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Original Article

Repercussions of the COVID-19 pandemic on preschoolers' occupations

Repercussões da pandemia de COVID-19 nas ocupações de pré-escolares

Carolinne Linhares Pinheiro[a,b], Sylvia Gois Santos Vitorio[a], Mirela de Oliveira Figueiredo[b]

[a]Instituto Federal de Educação, Ciência e Tecnologia do Rio de Janeiro – IFRJ, Rio de Janeiro, RJ, Brasil.
[b]Universidade Federal de São Carlos – UFSCar, São Carlos, SP, Brasil.

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Abstract

Introduction: The physical distancing resulting from the COVID-19 pandemic led to home confinement and altered the usual ways in which children's occupations were conducted, depriving them of experiences that promote development. **Objective:** To identify the repercussions of the initial phase of the COVID-19 pandemic on the preschoolers' occupations. **Method:** A descriptive, quantitative, cross-sectional study conducted with 35 guardians of 3-year-old preschoolers from the city of Rio de Janeiro. A self-administered questionnaire was used to investigate changes in children's occupations during the initial phase of the pandemic. **Results:** Changes occurred in all occupations investigated: interaction with peers (100%), relatives (94.2%), and participants (91.4%); leisure (97.1%); play (91.4%); eating (88.6%); screen activities (88.6%); physical activities (80%); and sleep (68.6%). There was a reduction/absence of playing in outdoor environments, greater demand for adult participation in play, absence of play with peers, and increased time spent on electronic play. Leisure became less frequent, more restricted, and screen-oriented. Thus, the daily screen exposure time increased. There was a significant absence/decrease of in-person interaction with peers and relatives, a decrease in physical activities (frequency and variety), difficulty in maintaining an organized eating routine, and changes in sleep schedules. These results are discussed and corroborated by current literature on the subject. **Conclusion:** During the initial phase of the pandemic, when physical distancing was more stringent, children faced significant restrictions in their occupations, with limitations in the diversity, quantity, and quality of opportunities for their full development. Therefore, the experience of the pandemic context may have been acted as a hindering force in children's development.

Keywords: Activities of Daily Living, Preschool Child, COVID-19 Pandemic, Child Development.

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Resumo

Introdução: O distanciamento físico decorrente da pandemia de COVID-19 acarretou restrição ao domicílio e alterou as formas usuais de concretização das ocupações de crianças, privando-as de experiências promotoras do desenvolvimento. **Objetivo:** Identificar as repercussões da fase inicial da pandemia de COVID-19 nas ocupações de pré-escolares. **Método:** Estudo descritivo, quantitativo, transversal, com 35 responsáveis por pré-escolares de 3 anos, do município do Rio de Janeiro. Utilizou-se questionário autoaplicável para investigar as modificações nas ocupações infantis na fase inicial da pandemia. **Resultados:** Ocorreram transformações em todas as ocupações investigadas: interação com pares (100%), parentes (94,2%) e participantes (91,4%); lazer (97,1%); brincar (91,4%); alimentação (88,6%); atividades em tela (88,6%); atividades físicas (80%); e sono (68,6%). Identificou-se redução/ausência de brincadeiras em ambientes externos, maior demanda pelo adulto na brincadeira, ausência do brincar com pares e maior tempo de brincadeira em eletrônicos. O lazer tornou-se menos frequente, mais restrito e voltado às telas. Destarte, aumentou o tempo de exposição diária às telas. Verificou-se ausência/diminuição importante da interação presencial com pares e parentes, redução das atividades físicas (frequência e variedade), dificuldade em manter uma rotina alimentar organizada e mudanças nos horários de sono. Tais resultados são discutidos e corroborados pela literatura atual sobre o tema. **Conclusão:** Na fase inicial da pandemia, de maior rigor do distanciamento físico, as crianças enfrentaram restrições importantes em suas ocupações, com limitações na diversidade, quantidade e qualidade das oportunidades para seu pleno desenvolvimento. Logo, a vivência do contexto pandêmico pode ter se configurado como força despotencializadora do desenvolvimento infantil.

Palavras-chave: Atividades Cotidianas, Pré-escolar, COVID-19, Desenvolvimento Infantil.

Introduction

The World Health Organization (WHO) declared the COVID-19 pandemic (Coronavirus Disease 2019), caused by the SARS-CoV-2 virus, in March 2020 (Organização Pan-Americana da Saúde, 2020). Given the lack of an effective pharmacological treatment, the high rate of transmissibility, and the great risk to life, containment measures were adopted, such as social distancing and restrictions on the movement of people (Aquino et al., 2020).

In the municipality of Rio de Janeiro, a series of decrees were issued starting in March 2020, implementing measures to combat the pandemic. Decree No. 47.262, dated 21 March 2020, established more restrictive measures regarding the movement of people and social distancing (Rio de Janeiro, 2020a). It is worth noting that, in 2021, the Health Sciences Descriptors (Medical Subject Headings) (DeCS/MeSH) established the descriptor "physical distancing" to indicate the recommendation to maintain spatial separation between people. The term "social distancing" became an alternative for this descriptor, as the objective was to prevent physical proximity between individuals, not social contact itself.

These measures—while necessary to curb the exponential growth of the disease, prevent deaths, and avoid the collapse of health systems worldwide—led to various transformations in Brazilian family, economic, and social contexts (Almeida et al., 2020; Araújo & Lua, 2021; Linhares & Enumo, 2020).

Daycares, schools, and recreational spaces were closed, businesses were restricted in their operations, and work arrangements were altered, causing an increase in unemployment and a decrease in the population's income (Araújo & Lua, 2021; Figueiredo et al., 2021). The need for home confinement, experienced especially during the initial months of the pandemic, triggered feelings of fear and uncertainty, exposing parents and children to excessive stress, which resulted in psychosocial impairments such as anxiety, insecurity, depression, and sleep disorders (Araújo et al., 2021; Aydogdu, 2020; Fernandes et al., 2023).

Although children were not part of the population most vulnerable to the disease, living through the pandemic context may have created challenges for their full development (Araújo et al., 2021; Fernandes et al., 2023; Linhares & Enumo, 2020). Among the various changes experienced, the following stand out: alteration and even interruption of usual ways of engaging in significant childhood occupations, such as playing, interacting with peers and significant others, studying, and engaging in leisure (Betti, 2021; Figueiredo et al., 2021; Sá et al., 2021).

Figueiredo et al. (2021) explain that it is through engagement in meaningful occupations that children find structure, organization, identity, and opportunities for development and self-expression. Folha & Della Barba (2020) assert that the occupational repertoire is dynamic and becomes more complex with age progression and through the child's interaction with their occupations and environments. Therefore, engaging in occupations becomes crucial for cognitive, physical, emotional, social, and communicative development, as well as for autonomy, in addition to positively influencing health and well-being (Figueiredo et al., 2021; Folha & Della Barba, 2020).

The pandemic context and home confinement disrupted family routines, limited interaction possibilities, and caused restriction and/or deprivation of healthy and meaningful opportunities and experiences for children (Araújo et al., 2021; Figueiredo et al., 2021; Pfeifer & Sant'Anna, 2022). It is likely that, like adults, children also experienced occupational disruption (Hammell, 2020). Occupational disruption occurs when there is an abrupt and temporary change in a person's routine and engagement in meaningful occupations due to factors beyond their control, which may harm their health and well-being (Nizzero et al., 2017).

Given this, it is considered that the numerous changes children experienced in their everyday lives and engagement in meaningful occupations during the COVID-19 pandemic may have negatively influenced their developmental process (Araújo et al., 2021; Figueiredo et al., 2021; Pfeifer & Sant'Anna, 2022).

In this context, it becomes relevant to investigate the impacts of the COVID-19 pandemic on children's routines and development, as such knowledge can foster public policies involving health, education, and social assistance, as well as prepare families to mitigate and prevent risks to child development in case of restrictions similar to those imposed by the pandemic. Thus, this study aimed to identify the repercussions of the

initial phase of the COVID-19 pandemic on the occupations of preschoolers in Rio de Janeiro.

Method

This is a descriptive, quantitative, cross-sectional study (Andrade & Theobald, 2020) derived from research that investigated the repercussions of the COVID-19 pandemic on the development and occupations of early childhood children (aged 0-6 years), approved by the Research Ethics Committee of the Rio de Janeiro Federal Institute of Education, Science, and Technology (IFRJ) under opinion no. 4.414.593.

The inclusion criteria for participants were as follows: being aged ≥18 years; being responsible for at least one child between 18 months and 5 years and 11 months old; residing with the child in the city of Rio de Janeiro. The exclusion criterion was the parent or legal guardian reporting a diagnosis or suspected diagnosis of the child with Autism Spectrum Disorder (ASD), neurological conditions, genetic syndromes, or sensory impairment (visual or auditory).

This is an ongoing doctoral research project in which the children were divided into age groups for analysis. The present study presents the results of the three-year-old group, which had the largest sample size and was the first age group to be analyzed. For this reason, only the parents or guardians of 3-year-old children (36 to 47 months) were included as participants.

Data were collected through a self-administered online questionnaire containing objective questions that investigated, among other aspects, the sociodemographic characteristics of the participant and the child, the family's socioeconomic conditions, and the changes in children's routine occupations, such as eating, sleeping, leisure, play, physical activity, social interaction, and screen time, experienced during the first four months of the pandemic (March to July 2020). It is worth clarifying that the assessment of changes in children's occupations was based on participants' recall, which may have led to memory biases or inaccuracies.

The decision to focus on the period from March to July 2020 stemmed from the stricter measures on movement and physical distancing, which began to be relaxed with the publication of the plan for resuming economic activities (Rio de Janeiro, 2020b). It is worth noting that, as of 31 July 2020, snack bars, bars, restaurants, stores, gyms, and sports training centers were open, but with restricted operating hours, capacity, and physical distancing measures. Daycares, schools, and cultural spaces remained closed, gatherings in open spaces were prohibited, and beaches could only be used for physical activity (Rio de Janeiro, 2020c).

The Brazilian Economic Classification Criterion (CCEB) (Associação Brasileira das Empresas de Pesquisa, 2019) was used to classify participants' families. This criterion is based on measuring access to 12 comfort items and essential public services, such as piped water and street paving, as well as the educational level of the family's highest-earning member. Each item has a specific score, and the higher the total sum of points, the higher the economic class, defined as follows: A (45-100 points); B1 (38-44 points); B2 (29-37 points); C1 (23-28 points); C2 (17-22 points); and D-E (0-16 points) (Associação Brasileira das Empresas de Pesquisa, 2019).

Regarding data collection procedures, participants were recruited through social media platforms Instagram, Facebook, and WhatsApp. A digital invitation was shared on the research team's social media profiles and replicated by several of their contacts to expand outreach. After confirming interest in participating in the study, the participant was directed to the Informed Consent Form (ICF), and upon consent, accessed the data collection questionnaire.

Data collection occurred between December 2020 and March 2021. There were 145 responses to the questionnaire; however, 17 of them were disregarded because the respondents did not meet all the inclusion criteria and/or met the exclusion criterion. Thus, the study included a total of 128 participants, of whom 35 were responsible for three-year-old children, comprising the sample for the present study.

Data analysis involved the use of simple descriptive statistics, with the results presented in tables. Frequencies were calculated for most variables, as well as mean and standard deviation for the variables related to the age of the participant and the child.

Results and Discussion

The analysis of the participants' profile, whose characterization is presented in Table 1, shows that the majority were mothers of the children (88.6%), aged 23 to 49 years, with a mean age of 35 years (SD ±6.1 years), and that most had only one child (68.6%). The gender inequality in caregiving and the responsibility of raising children (Silva et al., 2020) likely explains the greater interest of mothers in participating in the study.

A high level of education was observed among the participants, as 77.2% had at least a college degree (Table 1). A similar result was found concerning the educational level of the child's other parent/guardian, with 60% of the participants reporting at least a college degree. Correspondingly, the majority of participants (79.9%) belonged to higher socioeconomic strata, according to the CCEB (classes A and B), and just over half (57.1%) reported a monthly family income of BRL 5,225.00 or more, while 34.3% reported an income of BRL 10,450.00 or higher (Table 1). On the other hand, 28.6% of the participants reported a monthly income between BRL 1,045.00 and BRL 3,1135.00.

The level of formal education and the economic classification are related aspects, as higher education typically increases the likelihood of obtaining higher-paying jobs (Salvato et al., 2010). It is noteworthy that the participants had privileged incomes compared to the general population of the state of Rio de Janeiro, as most reported a household income equal to or greater than five minimum wages in 2020, while the National Household Sample Survey (Instituto Brasileiro de Geografia e Estatística, 2020) indicated an average monthly household income of approximately R$ 1,723.00 for residents of this state in that year.

Regarding the children, the average age was 41 months (SD ±3.5 months). Most were female (60%) and enrolled in preschool or daycare (82.9%), of which 51.4% attended a private institution and 65.7% experienced remote learning.

Table 1. Characterization of the participants and their children.

Variables	n=35	%
Relationship with the child		
Mother	31	88.6
Father	4	11.4
Number of children		
1	24	68.6
2	9	25.7
3	2	5.7
Participant's education level		
Completed Middle School / Incomplete High School	2	5.7
Completed High School / Incomplete College	6	17.1
Completed College	9	25.7
Postgraduate	10	28.6
Postgraduate - Stricto Sensu	8	22.8
CCEB Classification		
Class A	6	17.1
Class B1	9	25.7
Class B2	13	37.1
Class C1	6	17.1
Class C2	1	2.8
Child's sex		
Female	21	60
Male	14	40
Child enrolled in daycare/preschool		
Yes	29	82.9
No	6	17.1
Type of educational institution		
Public	11	31.4
Private	18	51.4
Not applicable	6	17.1
Child's participation in remote learning		
Yes	23	65.7
No	6	17.1
Not applicable	6	17.1

It is important to clarify that, because of the closure of schools and the lack of a reopening forecast, in April 2020, the National Education Council approved Opinion no. 5/2020, which validated the use of non-face-to-face pedagogical activities at all levels of education, including early childhood education, intended for children between 3 and 5 years old (Brasil, 2020).

The pandemic brought about many changes in a short period of time. Children's school routines were interrupted, remote learning was implemented, and these were just a few of the numerous changes in the everyday lives and routines of families worldwide, imposed by the necessary physical distancing measures (Linhares & Enumo, 2020).

Table 2 contains information about the changes experienced in the participants' life contexts. Regarding family adherence to physical distancing measures during the first four months of the pandemic, participants were asked to indicate, using a scale from 1 to 5, the level of physical distancing adopted. A score of 1 meant no adherence to distancing, with frequent outings, participation in events and celebrations, and continued visits to relatives, while a score of 5 implied leaving the house only for essential tasks (such as going to the market, visiting the doctor, etc.). Participants overwhelmingly reported that their families fully (62.8%) or almost fully (25.7%) followed the physical distancing measures between March and July 2020, which corroborates studies conducted in different states that identified good adherence by the population to such measures (Almeida et al., 2020; Barros et al., 2020).

Changes in family income were reported by more than 70% of caregivers after the pandemic began, of whom 40% reported a slight decrease, while 25.7% mentioned a significant decrease in income (Table 2). These findings agree with those obtained by Almeida et al. (2020) regarding changes in the socioeconomic conditions of Brazilians at the beginning of the pandemic, when more than 50% of active workers reported a reduction in their household monthly earnings. Thus, it is evident that social restriction measures, while necessary, negatively impacted the economic landscape, causing salary reductions, bankruptcies, and unemployment (Almeida et al., 2020; Araújo & Lua, 2021).

The work of the participants and other caregivers of the children was also affected. The majority (71.4%) indicated changes in their own work, with remote work (51.4%) and income reduction (31.4%) being the most prominent ones. Additionally, 60% reported changes in the work of the other caregiver, with income reduction being the most frequently mentioned change (Table 2). Similarly, in the studies by Almeida et al. (2020) and Araújo & Lua (2021), the main changes reported by participants included the start of remote work, income reduction, and an increase in working hours.

With the adoption of remote work, workers faced the challenge of balancing work, household, caregiving, and rest demands, all while coping with long, unregulated work hours and managing the economic difficulties faced by their families (Almeida et al., 2020; Araújo & Lua, 2021). In addition, home confinement limited opportunities for relief from daily tensions, which may have increased stress levels, harmed mental health, and favored the occurrence of psychological disorders, affecting family functioning (Araújo & Lua, 2021; Linhares & Enumo, 2020).

The family routine was impacted for the vast majority of participants (97.1%) during the first four months of the pandemic (Table 2). According to Urie Bronfenbrenner's Bioecological Theory of Human Development, proximal processes—formed through interaction with people, objects, and symbols in the individual's environment—are fundamental to their development (Martins & Szymanski, 2004). Therefore, it can be inferred that transformations in family life may influence individual development.

This theory also highlights the existence of essential life contexts, called systems, that integrate the development process: the microsystem – the context in which the individual actively participates, where proximal processes are established, such as the family or school in the case of children; the mesosystem – formed by interrelations between two or more microsystems, such as the relationship between family and school; the exosystem – composed of one or more environments where the individual does not directly participate,

but which can affect or be affected by them, such as the parents' work; and finally, the macrosystem – encompassing all other systems and involving events related to political, social, and/or cultural structures (Martins & Szymanski, 2004).

Table 2. Changes in the context of family life during the pandemic.

Variables	n=35	%
Adherence to physical distancing		
5 (Complete physical distancing)	22	62.8
4	9	25.7
3	3	8.6
2	1	2.8
1 (No physical distancing)	0	0
Changes in family routine		
Yes	34	97.1
No	1	2.8
Change in monthly family income		
Yes	25	71.4
No	10	28.6
Type of change		
Income increase	2	5.7
Small income decrease	14	40
Significant income decrease	9	25.7
Change in the participant's work		
Yes	25	71.4
No	10	28.6
Types of changes*		
Shifted to remote work	18	51.4
Income decrease	11	31.4
Increase in work hours	5	14.3
Lost job	3	8.6
Started informal work	1	2.8
Change in the other caregiver's work		
Yes	21	60
No	7	20
Not applicable	7	20
Types of changes*		
Income decrease	11	31.4
Shifted to remote work	8	22.8
Increase in work hours	4	11.4
Lost job	1	2.8
Started informal work	0	0
Other	1	2.8

*There is overlap in the responses.

It is likely that all these contexts were impacted by the pandemic. Considering children, the negative impacts on the family and school microsystems stand out, which may have affected proximal processes and, consequently, the primary mechanism for human development (Linhares & Enumo, 2020; Martins & Szymanski, 2004).

As for children's occupations, significant changes were widely reported in all of them during this period: interaction with peers (100%); leisure (97.1%); interaction with relatives (94.2%); interaction with the caregiver (91.4%); play (91.4%); eating (88.6%); screen time activities (88.6%); physical activities (80%); and sleep (68.6%), as shown in Tables 3, 4, and 5. This reinforces the idea that, in addition to generating various changes in family routines, the physical distancing measures led many families into a state of occupational disruption (Hammell, 2020).

Sima et al. (2017) studied the occupational implications two years after the natural disaster caused by Cyclone Yasi in Australia in 2011. They concluded that survivors experienced profound disruption in their productive, social, and leisure occupations, and that re-engagement in meaningful occupations was essential for their physical, emotional, and social recovery. These findings reinforce Hammell's (2020) idea that occupation can serve as a means to promote well-being and provide structure, routine, and meaning through engagement in occupational roles.

It should be noted that there are different conceptions of human occupation, including the one established by occupational therapist Wilcock (1999) in her theory on the occupational nature of human beings. In this theory, human occupation is explained through the synthesis of three interrelated concepts: Doing, Being, and Becoming.

Doing involves the constant and daily actions conducted by people, which allow for personal and social growth and development (Wilcock, 1999). "People [...] carry out daily tasks, including things they feel they must do and others they wish to do. Human evolution is filled with continuous and progressive actions [...]" (Wilcock, 1998, as cited in Wilcock, 1999, p. 3). The concept of Being is understood as the essence of oneself, what motivates and drives the individual; it thus outlines the natural drive for human doing. Becoming represents the outcome of the interaction between Doing and Being, as the relationship between what one does and who one is in the present allows for the transformation of the person into what they aspire to be. Therefore, Becoming relates to individual life history and context and represents each person's potential for future growth (Wilcock, 1999).

In summary, engagement in occupations enables human doing, which expresses being and drives the pursuit of becoming what one desires. Thus, it is through the balance of the relationship between Doing, Being, and Becoming that occupation assumes a driving role in health and well-being (Wilcock, 1999; Wilcock, 2007). Similarly, the imbalance of this relationship, experienced in a state of occupational disruption, can negatively affect individual development, since "[…] doing or not doing are powerful determinants of well-being or illness" (Wilcock, 1999, p. 3).

In light of this, occupation can also be understood as a mechanism for individual development, as noted in Wilcock's words (1993, p. 17, as cited in Hocking & Townsend, 2020, p. 7):

> […] occupation provides the mechanism for people to fulfill basic human needs essential for survival, to adapt to environmental changes, and to develop an innate capacity of biological, social, and cultural nature to thrive as individuals.

In line with this, Folha & Della Barba (2020, p. 228) consider that "[…] participation in children's occupations contributes to the physical, cognitive, social, and emotional development of the child and directly influences the health and well-being of both the child and the family".

Consequently, it is possible to recognize that occupation and development are interdependent, as through participation in meaningful occupations children learn and practice new skills, achieve autonomy and independence, and become productive and socially engaged. It is also through these achievements that they attain appropriate and healthy development (Betti, 2021; Betti et al., 2023; Folha & Della Barba, 2020; Figueiredo et al., 2021).

In light of these premises, the results of this study, and the transformations imposed by the pandemic, the child's relationship with their environment and occupation was altered. Coelho (2021) and Paterson et al. (2021) highlighted the decrease in meaningful activities in children's routines during the pandemic, as well as the performance of some occupations in an uninterested and unsatisfactory manner, which implies possible risks and/or harm to child development.

Changes in children's leisure activities were reported by 97.1% of caregivers. It was mainly reported that leisure activities became exclusively with people living in the same household as the child (68.5%), that the frequency of these activities decreased during this period (57.1%), and that leisure became more tied to screen use (54.2%) (Table 3). Home confinement restricted children's leisure options, and they reported missing riding bikes, going to the park, skating, and running (Berbet et al., 2021; Guan et al., 2020).

It is important to note that, since recreational areas were closed and social gatherings were restricted or nonexistent, technology use, although harmful when excessive, became a relevant strategy to provide access to recreational activities and social interaction (Betti, 2021; Berbet et al., 2021), resulting in increased recreational screen time. In this study, it was found that 88.6% of children increased their daily screen exposure compared to the pre-pandemic period, and more than half of the participants (54.2%) reported an increase of three or more hours per day (Table 3), resulting in a minimum increase of 21 hours per week. Xiang et al. (2020) reported a total increase of 30 hours per week in screen exposure for 2426 Chinese children aged 6 to 17 years. Stienwandt et al. (2022) found that, in Canada, children aged 2 to 8 were exposed to screens for about 32 hours per week during the initial months of the pandemic.

Despite the benefits provided by access to technology during the pandemic, such as entertainment and reducing the impact of physical distancing, Cartanyà-Hueso et al. (2022) demonstrated in a study conducted with Spanish children (aged 4 to 14) that those who used screens for leisure for more than 180 minutes a day were more likely to develop emotional and behavioral issues. They also observed that these children had more difficulty interacting with peers and could become less socially engaged compared to those who used screens for leisure for less than 60 minutes a day.

Table 3. Changes in the routine of children's leisure, play, and screen activities between March and July 2020.

Variables	n=35	%
Change in leisure routine		
Yes	34	97.1
No	1	2.8
Types of changes*		
Activities done only with household members	24	68.6
Decreased frequency of leisure activities	20	57.1
Leisure became more screen-focused	19	54.2
Leisure restricted to at-home activities	16	45.7
Other	2	5.7
Change in play routine		
Yes	32	91.4
No	3	8.6
Types of changes*		
Decreased/absence of outdoor play	27	77.1
Greater demand for adult presence in play	23	65.7
Lack of play with other children	20	57.1
Increased time playing on electronic devices	19	54.2
More time spent playing alone	11	31.4
Increased engagement in play	11	31.4
Reduced movement-based play	8	22.8
Difficulty playing alone or creating new play	6	17.1
Decreased engagement time in play	6	17.1
Constant boredom during play	5	14.3
Other	2	5.7
Reduced interest in play	1	2.8
Change in screen use routine		
Yes	31	88.6
No	4	11.4
Increase in daily screen exposure		
3 or more hours	19	54.2
2 hours	7	20
1 hour	3	8.6
Less than 1 hour	2	5.7

*There is overlap in the responses.

This can be explained by leisure being considered an intrinsically motivated occupation, performed during free time and not related to other occupations such as work, self-care, or sleep (American Occupational Therapy Association, 2020), which provides safe interaction, bond-building, and emotional regulation, all of which support the academic, psychological, social, and behavioral development of the child (Boelens et al., 2022). Therefore, participating in leisure activities is considered a protective factor for children's mental and physical health, as it is associated with fewer psychological complaints and the development of skills that foster competence,

confidence, and positive connections with peers and adults (Boelens et al., 2022). Thus, it is likely that children's socio-emotional skills and mental health were negatively affected by the pandemic (Berbet et al., 2021).

In addition to providing entertainment, during the pandemic, screens were used, among other purposes, as a means of passive distraction by families with children, fulfilling the goal of containing and mediating their behavior (Sociedade Brasileira de Pediatria, 2019). During this period, the challenge of working from home and managing all demands was, in part, alleviated by children's increased screen time (Betti, 2021; Betti et al., 2023; Pfeifer & Sant'Anna, 2022).

Excessive screen use had already raised concerns among researchers and health and education professionals (Nobre et al., 2021), and during the pandemic, this concern grew (Viana et al., 2022; Molleri et al., 2023). It is known that screen exposure negatively impacts child development, contributing to delays in language and fine motor skills, psychological dependence, depression, anxiety, sleep problems, and emotional and behavioral difficulties, in addition to facilitating access to inappropriate content (Cartanyà-Hueso et al., 2022; Nobre et al., 2021; Sociedade Brasileira de Pediatria, 2019; Viana et al., 2022).

Among the occupations conducted by children, Pfeifer & Sant'Anna (2022) highlight play as one of the most significant. They understand this occupation as being composed of free and spontaneous actions, intrinsically motivated, involving pleasure and playfulness, without the expectation of performance or specific outcomes, and serving as a means for the child to develop motor, social, emotional, and cognitive skills.

An overwhelming majority of our participants (91.4%) reported changes in play during the early pandemic. The most frequent changes were the absence or reduction of outdoor play (77.1%), greater demand for adult presence during play (65.7%), absence of play with other children (57.1%), and increased time spent using electronic devices (54.2%) (Table 3).

Betti (2021) investigated the impacts of the pandemic on the occupations of typical and atypical children aged 4 to 6 and observed changes in play that corroborate our findings, most of a negative nature, such as a lack of space at home for children to move around, little variation in forms and types of play, excessive use of electronic devices, children's inability to play alone, and adults' difficulty in playing with them.

Paterson et al. (2021), in a review of studies involving children from 40 countries, found similar restrictions related to play in the pandemic context, such as reduced social participation through play, variety of play, and time spent in this occupation. Thus, it is evident that physical distancing directly affected play in all aspects. Children experienced restrictions in environments, partners, and opportunities for play, which may have hindered their development process (Pfeifer & Sant'Anna, 2022).

It is also worth noting that play is an important means of developing communication and, especially, social interaction, which is essential for the cognitive, motor, socio-emotional, and language transformations typical of the development process (Alves, 2017). Social interaction involves the encounters and exchanges established with others, and it is known that children learn about the social world through the relationships they establish with the people around them (Alves, 2017). Through interaction with peers, children build socio-cultural relationships, develop modes of behavior, and are

confronted with other perspectives, fostering self-decentralization and enabling the development of identity and autonomy (Alves, 2017; Fabiani et al., 2021).

It was found that children's social interaction with their peers was altered for all participants in this study, with 77.1% experiencing the absence or a significant reduction of in-person contact (Table 4), with video calls being the main means of interaction. However, when considering Piaget's Cognitive Development Theory, it is observed that the children studied were in the preoperational stage (2 to 7 years), when development and learning occur through concrete experiences (Papalia & Feldman, 2013). Consequently, it is inferred that maintaining peer contact virtually, although relevant in mitigating the harmful effects of the rupture of social interaction (Berbet et al., 2021), did not reach the complexity and potential for social and emotional development provided by in-person exchanges (Tíscar-González et al., 2022).

Similarly, children's interaction with close relatives decreased considerably (45.7%) or was absent (31.4%) during the period investigated (Table 4). These findings are consistent with those obtained by Betti (2021) and reported by Betti et al. (2023), who identified that most children (66.5%) lost in-person contact with significant others and missed these relatives. Consequently, children may have become more susceptible to feelings of anxiety, longing, and insecurity due to the distancing from people with whom they had emotional bonds (Berbet et al., 2021).

Changes in the child's interaction with the caregiver were widely reported (91.4%), with most (71.4%) indicating that the child became more attached and closer (Table 4). It is observed that, considering the child development process, some of these changes appeared to have a positive nature while others presented an adverse nature.

Among the changes that appear to have been positive, the following stand out: an increase in the time of interaction between the participant and the child (60%), improvement in the quality of this interaction (42.8%), and an increase in explicit affection between them (34.3%) (Table 4). Betti (2021) presented similar results, with 44.8% of participants reporting that their children sought greater interaction with adults, and 34.5% indicating they had more time and opportunity for moments of interaction with the family. Adults became the main play partners for young children (ages 4 to 9) during the first year of the pandemic (Fabiani et al., 2021). For many families, the confinement period represented an opportunity to strengthen bonds and deepen connections through interaction and play (Betti, 2021; Berbet et al., 2021).

On the other hand, the changes that seem to have taken on a more adverse nature included the child demanding more attention (62.8%) and becoming more dependent on the parents (28.6%), which might have contributed to the caregivers' sense of overload. This may explain the decrease in participants' patience with the children (37.1%) and the increase in reprimands (34.3%) compared to the pre-pandemic period (Table 4). According to Aydogdu (2020), parents may have become more irritated, impatient, and nervous because of the new demands imposed by the pandemic context, such as adapting to sudden routine changes, providing full-time care and attention to their children during home confinement, and balancing these tasks with remote work or unemployment conditions.

Table 4. Changes in the child's social interaction with peers, relatives, and the caregiver between March and July 2020.

Variables	n=35	%
Changes in the child's interaction with peers		
Yes	35	100
No	0	0
Types of change*		
In-person contact was absent	14	40
In-person contact significantly decreased	13	37.1
In-person contact slightly decreased	8	22.8
Changes in the child's interaction with close relatives		
Yes	33	94.2
No	2	5.7
Types of change*		
In-person contact significantly decreased	16	45.7
In-person contact was absent	11	31.4
In-person contact slightly decreased	6	17.1
Changes in the participant's interaction with the child		
Yes	32	91.4
No	3	8.6
Types of change*		
The child became more attached to the participant	25	71.4
The child began to demand more attention	22	62.8
Increase in interaction time	21	60
Improvement in the quality of interaction	15	42.8
Decrease in the participant's patience with the child	13	37.1
Increase in explicit affection between the child and the participant	12	34.3
The participant began to reprimand the child more	12	34.3
The child became more dependent	10	28.6
The participant perceived themselves as more tolerant with the child	7	20
Decrease in interaction time	5	14.3
Decrease in the quality of interaction	5	14.3
The participant perceived themselves as less tolerant with the child	4	11.4

*There is overlap in the responses.

Another occupation that, in childhood, is closely related to play is the practice of physical activities, which in the preschool phase manifests through movements such as running, jumping, climbing, dancing, among others (Coelho, 2017, 2021). Through these activities, preschoolers develop various skills, explore environments, solve problems, interact, create bonds, and participate socially (Coelho, 2017).

The practice of physical activity by children was altered, a fact referred to by 80% of our participants, who primarily indicated a considerable decrease in the performance of this type of activity (62.8%) and its variety (37.1%) (Table 5). Sá et al. (2021) investigated the time Brazilians up to 13 years old dedicated to outdoor physical activities and screen time between March and April 2020. They obtained congruent results, as they found a reduction in the practice of physical activities, in play with or

without associated physical activity, and an increase in screen time by over 70% compared to the pre-pandemic period. Other studies also reported a reduction in children's physical activities alongside an increase in screen exposure time during the pandemic period (Carroll et al., 2020; Molleri et al., 2023; Xiang et al., 2020).

It is considered that the development of the motor skill repertoire becomes progressively more complex, enabling more appropriate and effective responses to the challenges of everyday life (Palma et al., 2021). Therefore, motor experiences need to be fully lived, so that children can achieve better levels of agility, endurance, balance, strength, speed, among other skills that impact manipulation, locomotion, and body stabilization abilities (Coelho, 2017).

Considering the preschool age group, Guan et al. (2020) clarify that the practice of these activities occurs mainly through interactions in the school environment, in physical education, during recess, in outdoor play, through active transportation to school, and in extracurricular sports activities. They add, however, that it is at home where sedentary behaviors, such as screen activities, tend to accumulate. In the pre-pandemic routine, it was still possible to achieve some balance between active and sedentary behaviors, as daily tasks and the school environment demanded more active behavior. However, during home confinement, there was an increase in sedentary behaviors to the detriment of more active ones (Guan et al., 2020).

The WHO guidelines for physical activity, sedentary behavior, and sleep for children under 5 years old indicate that preschoolers aged 3 to 4 years should engage in 180 minutes of physical activity daily, of which at least 60 minutes should be of moderate to vigorous intensity (which makes the child out of breath), and they should not spend more than one hour in front of screens per day (World Health Organization, 2019). These recommendations support the guidance of the Sociedade Brasileira de Pediatria (2019), which suggests limiting screen time to a maximum of one hour per day for children between 2 and 5 years old. The results of this and other studies (Betti, 2021; Carroll et al., 2020; Molleri et al., 2023; Sá et al., 2021; Stienwandt et al., 2022; Xiang et al., 2020) indicate that these limits were not met during the pandemic.

Another aggravating factor, when considering the effects of the pandemic on children's health and development, concerns the impacts on sleep and eating occupations.

Sleep is an occupation that takes on a restorative and health-supporting role (American Occupational Therapy Association, 2020) and is a fundamental aspect of the physiological process for well-being and development in childhood (Hermes et al., 2022; Lopes, 2015). The sleep routine of children was altered for 68.6% of caregivers, with changes in sleep schedules (51.4%) being the main observed modification, followed by increased resistance from children to sleep or wake up (37.1%) (Table 5). Baptista et al. (2021) and Zreik et al. (2021) also identified changes in the sleep routine of preschoolers; however, a minority of their participants, 42.7% and 30%, respectively, reported problems or a worsening in children's sleep quality.

Sleep plays a significant role in brain functioning, cognitive performance, immune function, mood regulation, metabolism, and appetite control (Hermes et al., 2022; Lopes, 2015). These studies further explain that sleep debt increases the need for energy intake and palatable foods containing sugars and fats, leading to more sedentary behavior during the day. Moreover, Hermes et al. (2022) indicate that both reduced sleep hours and the habit of going to bed late are associated with a poor-quality diet, which promotes less healthy eating habits.

Table 5. Modifications in children's self-care occupations (eating, physical activity, and sleep) between March and July 2020.

Variables	n=35	%
Change in eating routine		
Yes	31	88.6
No	4	11.4
Types of changes*		
Difficulty in maintaining an organized eating routine	18	51.4
Greater need for help with eating	15	42.8
Difficulty in accepting food	13	37.1
Difficulty in stopping to eat	10	28.6
Increased appetite	10	28.6
Decreased appetite	4	11.4
Change in physical activity routine		
Yes	28	80
No	7	20
Types of changes*		
Considerable decrease in the practice of these activities	22	62.8
Decrease in the variety of physical activities	13	37.1
Decrease in the child's interest in this type of activity	5	14.3
Small decrease, even when restricted to the home environment	5	14.3
The child spent more time stationary and was less motivated	3	8.6
The child became tired more easily and/or spent less time engaged due to tiredness	3	8.6
Other	2	5.7
The child began doing physical activities in more open and isolated environments	1	2.8
Change in sleep routine		
Yes	24	68.6
No	11	31.4
Types of changes*		
Change in sleep schedule(s)	18	51.4
Greater resistance to sleep and/or waking up	13	37.1
Less sleep time	6	17.1
Inconsistent sleep routine	5	14.3
Woke up more frequently than usual during the night	5	14.3
Had more nightmares than usual	3	8.6
Needed parents' presence	3	8.6
Began to sleep for longer periods	2	5.7

*There is overlap in the responses.

The mothers in Betti's (2021) study pointed out that the change in sleep schedules during the pandemic was the biggest challenge related to this occupation, while in terms of eating, the main difficulty was the constant demand for less healthy foods, as well as the lack of routine and meal organization. Similarly, 88.6% of the participants in this study reported changes in children's eating habits, with the most prominent challenges being the difficulty in maintaining an organized eating routine (51.4%), the greater

need to assist the child during meals (42.8%), and the difficulty in the child's acceptance of food (37.1%) (Table 5).

In Carroll et al.'s (2020) study, 51% of parents reported that their children's eating habits changed during the pandemic, with 42% stating that their child started eating more and 55% indicating an increase in the consumption of snacks and junk food. Philippe et al. (2021) investigated the eating habits of French children (ages 3 to 12) and found that 60% of participants presented changes in these habits during the pandemic. The children showed an increased frequency of eating or demanding food as an emotional response (such as to anxiety and boredom), a greater anticipation for meals and snacks, an increase in appetite, and a higher frequency of snacking between meals compared to the pre-pandemic period. They also detected a statistically significant increase in the consumption of unhealthy foods (food rich in sugar and fat and ultra-processed foods).

The lack of an organized eating routine, the difficulty in accepting healthy foods, and the increased consumption of ultra-processed foods, combined with the decrease in physical activity and the rise in sedentary behaviors, can hinder the establishment of good eating habits in childhood and might affect eating habits throughout life – determinants of health and well-being (Hermes et al., 2022; Lopes, 2015).

Given this, the constant and prolonged exposure to lower levels of physical activity, deprivation in leisure, play, and social interaction, in addition to excessive screen time, combined with the changes in eating and sleep observed in this study, may have caused deleterious effects on children worldwide. This becomes particularly relevant for public actions and policies to be strengthened and directed toward mitigating the adverse effects that this context may have caused on childhoods in Brazil.

Final Remarks

All the childhood occupations investigated were impacted during the initial phase of the pandemic. Significant restrictions were detected in play, a primary and fundamental occupation in childhood, which is extremely important for the process of motor, cognitive, emotional, and social development during this period. Social interaction with peers and significant relatives, as well as children's leisure—occupations that, like play, are important for the child's mental health and provide opportunities for developing socioemotional skills—also faced limitations during the COVID-19 pandemic.

There was also a considerable decrease in physical activities, which, at three years old, primarily occur through motor play, which is in full expansion and offers stimuli for learning and refining motor skills. At the same time, screen time increased. This combination can cause harm to development and health, as it fosters childhood sedentary behavior. The occupations of eating and sleeping, essential for maintaining health and well-being, were negatively affected for most children, which may have hindered their emotional regulation and interfered negatively with the adoption of healthy habits throughout life.

This study identified that the transformations that occurred negatively impacted, especially, the form, quality, and quantity of the activities performed in the everyday lives of the children investigated. The diversity of environments and interactions, so fundamental for the development of preschoolers, was suspended or severely limited

during this period. Thus, the findings suggest that the children experienced a process of occupational disruption during the initial phase of the pandemic, which may have caused harm to their health and well-being.

It is important to clarify that the harm to the child development process raised in this study does not only refer to developmental changes or delays but also to restrictions on opportunities that promote this process, imposed by the pandemic. Therefore, experiencing the pandemic context may have taken on the role of a force that disempowered child development.

It is acknowledged that this research has limitations. The small sample size and non-probabilistic sampling prevent the generalization of the results, and the high socioeconomic status of the participants reflects a social reality different from that of most of Rio de Janeiro's population. Nevertheless, this study provides important information about the changes in the occupations experienced by 3-year-old preschoolers with socioeconomic conditions similar to those of our participants.

Furthermore, there might have been recall bias, as the data collected refers to the period from March to July 2020, while the data collection occurred between December 2020 and March 2021, which may compromise the internal validity of the study. However, the exceptional nature of the pandemic and the physical distancing measures in the Brazilian context seem to mitigate this bias, and therefore, it is believed that the data obtained represent the participants' experiences. Social desirability bias may have also increased the predisposition of some participants to provide socially accepted and deemed appropriate responses in the questionnaire.

In conclusion, despite these limitations, the results contribute to a broader understanding of how preschoolers' occupations were altered and restricted during the pandemic.

This study may be useful to enrich and inspire future research related to the unprecedented and prolonged experience of the pandemic context, as well as the occupational restrictions in childhood, health, well-being, and child development. Studies of this nature are relevant not only to strengthen and expand public policies related to health, education, and social assistance, aimed at mitigating the adverse effects of the pandemic on child development, but also to prepare these sectors for future situations that may require restrictions similar to those imposed by the pandemic scenario.

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Author's Contributions

Carolinne Linhares Pinheiro was responsible for the production, analysis, and discussion of the data, as well as the writing of the manuscript. Sylvia Gois Santos Vitorio contributed to the analysis and discussion of the data and the writing of the manuscript. Mirela de Oliveira Figueiredo was responsible for reviewing the text and contributed to the final writing of the manuscript. All authors approved the final version of the text.

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Corresponding author

Carolinne Linhares Pinheiro
e-mail: carolinne.pinheiro@ifrj.edu.br

Section editor

Profa. Dra. Patrícia Leme de Oliveira Borba