



Multivariate Analysis of Risk Factors for Destructive Behavior in Children in Indonesia

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ABSTRACT

Conduct disorders pose a significant global burden, affecting an estimated 5.75 million children and adolescents, especially boys. Conduct disorders involve repetitive behaviors that violate others rights and can jeopardize normal relationships between children and those around them. Major behavioral issues in children often occur in both school and family settings and are closely linked to the roles of parents and teachers as educators and guides. Additionally, children at a young age are highly curious and eager to explore new things; the rapid growth of technology introduces new challenges for them. Without parental guidance, considering factors such as parenting styles, education level, socioeconomic status, and occupation, children's social lives may be significantly impacted. This study aims to analyze various risk factors associated with disruptive behavior among children in Indonesia. This cross-sectional study used a guided questionnaire involving 301 parents/guardians of children aged 2-5 years. In this regard, the researchers were assisted by data enumerators residing at the study site. Data collection was conducted in two regions in Indonesia, Greater *Jabodetabek (Jabodetabek)* and Aceh, from October 2024 to January 2025. Bivariate analyses were performed using the Chi-square test, followed by binary logistic regression to determine factors independently associated with disruptive behavior. Bivariate analysis indicated that type of content ($p = 0.017$), screen time allocation ($p = 0.018$), and parenting pattern ($p = 0.043$) were significantly associated with disruptive behavior, while other variables such as parental education, domicile, occupation, marital status, and child's age or gender showed no significant relationships. In the multivariate model, only type of content remained a significant predictor ($p = 0.018$). The study highlights that the quality of media content, rather than the amount of screen time, plays a key role in the emergence of disruptive behavior among children. Parental guidance and the selection of educational media content are essential preventive strategies. Interventions focusing on digital literacy and positive parenting may help mitigate the risk of behavioral problems in early childhood.

INTRODUCTION

Conduct disorder is a significant global burden, with an estimated 5.75 million children and adolescents experiencing this problem, especially boys.¹ Conduct disorder involves a repetitive pattern of behavior that violates the basic rights of others and can threaten normal relationships between children and those around them. The phenomenon of significant conduct disorder in children occurs in both school and family environments, and is closely tied to the roles of parents and teachers as educators and guides. Recent research conducted in Ontario, Canada, shows consistency in the presence of behavioral disorders in the general population, namely 5.5% of children aged 4-16 years have behavioral disorders, in Queensland, 6.7% in children aged 10 years, and in Dunedin, New Zealand, 6.9% in children aged 7 years.² Meanwhile, based on *Riset Kesehatan Dasar (RISKESDAS)* data from the Indonesian Ministry of Health in 2028, the prevalence of 9.8% of Indonesians suffering from mental behavioral disorders.³

Indonesia has little research on disruptive behavior in early childhood. A study conducted in 2015 by Purwati and Japar (2017:228) at PAUD Magelang found that 35% to 56% of children in each class exhibited disruptive behavior.⁴ This is in line with the results of research on professional practice data from the Center of Public Mental Health, Faculty of Psychology, UGM, which found that 34% of early childhood children have a tendency to experience behavioral disorders.⁵ In addition, according to a recapitulation of emotional and behavioral problems from the Cipto Mangunkusumo Hospital clinic in Jakarta, Bogor, Depok, Tangerang, Bekasi (*JABODETABEK*), 27.3% of 106 early childhood patients experienced behavioral disorders.⁶

Ages 2-5 years are included in early childhood, during which children exhibit growth and development patterns in physical, cognitive, socio-emotional, creative, language, and communication aspects that adapt to the environment and phases the child is experiencing at that time. Children need to receive positive stimuli so that they can grow and develop in a good direction. One important stimulus is audio-visual media.⁷ At this age, the brain is going through a significant development phase in increasing

knowledge and education, so that everything received from the stimulus given will greatly impact and affect their personality in the future.⁸

As the world of technology continues to develop, more risk factors will impact society. The increasing use of mobile phones, also known as handphones (HP), also increases screen time (ST) for users who utilize audio-visual media, with children and adolescents often interacting with various types of screens and exploring diverse content.⁹ Moreover, children at an early age are inquisitive and very interested in new things, and this increasingly developing technology is something new for children.⁵ Without guidance/guidance from parents related to parenting patterns, parental education levels, socioeconomic and parental work, this will affect the child's social life.⁹

Several researchers have conducted numerous studies on mobile phone screen time, examining its relationship with children, both positive and negative, and its impact on the child's social life and personality. It all depends on what is watched and what is seen and learned by the child at that time.^{10,11}

A longitudinal study of 491 families showed that there is a bidirectional relationship between parenting style (authoritarian, permissive, over-protective) and children's symptoms of ADHD, ODD, depression, and anxiety that is, parenting styles shape the symptoms of the disorders, and children's symptoms also shape subsequent parenting styles.¹²

Therefore, it is hoped that this study will provide insight into the landscape and examine how various factors, such as mobile phone screen time, parenting patterns, parents education, socioeconomic status, and parental work, are related to the emotional and behavioral health of children.

MATERIAL AND METHOD

Data collection was carried out from October 2024 to January 2025. The study took place in Jakarta, Bogor, Depok, Tangerang, Bekasi (*JABODETABEK*) and Aceh. The research employed an analytical design with a cross-sectional approach, using a guided questionnaire. During this process, the researcher and data enumerator interviewed parents or guardians to gather data. The accessible population consisted of parents or guardians of chil-

dren aged 2-5 years in the selected areas. Purposive sampling was used to select the sample. The total sample included 301 respondents from two targeted regions in Indonesia. The inclusion criteria of this study are parents/guardians who have children aged 2-5 years who live in *JABODETABEK* and Aceh, and the exclusion criteria are parents/guardians who have children with a history of certain psychological illnesses, such as intellectual disability, autism, and Down syndrome (based on observations and interviews with the parents/guardians of the child). The primary data sources included questionnaires, such as the Smartphone Addiction Scale-Short Version (SAS-SV)¹³ and the Disruptive Behavior Disorder Scale,¹⁴ as well as assessments of parenting patterns.¹⁵

Additional questions were added based on research needs, including socio-economic status, education level, and parent's occupations. Participants who met the inclusion and exclusion criteria were chosen as research subjects. Information about the child's gender and age was collected from their responses to the questionnaire. Trained researchers and data enumerators conducted guided interviews with parents or guardians and assisted in completing the questionnaires to ensure all questions were answered.

Statistical analysis was performed using SPSS for Mac v.28. The chi-square test and Fisher's exact test were used for bivariate testing. Multinomial logistic regression was used to determine whether gender, age, duration of gadget use, type of media exposure, parenting style, and smartphone addiction significantly influenced a child's risk of developing a specific behavioral disorder (ADHD, ODD, or combined ADHD and ODD) categorized as disruptive behavior compared to children who did not exhibit the disorder (normal category). The accepted safety level was 95%, and a p-value <0.05 was considered statistically significant. This study received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Trisakti, with No. 001/KER/FK/11/2024.

RESULTS

This study collected primary data from October 2024 to January 2025 using a validated questionnaire to gather information from

parents or guardians of children aged 2-5 years in Jakarta, Bogor, Depok, Tangerang, Bekasi (*JABODETABEK*), and Aceh.

This study included 301 participants who were parents or guardians of children aged 2 to 5 years. Based on age distribution, the majority of respondents were in the 31-40-year age group (56.1%), followed by those aged 20-30 years (29.9%) and 41-50 years (14.0%), as shown in Table 2. These findings suggest that most respondents were in their productive years, typically involved in active parenting roles. In terms of gender, the majority were female (87.4%), while only 12.6% were male. This gender disparity reflects that women, particularly mothers, tend to be more involved in caregiving and child-related decision-making. Regarding their relationship with the child, most respondents (90%) were biological parents, while 10% were guardians. This suggests that the child's own parents largely undertake caregiving and parenting responsibilities in the sampled population.

Most respondents had a relatively high level of education, with 64.8% having completed a Diploma or Bachelor's degree, and only 2% having an education at the junior secondary level. This level of education may contribute to better knowledge and practices related to child health and behavior. Respondent's occupations varied, with the highest proportion being housewives (28.9%), and the lowest being teachers (4.7%). This diversity indicates a broad range of socioeconomic backgrounds.

A vast majority of respondents (95.7%) were married, with only 4.3% being single or divorced. A stable marital status is often associated with a more supportive family environment, which may influence child development outcomes. Geographically, respondents came from two regions: *JABODETABEK* (52.8%) and Aceh (47.2%). This distribution allows for comparative analysis of regional differences in parenting practices, access to services, and child behavior. Regarding monthly income, 59.8% of respondents earned at or above the provincial minimum wage, while 40.2% earned below it. This provides a useful proxy for the economic diversity of the sample.

The age distribution of the children showed that 69.8% were between 4 and 5 years old, and

30.2% were between 2 and 3 years old. The gender of children was nearly balanced, with 52.8% male and 47.2% female. Only 12% of respondents worked in the health sector, while 88% did not, suggesting that most caregivers were not health professionals. Nonetheless, access to healthcare was relatively high, with 88% of respondents having health insurance. In terms of religion, almost all respondents identified as Muslim (99%), and only 1% identified as Christian or Catholic, indicating a predominantly Muslim population.

A high proportion of respondents (86.4%) reported giving their child screen time, and 84.4% stated they limited this to less than or equal to two hours per day. Only 15.6% allowed more than two hours, indicating general awareness of recommended screen time limits for children. When asked about the type of shows they provided to their children, most chose educational content (83.7%), while a small percentage (1.7%) opted for a combination of both. Regarding the platform or type of content, YouTube was the most commonly reported (74.8%), and social media (1.0%).

Smartphone addiction was identified in 12% of the children, while 88% were not considered addicted. This suggests that problematic screen use is present among a minority of children, warranting further investigation. In terms of parenting patterns, the majority of respondents reported using a democratic style (64.1%), followed by authoritarian (30.2%), and permissive parenting (5.6%). The prevalence of democratic parenting suggests a tendency toward balanced and communicative approaches in child-rearing.

Finally, when examining behavioral outcomes, most children were classified as having normal behavior (92%). However, 4.7% were identified with Attention Deficit Hyperactivity Disorder (ADHD), 2.0% with Oppositional Defiant Disorder (ODD), and 1.3% with a combination of both. Although the overall prevalence of disruptive behavior disorders was low, early identification remains important for appropriate intervention and support.

In summary, the respondents in this study were primarily well-educated, married women of reproductive age with a relatively high rate of health insurance coverage and awareness of child health recommendations. The characteris-

tics of both parents and children, including income, parenting styles, and media exposure, provide essential context for interpreting behavioral outcomes in early childhood.

Table 1a. Distribution of Respondent Characteristics

Variable	n = 301	%
Age (Years Old)		
20-30	90	29.9
31-40	169	56.1
41-50	42	14
Gender		
Female	263	87.4
Male	38	12.6
Relationship with Children		
Parents	271	90
Guardian	30	10
Parents/Guardian Education Level		
Secondary School	6	2
High School	74	24.6
Diploma/Bachelor Degree	195	64.8
Master Degree	26	8.6
Occupation of Parents/Guardians		
Government Employee	61	20.3
Teacher	14	4.7
Housewife	87	28.9
Private Sector	56	18.6
Medical Personnel (doctors/nurses/midwives)	15	5
Self-employed	68	22.6
Marital Status of Parents/Guardian		
Single (Not Married/Divorced)	13	4.3
Married	288	95.7
Domiciled		
Aceh	142	47.2
JABODETABEK	159	52.8
Monthly Income		
< Provincial Minimum Wage	121	40.2
≥ Provincial Minimum Wage	180	59.8
Children Age		
2-3 y.o	91	30.2
4-5 y.o	210	69.8
Children Gender		
Male	159	52.8
Female	142	47.2

Table 1b. Distribution of Respondent Characteristics

Variable	n = 301	%
Do you Work in The Health Sector?		
Yes	36	12
No	265	88
Do you Have Health Insurance?		
Yes	265	88
No	36	12
Religion		
Islam	298	99
Christian/Catholic	3	1
Do you Give Your Child Screen Time?		
Yes	260	86.4
No	41	13.6
How Long do You Usually Give Your Child a Cell Phone/Tablet?		
≤ 2 Hours	254	84.4
> 2 Hours	47	15.6
What Kind of Shows do You Give Your Child?		
Education	252	83.7
Entertainment	44	14.6
Education and Entertainment	5	1.7
What Content Does Your Child Usually Watch/Play?		
Youtube	225	74.8
Playing games	36	12.0
Television	37	12.3
Social Media	3	1.0
Smartphone Addiction		
Addicted	36	12.0
Not Addicted	265	88.0
Types of Parenting Patterns		
Authoritarian	91	30.2
Democratic	193	64.1
Permissive	17	5.6
Disruptive Behavior		
ADHD	14	4.7
ODD	6	2.0
ADHD + ODD	4	1.3
Normal	277	92.0

Source: Primary Data, 2024

Bivariate Analysis: Factors Associated with Disruptive Behavior in Children

Table 2 presents the results of bivariate analysis examining the relationship between various sociodemographic and behavioral factors and the presence of disruptive behavior in children (ADHD, ODD, and a combination of both).

Based on the results of the Chi Square and Fisher's Exact Tests, several variables were found to have a statistically significant association with the occurrence of disruptive behavior among children ($p < 0.05$).

The analysis revealed that domicile, child age, type of show watched, and parenting pattern were significantly associated with disruptive behavior. Children living in Aceh were more likely to exhibit disruptive behavior compared to those living in *JABODETABEK* ($p=0.025$). In terms of age, children aged 2–3 years demonstrated a higher proportion of disruptive behavior than those aged 4–5 years ($p=0.028$).

The type of shows children usually watched was also significantly related to behavioral outcomes. Children who were primarily exposed to non-educational or entertainment shows were more likely to display disruptive behavior compared to those who watched educational content ($p=0.021$). Furthermore, children raised under a non-democratic parenting pattern had a significantly higher prevalence of disruptive behavior compared to those raised under a democratic parenting style ($p = 0.032$).

In contrast, other variables such as parental age ($p=0.165$), parental education level (0.207), marital status ($p=0.278$), child gender ($p=0.891$), screen time duration ($p=0.184$), type of media used (passive vs. interactive) ($p=0.339$), and smartphone addiction ($p=0.434$) did not show a statistically significant relationship with disruptive behavior ($p > 0.05$).

The lack of statistically significant associations across several variables suggests that disruptive behavior in early childhood may be more strongly influenced by behavioral and environmental factors, such as exposure to digital media rather than solely by sociodemographic characteristics. However, it is possible that these fac-

tors interact in more complex patterns that are not reflected in simple bivariate analyses.

These results underscore the importance of paying close attention not only to the type of media content children consume but also to the duration of time they spend using digital media. Furthermore, they point to the necessity of conducting more comprehensive multivariate analyses to address potential confounding variables and to gain a deeper understanding of how different risk factors interact in contributing to disruptive behaviors.

Logistic Regression Analysis

The binary logistic regression model was conducted to determine the factors independently associated with disruptive behavior among children. As shown in Table 3, only the type of show variable demonstrated a statisti-

cally significant relationship with disruptive behavior (p=0.018). Children who predominantly watched non-educational shows were 3.47 times more likely to exhibit disruptive behavior compared to those who watched educational programs (OR=3.477; 95% CI=1.240–9.751).

Other variables, including parent’s age (p = 0.068), parent’s education level (p = 0.089), domicile (p = 0.130), child’s age (p = 0.065), screen time duration (p = 0.301), and parenting pattern (p = 0.098), were not significantly associated with disruptive behavior. However, the p-values of parental age, child’s age, and parenting pattern approached the significance level, indicating a potential trend that might become significant in larger samples.

Table 2a. Relationship Between Sociodemographic, Media Use, and Parenting Factors and Disruptive Behavior

Variable	Diagnose				P-Value
	Disruptive Behavior		Normal		
	n	%	n	%	
Age (Years Old)					
≤ 35	12	3.99	178	59.13	0.165*
> 35	12	3.99	99	32.89	
Parents/Guardian Education Level					
Higher Education	15	4.98	206	68.44	0.207*
Secondary Education	9	2.99	71	23.59	
Domiciled					
JABODETABEK	6	1.99	135	44.85	0.025*
Aceh	18	5.98	142	47.18	
Occupation of Parents/Guardians					
Formal Employment (Government Employee, Teacher, Private Sector, Medical Personnel)	10	3.32	133	44.18	0.550*
Informal employment (Housewife, Self-employed)	14	4.65	144	47.84	
Marital Status of Parents/Guardian					
Married	22	7.31	266	88.37	0.278+
Single (Not Married/Divorced)	2	0.66	11	3.65	
Children Age (Years Old)					
2 – 3	12	3.99	79	26.25	0.028*
4 – 5	12	3.99	198	65.78	
Child Gender					
Girl	11	3.65	131	43.52	0.891*
Boy	13	4.32	146	48.50	
Do You Give Your Child Screen Time?					
Yes	21	6.98	239	79.40	0.582*
No	3	0.99	38	12.62	
How Long do You Usually Give Your Child A Cellphone/Tablet?					
≤ 2 hours	19	6.31	245	81.39	0.184*
> 2 hours	5	1.66	32	10.63	
What Kind of Shows do You Give Your Child?					
Education-related → Education, Education and Entertainment	17	5.64	243	80.73	0.021*

Non-education → Entertainment	7	2.32	34	11.29	
What Content Does Your Child Usually Watch/Play?					
Passive Media → Television, YouTube	20	6.64	244	81.06	0.339+
Interactive Media → Playing Games, Social Media	4	1.32	33	10.96	
Smartphone Addiction					
Not Addicted	21	6.98	255	84.72	0.434+
Addicted	3	0.99	22	7.31	
Types of Parenting Patterns					
Democratic	11	3.65	187	62.12	0.032*
Non-democratic	13	4.32	90	29.90	

Source: Primary Data, 2024

*Chi-square test $p < 0.05$

+Fisher's Exact test

Table 3. Logistic Regression Result

Variables	B	SE	Wald	p-value	OR (Exp(B))	95%CI
Parent Age (>35 vs ≤35 years)	0.851	0.466	3.340	0.068	2.343	0.940 – 5.839
Parent Education (Higher vs Secondary)	-0.823	0.484	2.895	0.089	0.439	0.170 – 1.133
Domicile (JABODETABEK vs Aceh)	-0.820	0.541	2.296	0.130	0.440	0.153 – 1.272
Child Age (2–3 vs 4–5 years)	0.866	0.469	3.402	0.065	2.377	0.947 – 5.963
Screen Time Duration (>2 vs ≤2 hours)	-0.723	0.700	1.069	0.301	0.485	0.123 – 1.911
Type of Show (Non-education vs Education)	1.246	0.526	5.611	0.018	3.477	1.240 – 9.751
Parenting Pattern (Non-democratic vs Democratic)	0.790	0.477	2.744	0.098	2.204	0.865 – 5.615
Constant	-2.787	0.636	19.232	<0.001	0.062	

Source: Primary Data, 2024

DISCUSSION

The bivariate analysis in this study revealed significant associations between domicile, child age, type of show watched, and parenting style with disruptive behavior among preschool-aged children. Children from Aceh, aged 2–3 years, who primarily watched non-educational entertainment content, and those raised with non-democratic parenting styles, exhibited a higher prevalence of disruptive behavior compared to their counterparts.

The association between media content and disruptive behavior supports evidence from both global and Indonesian studies emphasizing that the *type* of screen exposure is a more critical determinant of socio-emotional outcomes than duration alone. A recent Indonesian study found that exposure to entertainment-oriented or aggressive digital media content was significantly associated with increased externalizing behaviors among preschoolers.¹⁶ Similarly, research in *JABODETABEK* reported that excessive

screen exposure correlated with greater emotional difficulties among young children, especially in lower socioeconomic groups.¹⁷ These findings suggest that non-educational digital content may overstimulate or model inappropriate behaviors, contributing to early disruptive tendencies.

The observed relationship between parenting style and child behavior is also consistent with both Indonesian and international literature. Studies in Indonesia have demonstrated that authoritative (democratic) parenting is associated with better emotional regulation and prosocial behavior, whereas authoritarian and permissive approaches are correlated with higher behavioral problems.¹⁸⁻²⁰ A review of Indonesian parenting practices similarly concluded that parent-child interaction quality strongly predicts child behavioral adjustment and that parenting interventions remain underutilized nationally.²¹

The finding that younger children (2–3 years) were more likely to display disruptive be-

havior aligns with developmental theory, which posits that early toddlerhood is characterized by limited emotional regulation and emerging autonomy factors that may manifest as impulsivity and tantrums.²² Meanwhile, the difference in disruptive behavior by domicile (Aceh vs. *JABODETABEK*) may reflect variations in socio-economic conditions, parental supervision, access to early education, or cultural expectations of child behavior. Prior research has shown that Indonesian parenting and early childhood practices vary substantially across provinces and cultural contexts.²³

The multivariate logistic regression results demonstrated that the type of media content was a significant determinant of disruptive behavior among preschool children, even after adjusting for parental and demographic variables. Children who primarily watched non-educational or entertainment-oriented shows were 3.5 times more likely to display disruptive behavior than those who watched educational content.

This finding aligns with recent evidence showing that the *quality* of digital exposure plays a more crucial role than duration alone. A 2024 longitudinal study revealed that high screen media use was associated with poorer inhibitory control and prefrontal activation in young children.²⁴ Similarly, studies conducted during the COVID-19 pandemic found that increased screen time and parental stress were associated with heightened behavioral and emotional difficulties among school-aged children.²⁵ A global systematic review also confirmed that entertainment-based viewing remains dominant and is associated with higher behavioral risk.²⁶

Although variables such as parental age, education, and parenting style were not statistically significant in the final model, they showed meaningful tendencies consistent with recent Indonesian studies.

Democratic or authoritative parenting was associated with lower behavioral problems, while authoritarian and permissive patterns correlated with higher externalizing behaviors.²⁷⁻³⁰

For example, Hasan et al. found that children of parents using inconsistent or punitive approaches had greater emotional-behavioral problems,²⁷ and Maulida et al. reported that children from single-parent or less cohesive families

demonstrated more aggressive and oppositional tendencies.²⁸

The relationship between parental mediation and screen exposure is also noteworthy. Children whose parents applied active mediation such as, discussing show content and setting viewing rules tended to have better socio-emotional development.³¹ Conversely, passive or absent mediation during entertainment media exposure was associated with increased behavioral risk.²⁹ These patterns reinforce the protective role of democratic parenting in moderating the effects of screen exposure on behavior.

The environmental variation observed between urban (*JABODETABEK*) and semi-urban (Aceh) settings in the bivariate results may also reflect regional differences in parenting practices, socioeconomic factors, and access to educational resources. UNICEF Indonesia (2022) emphasizes that digital literacy and parental guidance vary widely across provinces, influencing children's behavioral development.³²

Overall, these findings support a multifactorial model in which media content, parenting practices, and sociocultural context interactively shape behavioral outcomes. This highlights the need for comprehensive interventions that target both media literacy and parenting education in Indonesia. Strengthening parental guidance on media use,³³ promoting educational content, and supporting democratic parenting programs could serve as culturally appropriate strategies to mitigate disruptive behaviors in Indonesian preschoolers.

CONCLUSION AND RECOMMENDATION

This study identified media content type as the strongest independent predictor of disruptive behavior among preschool children. Exposure to non-educational or entertainment content significantly increased the likelihood of behavioral problems compared with exposure to educational content.

Although other variables, such as parenting style and child age, did not achieve statistical significance in the multivariate model, their observed patterns align with previous studies suggesting that they may play an indirect or moderating role in behavioral regulation. These

results highlight the importance of guiding parents to focus not only on-screen time limits but also on the nature of the content and the quality of parent-child interaction during media use.

Based on the results of this study, we recommend that Parents should be encouraged to provide educational and prosocial media content, establish consistent screen routines, and engage in co-viewing and discussion to enhance children's comprehension and emotional control. Pediatricians and educators should integrate screen use assessment and media counseling into routine developmental screening. Early childhood education programs should emphasize digital parenting skills and positive discipline strategies to mitigate behavioral risks. It is also important that National and local authorities should develop policies supporting child-safe programming and promote digital literacy for parents through the public health and education systems. Collaboration with media producers to increase the availability of educational content is essential.

Future research should use a longitudinal design, involve a larger sample, and ensure balance in diagnostic categories to improve the external validity of the findings. Cross-sectional designs, as currently used, only capture relationships at a single point in time.

Consequently, it is uncertain whether media exposure causes behavioral disorders or whether children with behavioral difficulties are more likely to seek entertainment through media. Longitudinal designs allow researchers to follow children over time, allowing them to observe the sequence of events and assess whether media exposure precedes the onset of disruptive behavior.

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AUTHOR CONTRIBUTIONS

For research articles with several authors, a NH organized and planned the research concept, designed the methodology, conducted the research, analyzed the data, and drafted the manuscript. HA, ATWR, YM, MAHEP, and AAR assisted with the research and provided feedback on the manuscript. All authors reviewed and approved the final version. NH = Nany Hairunisa; HA = Husnun Amalia; ATWR = Agnes Tineke Waney Rorong; YM = Yasmine Mashabi; MAHEP = Muhammad Amru Hammam El Putra; AAR = Asrenee Ab. Razak.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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