

Behavioral and Emotional Changes in Early Childhood during the COVID-19 Pandemic

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Abstrak: Pandemi *Coronavirus Disease 2019* (COVID-19) mengakibatkan perubahan yang besar terhadap gaya hidup sehari-hari, termasuk pada anak usia dini. Penelitian ini bertujuan untuk mengetahui dampak *lockdown* (karantina wilayah) akibat pandemi Covid-19 pada perilaku dan emosi anak usia dini (usia 0-8 tahun), serta kegiatan rutin sehari-hari seperti aktivitas fisik, *screen time*, dan pola tidur. Penelitian ini merupakan suatu *literature review* dengan menggunakan database *Google Scholar*, *ScienceDirect*, dan *PubMed*. Terdapat 15 literatur yang dipublikasi dalam bahasa Inggris atau Indonesia selang April 2020 dan Maret 2021. Literatur dalam penelitian ini melaporkan tentang perubahan perilaku dan emosi pada anak usia dini. Peningkatan perilaku eksternalisasi dan internalisasi serta perubahan waktu aktivitas fisik dan pola tidur juga dilaporkan pada banyak studi tersebut. Selain itu, terdapat peningkatan *screen time* selama *lockdown*. Simpulan penelitian ini ialah *lockdown* dapat memengaruhi baik pola tidur dan aktivitas fisik maupun kemampuan mengontrol emosi pada anak usia dini.

Kata kunci: COVID-19, *lockdown*, keterbatasan, anak usia dini, perubahan perilaku

Abstract: The coronavirus disease 2019 (COVID-19) pandemic demanded great changes in the everyday lifestyle of people, including children in their early years. This study was aimed to obtain the impact of COVID-19 confinement in young children's (age 0-8 years) behavior and emotion, along with their daily routines such as physical activity, screen time, and sleep pattern. This was a literature review study using databases of Google Scholar, ScienceDirect, and PubMed. The results showed that there were 15 studies published in English or Indonesian between April 2020 and March 2021 included in this review. The studies reported behavioral and emotional changes in the early life of children. An increase in externalizing and internalizing behavior along with a shift in physical activity and sleep behavior was reported in many of the studies. There was an increase in screen time during lockdown. In conclusion, lockdown can affect not only children's normal behavior in their sleep and physical activity but also their capability of controlling their emotion.

Keywords: COVID-19, lockdown, confinement, early childhood, behavioral changes

INTRODUCTION

Since it was first discovered in Wuhan, China, coronavirus disease 2019 (COVID-

19) has been designated by the World Health Organization (WHO) as a pandemic.¹ Until April 2021 this disease has spread to more

than 200 countries and caused nearly three million deaths worldwide. Coronavirus Disease 2019 is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that spread through droplet inhalation, direct contact, or airborne.^{2,3} Various efforts have been and are still being made by the government to reduce transmission of COVID-19 by forming a new normal lifestyle in the community while waiting for the success of vaccination. One of the government's efforts to reduce the incidence of COVID-19 is by imposing restrictions on social activities outside the home such as lockdowns.⁴ Research shows that lockdowns have been proven effective in reducing the number of COVID-19 transmission in various countries.⁵ However, the success of a new normal lifestyle in this lockdown, of course, is accompanied by negative effects that affect the community.

The World Health Organization (WHO) states that changes in lifestyle since the existence of COVID-19 will cause stress in the community.⁶ This is supported by studies that identify the psychological effects that can occur during lockdown in various countries. Panic disorders, irritability, anxiety, depression, and hypochondria are some of the common behavioral changes that occurred during the COVID-19 pandemic.⁷⁻¹³ Other changes that can occur are poor sleep quality, insomnia, changes in diet, and boredom.¹⁴

Although the rate of transmission of COVID-19 to children is not as high as that of adults, the pandemic requiring restrictions on outdoor activities causes behavioral changes in children that can occur in the short term and may be lifelong.¹⁵ In April 2020, UNICEF Executive Director, Henrietta Fore, said that worldwide as many as 99 percent of children under 18 years of age live in one of the 186 countries with some form of restriction due to COVID-19.¹⁶ Fore called on governments to realize that children were invisible victims because this pandemic has an impact on their health, welfare, development, and future.¹⁵ For this

reason, changes in children, especially early childhood, must be considered so as not to cause unwanted long-term effects. This study is aimed to find out the behavioral and emotional changes that occur in early childhood during the COVID-19 pandemic.

METHODS

The articles used as sources in writing this review were articles obtained through searching electronic sources (e-resources) in the Google Scholar, ScienceDirect, and PubMed databases using the keywords "behavioral/emotional changes/lockdown impact on children/early childhood/preschooler"/"behavioral/emotional changes in children", "COVID-19". Through searching, articles were selected based on the year they were published, which was between April 2020 and the end of March 2021.

DISCUSSION

Externalization and Internalization Behavior

The response of early childhood in facing changes due to the COVID-19 pandemic can generally be in the form of externalizing and internalizing behavior. Externalizing behavior is behavior that tends to show aggression, disobedience, hyperactivity, and any behavior that is difficult for children to control. While internalization behavior is behavior that tends to be overly controlled by children so that it has the impact of social withdrawal, anxiety, depression, somatization, and so on.^{17,18}

In general, Schmidt et al¹⁹ reported that the most frequent behavior during the lockdown was externalizing behavior, namely defiant (38.6%), disobedient (34.2%), stubborn (32.0%), and temper tantrums (31.5%) and the least frequent internalization behavior (fear).¹⁹ This was the same as Alonso-Martinez's report that externalizing behavior was more widely observed by parents.²⁰ Glynn et al²¹ found that children who had family routines tended to reduce symptoms of depression and externalizing behavior.

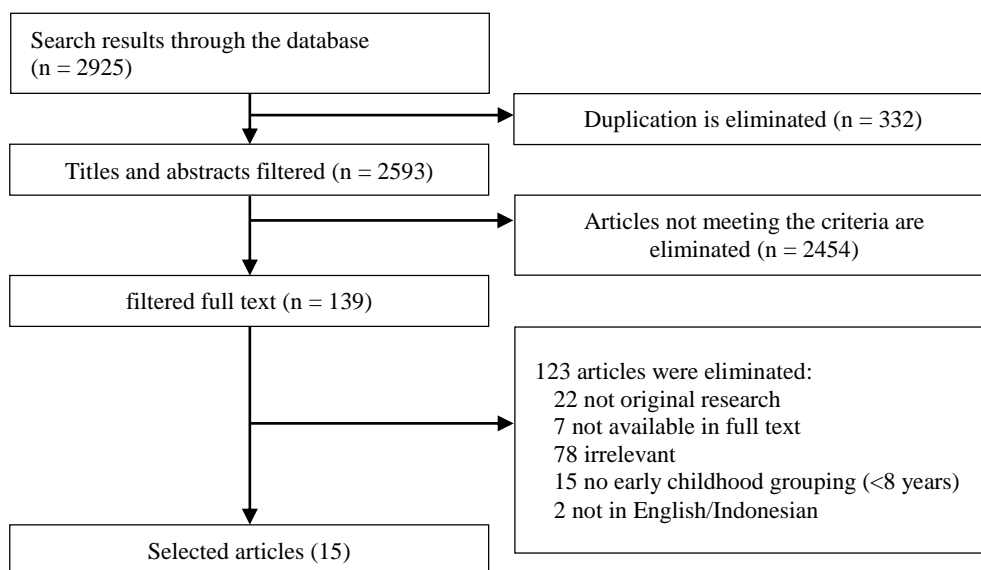


Figure 1. Article Filtering

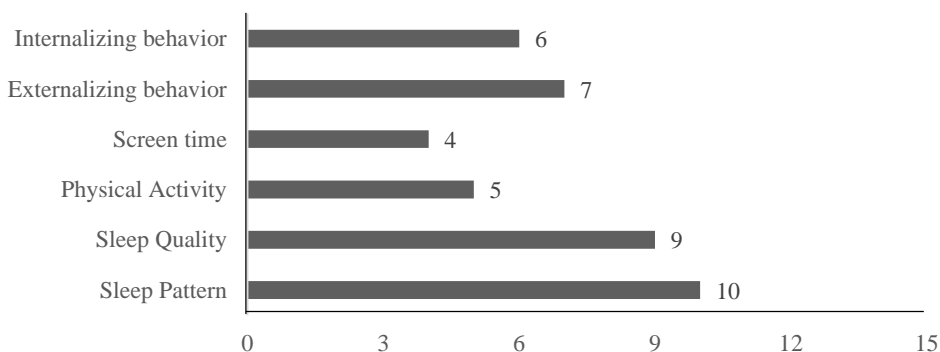


Figure 2. Frequency of changes that the article screening identified

Conduct problems (behavior problems), hyperactivity, and aggressiveness were the most commonly reported externalizing behavior during the lockdown period.¹⁹⁻²⁵ Glynn et al²¹ also found that approximately 64% of parents reported an increase in externalizing behavior since the start of the pandemic, with nearly 50% of the total 169 children experienced an increase in tantrum temper.

A total of five studies reported signs of internalizing behavior in the form of anxiety, depression, somatization, and sleep disturbances.^{19,20,22-24} Research conducted by Romero et al²³ stated that 29.2% of

children aged 3-6 years experienced emotional problems assessed by using the Strength and Difficulties Questionnaire (SDQ) which on the emotional scale consisted of somatic signs, worry, unhappiness, spoiledness, and fear.^{23,26} Another study of children in several European countries stated that more than 20% of children tended to be more spoiled, did not want to sleep alone, were often sad, and experienced of separation anxiety.¹⁹ In addition, there were also those who stated that there was a setback in terms of potty training.²⁴

Physical Activity and Screen Time

In general, five studies stated that there was a decrease in physical activity and an increase in the duration of recreational screen time in early childhood during COVID-19.^{20,27-30} Two studies conducted in Spain, namely by Alonso-Martinez et al²⁰ and López-Bueno et al²⁹ stated that the difference in physical activity time of children before and during pandemic restriction was 43.3 minutes per day and 92 minutes per week, respectively, whereas the first study measured objectively using a physical activity measuring device for six days. López-Bueno et al²⁹ found that screen time in children 3-5 years increased by 2.2 hours to nearly four hours of screen exposure. One study in Portugal stated that 72.1% of children activities at home were spent in sedentary behavior, of which 27% were in front of a screen for recreation.²⁷ In Chile, physical activity for children aged 1-5 years decreased by an average of 46.8 minutes per day with the largest difference in five-year-olds, 58.8 minutes per day and an increase in screen time by almost 110 minutes per day.²⁸ Furthermore, in their German study, Schmidt et al³⁰ found that children aged 4-5 years had less time to spend exercising during lockdown and there was an increase in screen time duration by 41.1 minutes with the largest increase, which was 2.5 times as much as when playing devices (gaming).

A study conducted by López-Bueno et al²⁹ also compared children's physical activity and screen time to tight and lenient restriction, which resulted in increased physical activity and reduced screen time on more relaxed restriction. Less restrictions in Spain that children under 14 were allowed to leave the house for a maximum of one hour per day under adult supervision.²⁹

This increased screen time may be a factor in the decrease in the physical activity children were engaged in every day during the pandemic.³¹

Changes in Sleep Patterns

Changes such as reduced physical activity and increased sedentary activity that

was limited at home could be a factor in causing changes in sleep patterns. Children could sleep more due to boredom in the house, or vice versa, children sleep time could be reduced due to increased use of devices during the pandemic. There were seven studies comparing sleep patterns of children before and after lockdown.^{20,25,28,29,32-35} Five studies suggested an increase in sleep duration and a shift in children's sleep time during lockdown. Three of the four studies stated that there was a shift in sleep time, in which children slept later and woke up later. In the study of Bruni et al³³ in Italy, only four children aged 1-5 years slept at 12 o'clock before the pandemic, but after the lockdown it increased to 68 children. Likewise, children who wake up after 10 AM increased from 12 to 133 people. Results like these were more or less the same as those found in China, where according to Liu et al³² the average child sleeps nearly 11 hours at night, almost the same as the results of Alonso-Martinez et al.²⁰ In contrast, two studies in Spain showed decreased sleep duration in early childhood. López-Bueno et al²⁹ noted that children aged 3-5 years were the only age group whose sleep duration was reduced to an average of 9.4 hours of sleep per day from the previous 9.2 hours per day, which was then reassessed on loose limitation to be reduced again to an average 9.2 hours per day. This was consistent with the results of Dellagiulia's research that there was a quadratic pattern in children's sleep patterns during the initial lockdown followed by stabilization of this decreasing pattern.³⁴ The differences in the results of this study could be influenced by the differences in the activities carried out by children at home. The results of a meta-analysis conducted by Janssen et al³⁶ stated that excessive screen time and inadequate physical activity could result in a decrease in the quality and quantity of sleep in children aged 0-4 years.

Another change that occurred was the child's nap. Liu et al's study found that children had longer sleep duration and shorter nap duration, whereas 72.5% of early childhood had no interest in napping.³²

This was likely to have an effect in the long term if it occurred over a long period of time because studies showed that napping in children under five years of age greatly affected children's memory development.³⁷ Other studies also suggested that lack of early childhood naps could affect the child to have a poor response to negative stimuli.³⁸

CONCLUSION

Limits on the COVID-19 pandemic require major changes to the lifestyles of children, especially early childhood. This review find various behavioral and emotional changes that can occur in early childhood, such as externalizing and internalizing behavior, as well as changes in sleep behavior and physical activity, including sedentary activities with screen time. Research related to the long-term impact of post lockdown must be carried out in order to find out whether the changes that occur in early childhood are persistent or not.

Conflict of Interest

There is no conflict of interest in this study.

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Table 1. Study Characteristics

Num	References	Type of Study and Instruments	Early Childhood Participant	Age group (years)	Country	Changes	Result
1.	Zhijun Liu et al. (July, 2020) <i>Sleep of preschoolers during the coronavirus disease 2019 (COVID-19) outbreak</i>	Online Questionnaire Survey (CHSQ)	1619	4-6	China	Sleep Pattern/Quality	Changes in sleep patterns, namely sleep later and wake up later. Sleep duration is longer, and naps are shorter.
2.	Maayan Shorer et al. (August 2020) <i>Young children's emotional stress reactions during the COVID-19 outbreak and their associations with parental emotion regulation and parental playfulness</i>	Online Questionnaire Survey (SRCL, DERS, PPQ)	351	2-7	Israel	Sleep Pattern/quality, behavior, emotional	The most commonly reported symptoms of stress are nervousness, agitation, aggressiveness, fear of being left behind, and spoiledness.
3.	Elisa Di Giorgio et al. (August, 2020) <i>The interplay between mother's and children behavioral and psychological factors during COVID-19: an Italian study</i>	Online Questionnaire Longitudinal Survey (SDSC, BRIEF-P, SDQ)	245	2-5	Italy	sleep Pattern/quality, behavior, emotional	Shifts in children's sleep time and difficulties in undergoing new routines, difficulty channeling energy, disturbed social relationships
4.	Antonio Dellagiulia et al. (September, 2020) <i>Early impact of COVID-19 lockdown on children's sleep: a 4-week longitudinal study</i>	Online Questionnaire Longitudinal Survey		3-6	Italy	Sleep Pattern/Quality	Quadratic Pattern in the sleep duration of the child which is reduced at the initiation stage of the lockdown followed by stability
5.	Rubén López-Bueno et al. (September 2020) <i>Health-Related Behaviors Among School-Aged Children and Adolescents During the Spanish COVID-19 Confinement</i>		162	3-5	Spain	Physical Activity, Sleep Pattern/quality, Screen Time	The duration of physical activity decreases, the screen time and sleep time increase. There was a significant difference between sleep times in tight and lenient restrictions.
6.	Estrella Romero et al. (September 2020) <i>Testing the Effects of COVID-19 Confinement in Spanish Children: The Role of Parents' Distress, Emotional Problems and Specific Parenting</i>	Online Questionnaire Survey (CD-RISC-10, PHQ-4, SDQ)	448	3-6	Spain	Behavior, Emotional	Children's adaptation to pandemic situations is influenced by parental distress and parents' emotional responses to crises, through how parents care for their children.
7.	Stefanie J. Schmidt et al. (September 2020) <i>Age-related effects of the COVID-19 pandemic on mental health of children and adolescents</i>	Online Questionnaire Survey (CBCL)	2726	1-6	Austria, Germany, Liechtenstein, Swiss	sleep Pattern/quality, behavior, emotional	Increased oppositional-defiant behavior, increased sleep problems and nightmares
8.	Marta Giménez-Dani et al. (October 2020) <i>Six Weeks of Confinement: Psychological Effects on a Sample of Children in Early Childhood and Primary Education</i>	Questionnaire Survey SENA	16	3-6	Spain	sleep Pattern/quality, behavior, emotional	Difficulty in emotional regulation, sleep and diet patterns, and in potty training

Table 1. Study Characteristics (continue)

Num	Reference	Type of Study and Instruments	Early Childhood Participant	Age group (years)	Country	Changes	Result
9.	Steffen C. E. Schmidt et al. (December 2020) <i>Physical activity and screen time of children and adolescents before and during the COVID-19 lockdown in Germany: a natural experiment</i>	German Cohort Questionnaire MoMo	317	4-5	Germany	Physical Activity	Decrease in sports activity, increase in screen time
10	Nicolas Aguilar-Farias et al. (December, 2020) <i>Sociodemographic Predictors of Changes in Physical Activity, Screen Time, and Sleep among Toddlers and Preschoolers in Chile during the COVID-19 Pandemic</i>	Online Questionnaire Survey	3157	1-2, 3-4, & 5	Chile	Sleep Pattern, Physical Activity, Screen Time	Time for physical activity decreases, screen time and sleep duration increase, and sleep quality decreases
11.	Laura M. Glynn et al. (January 2021) <i>A predictable home environment may protect child mental health during the COVID-19 pandemic</i>	Online Questionnaire Survey (PFC, SDQ, Family Routines Inventory)	169	2.6-6	USA	Emotional, behavior	Increased incidence of depression and externalizing behavior in children
12.	Alicia M. Alonso-Martínez et al. (January 2021) <i>Physical Activity, Sedentary Behavior, Sleep and Self-Regulation in Spanish Preschoolers during the COVID-19 Lockdown</i>	Cohort GENEActiv tri-axial accelerometer, CSBQ	268	4-6	Spain	Sleep Pattern, Physical Activity, Sedentary time, behavior	Decreased physical activity (MD = -43.3min), sleep efficiency (MD = -2.09), increased sedentary time (MD = 50.2 min), internalization problems (MD = 0.17) and externalization (MD = 0.33)
13.	Oliviero Bruni et al. (February, 2020) <i>Changes in Sleep patterns and disturbances in children and adolescents in Italy during the COVID-19 outbreak</i>	Online Questionnaire Survey (SDSC)	2156	1-3 & 4-5	Italy	Sleep Pattern, Screen Time	Changes in sleep patterns and sleep disturbances, increased screen time duration
14.	Rita Cordovil et al. (February, 2021) <i>Effects of the COVID-19 pandemic on preschool children and preschools in Portugal</i>	Online Questionnaire Survey	1168	0-2 & 3-5	Portugal	Physical Activity, Screen Time, Sedentary time	Children 3-5 years have more sedentary time (72% of total daily activity)
15.	Valeria Bacaro et al. (February, 2020) <i>Sleep Characteristics in Italian Children During Home Confinement Due to COVID-19 Outbreak</i>	Online Questionnaire Survey	395	0-2 & 3-5	Italy	Sleep Pattern, Emotional	Children get angry more frequently during the lockdown period, increasing sleep disorders in the form of insomnia

Abbreviations: AUD: Anak Usia Dini (Early Childhood); CHSQ: *Children's Sleep Habit Questionnaire*, SRCL: *Stress Reaction Checklist*, DERS: *Difficulties in Emotion Regulation Scale*, PPQ:

Parental Playfulness Questionnaire, SDSC: Sleep Disturbance Scale for Children, BRIEF-P: Behavior Rating Inventory of Executive Functions-Preschool version, SDQ: Strength and Difficulties Questionnaire, CD-RISC: Connor-Davidson Resilience Scale, PHQ: Patient Health Questionnaire for Depression and Anxiety, CBCL: Child Behaviour Checklist, SENA: System of Evaluation of Children and Adolescents, MoMo: Motorik-Modul, PFC: Preschool Feelings Checklist, CSBQ: Child Self-Regulation and Behavior Questionnaire