an online pre-survey and post-survey is given by Figure 3. The questions in Tables 1 to Table 3 were asked during the pre-survey, while the post-survey used some of the questions in Table 1, as well as all the questions in Table 3 and Table 4.

Table 4. Survey About the Webinars Advantages

Question Item	Response type
1. Will you be implementing screen time for your children after this webinar?	Yes/No
2. Will you use the proper body and hand positions after this webinar to avoid injury?	Yes/No
3. Is this webinar beneficial to your understanding of the safety and comfort in using gadgets for children?	Yes/No

The image shows a digital survey form. The top section is titled "DAFTAR HADIR WEBINAR & SURVEI DUNIA DIGITAL YANG AMAN DAN NYAMAN BAGI ANAK". Below this, there's a "Post-Survey Peserta Webinar" section with instructions and a list of required fields: Email, Nama Lengkap, and Usia. The right side of the form contains a section titled "Kondisi Eksisting Penggunaan Gadget Anak" with three questions: "Apakah anda memberikan device/perangkat digital untuk putra-putri anda?", "Apa jenis device/perangkat digital yang anda berikan?", and "Apakah device tersebut diberikan setiap hari?". Each question has radio button options for "Ya" and "Tidak".

Figure 3. Example of an Online Pre-Survey and Post-Survey

The webinar implementation is an activity to deliver material about digital safety and comfort to children in the form of information on ergonomic postures when using gadgets. Figure 4 depicts documentation of this activity.

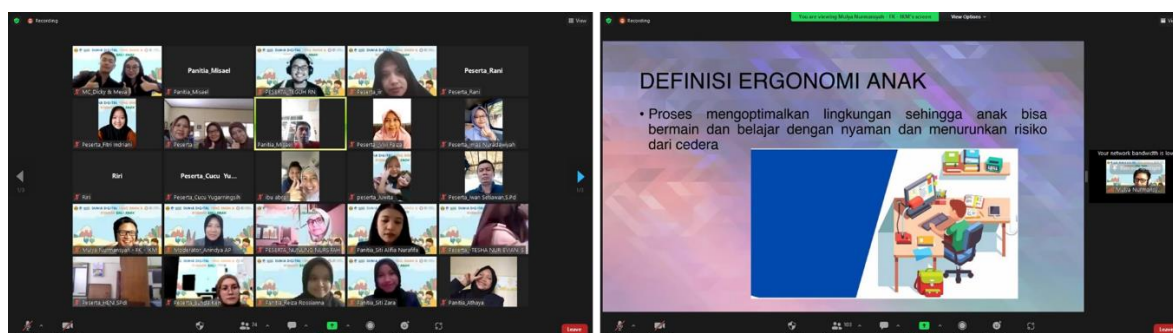


Figure 4. Webinar Documentation

3. RESULTS AND DISCUSSION

Discussion and analysis results from all respondents will be given according to the characteristics measured in the survey. The descriptive analysis is performed for describing the conditions of the respondents' answers and Mc'Nemar test of Statistics for analyze the difference of ergonomic knowledge before and after webinar.

3.1 Participants Profile

Table 5 show the demographics and descriptive statistics of the respondents. A total of 63 respondents, or the majority of the respondents in terms of age, were women, and the other 17 respondents were men. The frequency distribution of the respondents' ages is rather uniform. Most of those who took part in the webinar were in the age range of 36–45 and 46–55 years old. This webinar was held at Universitas Padjadjaran in West Java; therefore, the largest number of respondents were from the province of West Java. However, this webinar was also attended by other provinces such as Central Java, East Java, Banten, Jakarta, Bali, and the farthest, West Sumatera. The majority of respondents' professions were teachers, followed by housewives, and government employee (ASN). Alongside high school and a master's degree in terms of educational attainment, the majority of webinar participants had bachelor's degrees.

Table 5. Descriptive of Respondents Characteristics

Variabel	Value		Variable	Atribut	Value	
Gender			Profession	Teacher	39	48.75%
Male	17	21.25%		Housewife	15	18.75%
Female	63	78.75%		ASN/Government employee	12	15.00%
Age				Private/ Entrepreneur	4	5.00%
16-25	19	23.75%		Lecturer	3	3.75%
26-35	16	20.00%		Employee	2	2.50%
36-45	24	30.00%		Student	2	2.50%
46-55	21	26.25%		Student	2	2.50%
Origin				Midwife	1	1.25%
West Java	65	81.25%	Last Education	Primary School	2	2.50%
East Java	6	7.50%		High School	14	17.50%
Central Java	4	5.00%		Diploma II	2	2.50%
Banten	2	2.50%		Diploma III	4	50.00%
Jakarta	1	1.25%		Bachelor	47	58.75%
Bali	1	1.25%		Master	9	11.25%
West Sumatera	1	1.25%		Doctor	2	2.50%

3.2 Characteristics in using gadget for children

The characteristics of gadget use in children are given by Table 6. Only 9 out of the 80 respondents did not provide their children with electronic devices, leaving 71 respondents who did. After further investigation, it was discovered that of the 9 individuals, 5 were not married, 3 were childless, and just one did not permit their children to play with electronic devices. Therefore, question items 2 to 6 in Table 2 will determine by only 71 respondents who gave gadgets to their children.

In the Table 6, Smartphones, according to 46 respondents or almost 68% of youngsters, are the gadget kind that is most frequently given to children. Tablets came in second with 10 respondents, followed by TV with 8 respondents. According to these findings, children are typically given smartphones and tablets since they are convenient and easy to carry anywhere, including the bedroom, living room, or even outside the home.

Table 6. Summary Characteristics in using Gadget for Children

Variable	Value	Variable	Value
Give Gadgets?		Most common gadget provided	
Yes	71 97.30%	Smartphone	46
No	9 2.70%	Tablet	10
Given Every day?		TV	8
Yes	42	Laptop	5
No	29	PC	2
Use device holder?		Others	0
Yes	22		
No	49		

Apart from seeing that the majority of parents provide gadgets for their children every day, the average duration of use in 1 day is also a concern in this study. Examining from the distribution of gadget usage time (Figure 5), the minimum time is 15 minutes and the maximum is 600 minutes. After further investigation, the use of the 600 minutes was due to the child's home schooling and online tutoring. The most respondents give gadgets to their children is around 120 minutes in one day. Based on the recommended screen time, a maximum of 120 minutes or 2 hours has actually been fulfilled, that is, if the child is 6 years and over. Meanwhile, if it is less than 6 years old, the screen time will be even less.

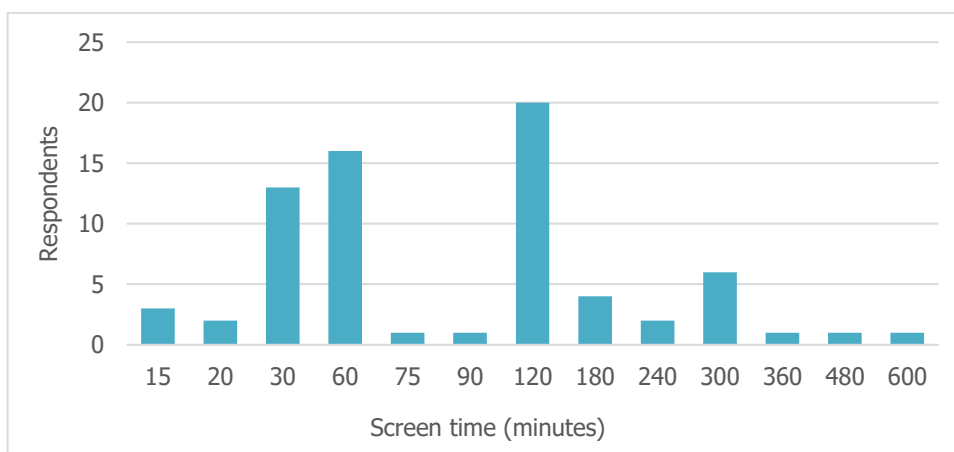






Figure 5. Distribution of Screen Time

Children most frequently use chairs to use devices, according to 34 respondents, followed by lying down for 21 respondents and sitting on the floor for 13 respondents. It is advised to use a chair and to sit up straight when using electronics. Injury is a possibility when sitting or lying down, particularly to the back. Aside from that, when asked about the use of supporting devices, 49 respondents claimed they did not give children any, while only 22 respondents gave them things like tripods. Additionally, holding the gadget directly with the hand runs the risk of hand injuries, particularly to the thumb.

Table 7. The Most Common Position of Children using Gadget

			
29 (41%)	12 (17%)	23 (32%)	7 (10%)

The characteristics of using gadgets in children explain that the majority of parents already understand the time limit for giving gadgets, but they still don't fully pay attention to ergonomic conditions, such as body position or the use of gadget support equipment.

3.3 Comparison of Ergonomic Knowledge in Using Gadgets for Children

In order to compare the knowledge before and after the webinar, the question items in Table 3 were asked twice in the pre-test and post-test. Figure 6 shows that 64 respondents, or 80%, of the respondents, were aware of the potential damage from using gadgets in the wrong condition before the webinar. This result, which indicates that 80% of respondents give attention to this knowledge, is pretty excellent. The awareness of screen time restrictions, body and hand postures, and eye distance, however, did not correspond to this information due to the fact that just 50% of respondents are aware of the ergonomic position for using gadgets. Furthermore, only 25% know the break guidelines for using devices on children.

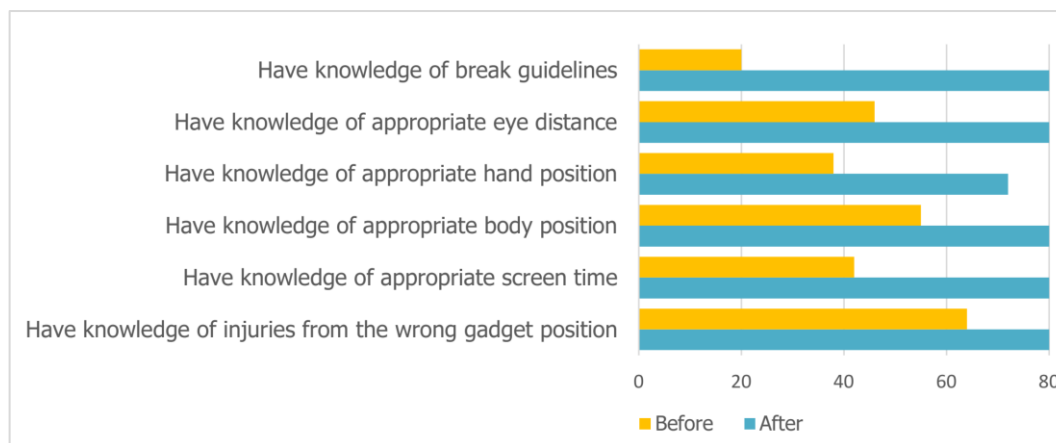


Figure 6. Respondents Ergonomic Knowledge, Before and After Webinar

The condition of good knowledge about the gadget is achieved after the webinar. Respondents' knowledge of the risk of injury, screen time, body position, eye distance and break guidelines reached 100%. Only knowledge about hand position was not 100%, that is, only 72 out of 80 respondents answered that they knew hand position after the webinar was over. After further investigation, it turned out that several people were skipping the information during the webinar. Overall, this webinar succeeded in increasing participants' knowledge in understanding ergonomic principles in using gadgets for children.

3.4 Survey About the Webinars Advantages

We evaluated the webinar's participants' engagement while it was being conducted. Consequently, a number of questions in the post-survey were created to determine if participants found the webinar to be helpful. As in Table 7, only one of the three questions, about implementing screen time for kids following the webinar, did not receive a complete response. After investigation, it will be very challenging to put it into practice for individuals who home-educate or use online tutoring after. However, after further explanation, the responder will restrict the use of devices for non-educational content.

Table 7. Response for Webinar Advantages

Question Item	Answers	
	Yes	No
1. Will you be implementing screen time for your children after this webinar?	76	4
2. Will you use the proper body and hand positions after this webinar to avoid injury?	80	0
3. Is this webinar beneficial to your understanding of the safety and comfort in using gadgets for children?	80	0

4. CONCLUSION AND RECOMMENDATION

The majority of respondents to this study, according to the survey's findings, permit their kids to have devices. The majority, however, are aware of recommended screen time limitations for kids. The majority of respondents are also aware of how utilizing improper technology might affect children's health. However, only 50% of respondents particularly know the ergonomic conditions for using gadgets, such as body position, hand position, eye distance, and breaking rules when using gadgets or electronic devices.

This webinar is proven to increase participants' knowledge regarding the ergonomic conditions of using gadgets for children. In support of that, the majority of them also made the decision to put the information from this webinar to use in improving the safety and well-being of kids using gadgets.

For further research, we will create a program to follow up several respondents to ascertain whether the material from this webinar activity is still being implemented to facilitate the safety and comfort in using gadgets for children.

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