

THE MENTAL HEALTH OF CHILDREN DURING THE COVID-19 PANDEMIC: AN INTEGRATIVE REVIEW

SAÚDE MENTAL DE CRIANÇAS NA PANDEMIA DA COVID-19: REVISÃO INTEGRATIVA

LA SALUD MENTAL DE LOS NIÑOS EN LA PANDEMIA DE COVID-19: REVISIÓN INTEGRADORA

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ABSTRACT

Objective: to analyze the scientific evidence on the repercussions of the COVID-19 pandemic on the mental health of children and their coping strategies. **Method:** this is an integrative literature review study in the SciELO, Lilacs, Scopus, and Medline databases. The search found a total of 6,094 articles. After applying the eligibility criteria, 12 articles were composed for the review. **Results:** the results showed that the main repercussions for mental health were: anxiety, stress, depressive symptoms, hyperactivity, irritability, changes in sleep patterns, mood states, social distancing, behavior changes, decrease or lack of connection with peers, and increased screen time. The following coping strategies were identified: open and explanatory dialogues between parents and children about the pandemic and the coronavirus, regulation of sleep patterns and screen time, regular physical activity, improvement in the quality of remote teaching and universal access to classes, and implementation of public policies and actions in the health. **Conclusion:** it was concluded that children are already suffering from these repercussions, which could affect their mental and physical health, raising the need to organize coping strategies at the population level that minimize damage in the post-pandemic period.

Keywords: Mental Health; Coronavírus; COVID-19; Pandemics; Child.

RESUMO

Objetivo: analisar as evidências científicas sobre as repercussões da pandemia da COVID-19 para a saúde mental de crianças e suas estratégias de enfrentamento. **Método:** estudo do tipo revisão integrativa de literatura nas bases de dados SciELO, Lilacs, Scopus e Medline. A busca resultou em um total de 6.094 artigos; após aplicação dos critérios de elegibilidade, 12 artigos compuseram a revisão. **Resultados:** os resultados mostraram que as principais repercussões para a saúde mental foram: ansiedade, estresse, sintomas depressivos, hiperatividade, irritabilidade, alterações no padrão do sono, estados de humor, distanciamento social, alterações de comportamento, diminuição ou ausência de conexão com os pares e aumento do tempo em tela. Foram apontadas como estratégias de enfrentamento: diálogos abertos e explicativos entre pais e filhos acerca da pandemia e do coronavírus, regulação do padrão de sono e do tempo em tela, prática de atividade física regular, melhora da qualidade do ensino remoto e universalidade do acesso às aulas e implementação de políticas públicas e ações em saúde. **Conclusão:** concluiu-se que as crianças já estão sofrendo com essas repercussões, as quais poderão afetar sua saúde mental e física, surgindo a necessidade de organizar estratégias de enfrentamento a nível populacional que minimizem os danos no período pós-pandemia.

Palavras-chave: Saúde Mental; Coronavírus; COVID-19; Pandemias; Criança.

RESUMEN

Objetivo: analizar las pruebas científicas sobre las repercusiones de la pandemia de COVID-19 en la salud mental de los niños y sus estrategias de afrontamiento. **Método:** revisión bibliográfica integradora en las bases de datos SciELO, Lilacs, Scopus y Medline. La búsqueda dio como resultado un total de 6.094 artículos; tras aplicar los criterios de elegibilidad, 12 artículos componían la revisión. **Resultados:** los resultados mostraron que las principales repercusiones para la salud mental fueron: ansiedad, estrés, síntomas depresivos, hiperactividad, irritabilidad, cambios en el patrón de sueño, estados de ánimo, retraimiento social, cambios de comportamiento, disminución o ausencia de conexión con los compañeros y aumento del tiempo de pantalla. Se señalaron como estrategias de afrontamiento las siguientes: diálogos abiertos y explicativos entre padres e hijos sobre la pandemia y el coronavirus, la regulación de los patrones de sueño y del tiempo de pantalla, la actividad física regular, la mejora de la calidad de la educación a distancia y el acceso universal a las clases y la implementación de políticas y acciones públicas en materia de salud. **Conclusión:** se llegó a la conclusión de que los niños ya están sufriendo estas repercusiones, que podrían afectar su salud mental y física, y que es necesario organizar estrategias de afrontamiento a nivel de la población para minimizar los daños en el periodo pospandémico.

Palabras clave: Salud Mental; Coronavírus; COVID-19; Pandemias; Niño.

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INTRODUCTION

Coronaviruses are a family of viruses that can infect humans. At the end of 2019, there was the manifestation of a new coronavirus, called Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), detected in China. The disease caused by the virus was called COVID-19 (Coronavirus Disease 2019), whose transmission can occur through the air, through personal contact with secretions, and contaminated objects or surfaces.¹ The COVID-19 pandemic was decreed in March 2020 by the World Health Organization (WHO). At that time, there were more than 118,000 cases of virus infection in 114 countries and 4,200 deaths. However, these numbers have grown, exceeding five million deaths.^{2,3}

Due to the contaminating potential of the new coronavirus, the severity of the disease, and the absence of effective treatment against COVID-19, disease prevention measures were established in the world and Brazil, with recommendations from the World Health Organization (WHO), the Organization Pan American Health Organization (PAHO), the Brazilian Society of Pediatrics (SBP) and the Ministry of Health (MH). An important measure of protection instituted was social distancing, whose main purpose was to reduce contact between people and, consequently, the transmission of the virus. This measure changed daily life, with the closure of most work, leisure, and education environments.^{1,4}

Such distancing can harm the daily lives of the population, including children and adolescents. Studies indicate that confinement at home can impact the mental health of children and adolescents since they are subject to stressors such as fear of infection; the impossibility of leisure outside the home; frustration and boredom; increased exposure to electronic devices; inadequate information; lack of personal contact with colleagues, friends, and teachers; lack of personal space at home; and financial loss in the family. Furthermore, the increase in the time spent together and the tensions in interpersonal relationships can lead to an increase in violence against children and adolescents.⁵⁻⁷

The concept of mental health is broad, characterized not only by the absence of mental disturbance but also by the ability to face the challenges and changes of everyday life with balance. The WHO states that rapid social change is associated with poor mental health, making its promotion, protection, and restoration vitally important.⁸

During the pandemic period, ongoing stress-related or not to COVID-19 - can change the way children respond to future challenges, including school reintegration. There is a possibility that the consequences of this period are long-lasting, but not necessarily chronic, and may also be presented by children who seemed to be well-adapted.⁹ A study carried out in China showed an association between an increase in depressive symptoms in children and a reduction in outdoor activities.¹⁰

Considering that the COVID-19 pandemic can harm emotional and psychological issues in children's lives, the need to investigate children's mental health has arisen. Thus, this study aimed to analyze the scientific evidence on the repercussions of the COVID-19 pandemic on the mental health of children and their coping strategies.

METHOD

This is an integrative literature review, which allows the synthesis of available research on a given topic and guides the practice based on scientific knowledge, which can generate relevance for Nursing and public health.¹¹

The research was divided into six phases: (1) elaboration of the guiding question; (2) search or sampling in the literature; (3) data collection; (4) critical analysis of included studies; (5) discussion of results; and (6) presentation of the integrative review.¹¹ The PICO strategy was used: Population (children), Interest (repercussions for mental health and coping strategies), and Context (COVID-19 pandemic). As a result, we obtained the following guiding question: *"What are the repercussions of the COVID-19 pandemic for the mental health of children and their coping strategies?"*

The bibliographic survey was carried out between January and March 2021, through access to the following databases: Scientific Electronic Library Online (SciELO), *Literatura Latino-Americana e do Caribe em Ciências da Saúde (Lilacs)*, Scopus e Medical Literature Analyses and Retrieval System Online (Medline) via PubMed. The study included articles available in full that answered the research question and that had been published between 2020 and 2021, considering the period of the discovery of the virus and the beginning of the pandemic. Exclusion criteria were: review or reflective articles; letter to the editor; historical articles; reviews; undergraduate final papers; theses; dissertations; and articles whose assessment of methodological rigor resulted in a score lower than 6. Repeated articles were counted only once.

From the Descriptors in Health Sciences (DeCS/MeSH), the following descriptors and their equivalents in the English language were used: *saúde mental*/mental health, COVID-19, *coronavírus*/coronavirus, *isolamento social*/social isolation, *pandemias*/pandemics, and *criança*/children.

To systematize sample collection, we used the advanced search form, respecting the peculiarities and distinct characteristics of each database. The combinations were made using the Boolean operator AND, as shown in Table 1. An independent researcher performed the search and standardized the sequence of use of descriptors and crossings in each database.

To ensure a broad search, all the articles were accessed through the journals portal of the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES). The article selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. We used the tool adapted from the Critical Appraisal Skills Program (CASP),¹² which allows for a systematic assessment of methodological rigor. The tool has 10 criteria, and we only included in this review articles with a score greater than or equal to 6. The level of scientific evidence was also measured.¹³

We search for the articles by crossing the descriptors in the selected databases, resulting in a total of 6,094 articles. Figure 1 summarizes the article selection process. After applying the eligibility criteria, we selected 63 articles to evaluate the methodological rigor and application of the CASP, in which 26 articles obtained a score greater than or equal to 6. Among them, 12 articles answered the guiding research question and met the objective of the study, completing the final sample.

During the discussion, we considered the results found in the selected studies based on the recommendations of the World Health Organization (WHO), *Organização Pan-Americana de Saúde* (OPAS), *da Sociedade*

Brasileira de Pediatria (SBP) and the Ministry of Health. (MS-Ministério da Saúde).

RESULTS

The studies of the final sample were developed in nine different countries, four in China and one in each of the following countries: Ireland, Brazil, India, France, Germany, Spain, Italy, and Turkey. Ten were in English, one in French, and one in Spanish. Regarding the year of the study, eight were published in 2020 and four in 2021.

In the methodological design, 11 studies were cross-sectional and one with Interpretive Phenomenological Analysis (IPA), with the application of online questionnaires and/or interviews with children of different ages and with the presence of parents or guardians. Two studies were carried out with a purely qualitative approach; the others were qualitative and quantitative. Regarding the level of evidence, studies A1, A2, A3, A5, A8, A9, A10, A11, and A12 were qualified with a level equal to VI. Study A4, A6 equal to IV and A7 were level II.¹³

Due to the need for distancing, no intervention was applied, with coping strategies being indicated according to the mental health repercussions that we observed. Table 2 shows the synthesis of the information and the main results, which presents the information of the 12 selected articles, identified from A1 to A12 in alphabetical order of the title. They were also separated by year of publication, country, objective, type of study, target audience and sample, level of evidence, main psychological repercussions, and coping strategies.

DISCUSSION

The articles included in this integrative review presented a diversified sample and approach in different countries. We found that, as discussed in the scientific

Table 1 - Search for publications according to the combination of descriptors in the respective databases

	SciELO	Lilacs	Scopus	Medline	Total
Mental health AND child AND COVID-19	2	9	776	260	1,047
Mental health AND child AND coronavirus	1	7	628	214	850
Mental health AND child AND social isolation	2	1	1,326	56	1,385
Social isolation AND pandemic AND child	2	4	434	127	567
Mental health AND pandemic AND child	3	6	838	234	1,081
Mental health AND pandemic AND social isolation	18	18	1,030	98	1,164
TOTAL	28	45	5,032	989	6,094

Source: Authors' creation

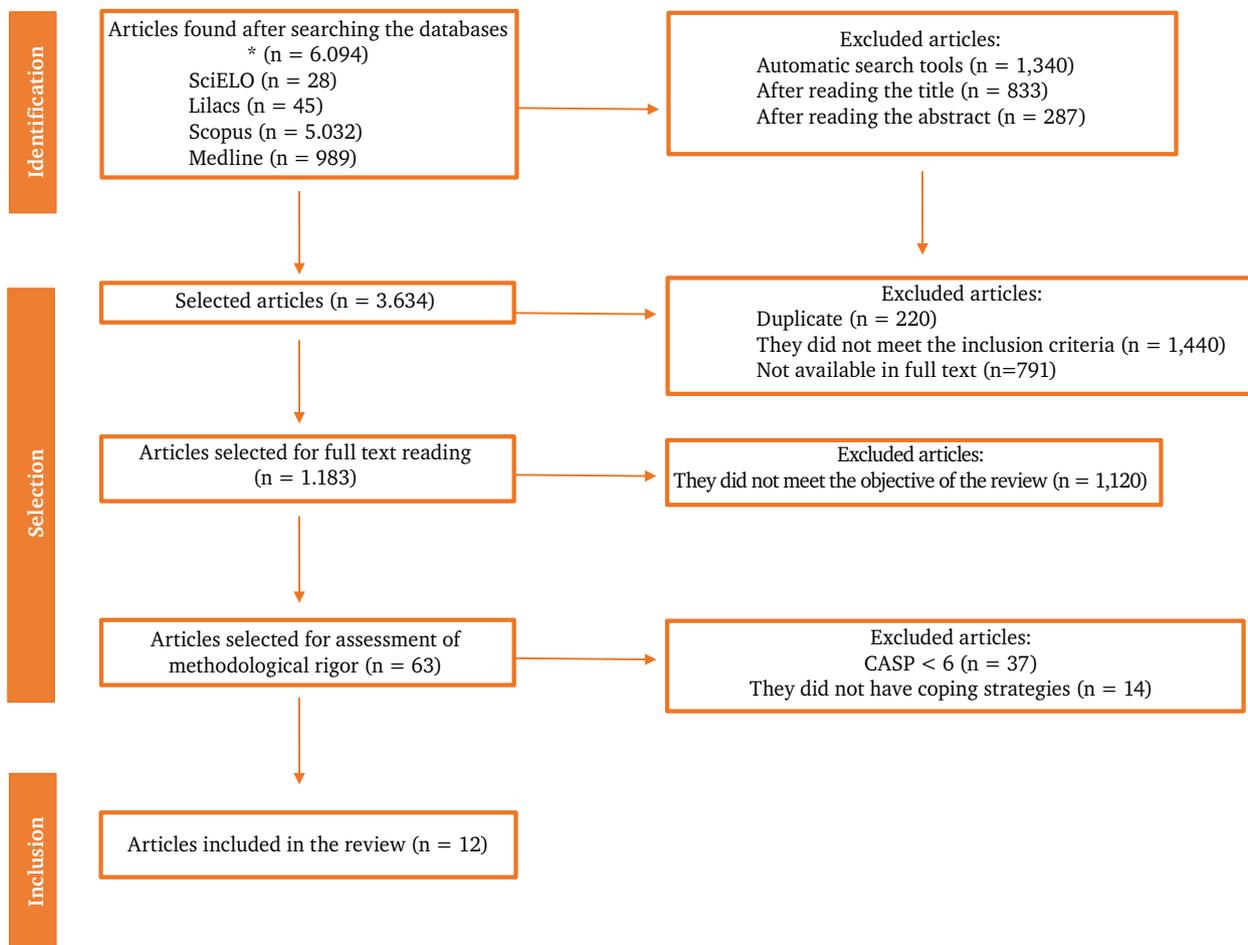


Figure 1 - PRISMA Flowchart
Source: Authors' creation

literature, the findings on mental health repercussions for children in the COVID-19 pandemic were also varied. We decided to divide this discussion into the following subtopics to be more clear: Mental health repercussions and Coping strategies.

Repercussions on mental health

Children are a more vulnerable group, especially in the current scenario. For this reason, it is important to always be aware of the factors that can be negative. Social, environmental and routine changes can have a significant impact on children, especially on mental health.^{14,15} In the analyzed studies, the main repercussions observed were anxiety, depressive symptoms, and stress. The prevalence of negative psychological effects varied, but they were assessed as relevant in most articles.

The studies of the sample showed that, in addition to the importance of children's mental health, it is necessary

to give children space and listen to how they describe their experiences, emotions, and perspectives during the pandemic. The possible associations derive from the number of people in the house; the age and level of education of the person responsible for the child - it is important to assess whether they had essential jobs -; the financial situation; and the mental health of the parents or caregivers, with positive differences among those with a good family structure.¹⁵⁻¹⁷

In study A11, carried out in different regions of China, with a sample of 668 participants, 46.7% of children were being psychologically affected by the reality of COVID-19.¹⁶ Study A7, carried out in Germany, with a sample of 1,586 participants, pointed out that 70.7% felt oppressed by COVID-19.¹⁷

The A3 study, with a sample of 289 children, aimed to assess the prevalence of anxiety and its associated factors and used two measurement scales: Childen's Anxiety Questionnaire (CAQ) and the Numerical Rating Scale

Table 2 - Synthesis of articles and main results

Identification, Title, Country, and Year	Objective	Study type, Target audience, and level of evidence	Repercussions	Coping strategies
A1 A Qualitative Study of Child and Adolescent Mental Health during the COVID-19 Pandemic in Ireland Irlanda, 2021	To understand the experiences of children and adolescents during COVID-19	Interpretive Phenomenological Analysis (IPA) Methodology, qualitative approach. The sample consisted of 48 families, totaling 94 people. The instrument used was a semi-structured interview. Level of Evidence: VI	Feelings of social isolation, depression, anxiety, and increased maladaptive behavior. Children with Autism Spectrum Disorders (ASD) showed increased mental health difficulties, mainly due to changes in routine	The study indicates specialized support systems and implementation of public policies. Children with ASD will need support to re-establish routine and be able to withstand the transition back to pre-pandemic times
A2 Association between Physical Activity and Mood States of Children and Adolescents in Social Isolation during the COVID-19 Epidemic China, 2020	To examine the impacts of social isolation on physical activity (PA) levels and mood states of children and adolescents and explore the correlation between them during the COVID-19 epidemic	Observational, transversal, and analytical with a qualitative and quantitative approach. It was a sample of 9,979 children and adolescents, most between 10 and 13 years old. PA and mood states were measured using the International Physical Activity Questionnaire Short Form (IPAQ-SF) and Profile of Mood States (POMS), respectively. Level of Evidence: VI	The four negative POMS subscales (Anger, Fatigue, Depression, and Confusion) and total mood disturbance in the moderate and high PA groups were significantly lower than in the low-level PA group. The study reveals that the higher the level of PA, the better the mood states	Implementation of policies on physical activity and mood health in the pandemic and post-pandemic period
A3 Children's Anxiety and Factors Related to the COVID-19 Pandemic: An Exploratory Study Using the Children's Anxiety Questionnaire and the Numerical Rating Scale Brasil, 2020	To assess the prevalence of anxiety in Brazilian children and its associated factors during social distancing by COVID-19	Observational, transversal with online research and qualitative and quantitative approach. The age range was from 6 to 12 years old. The instruments used to measure anxiety levels were the Children's Anxiety Questionnaire (CAQ; scores from 4 to 12) and the Numerical Rating Scale (NRS; scores from 0 to 10). Level of Evidence: VI	Based on CAQ \geq 9, the prevalence of anxiety was 19.4% (n = 56); Based on NRS > 7, the prevalence of anxiety was 21.8% (n = 63), which was associated with the type of employment of the parents or guardians, whether social distancing was done with the parents and the number of people living in the place and also the level of education of parents or caregivers	Implementation of public health actions aimed at these parents and children at the population level
A4 Compliance and Psychological Impact of Quarantine in Children and Adolescents due to COVID-19 Pandemic India, 2020	To examine a cohort of children and adolescents quarantined during the 2019 coronavirus disease outbreak in India and to describe their understanding, compliance, and psychological impact of the quarantine experience	Cross-sectional observational study carried out with 121 children and adolescents, between 9 and 18 years old, who were in isolation. Their results were compared with those of 131 children and adolescents from the same location and family background, but who were not isolated. Level of Evidence: IV	Those in isolation experienced greater psychological distress. Worry (68.59%), helplessness (66.11%), and fear (61.98%) were the most common feelings. also, knowledge about preventive measures was scarce	A multi-professional network is suggested that can minimize the psychological impact of isolation experiences. In addition to increasing access to information in a way that children can understand and providing a mobile phone or other means of communication between people in isolation and their loved ones

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Table 2 - Synthesis of articles and main results

Identification, Title, Country, and Year	Objective	Study type, Target audience, and level of evidence	Repercussions	Coping strategies
A5 Comment les enfants et adolescents avec le trouble déficit d' attention/ hyperactivité (TDAH) vivent-ils le confinement durant la pandémie COVID-19? França, 2020	To understand the mental health status of children and adolescents with attention deficit hyperactivity disorder (ADHD) during confinement	The study was observational, cross-sectional, and analytical with a qualitative approach, with a sample of 538 patients who responded to an anonymous online survey with discursive questions and multiple-choice, the mean age of the children was 10.5 years old. Level of Evidence: VI	Most children and adolescents experienced better well-being, decreased anxiety, and improved self-esteem, according to their parents. Children whose condition deteriorates have behavioral and emotional difficulties	In these children, whose "outside" is a source of conflict and stress, returning to school must be careful. Encourage drug and non-drug treatment, as well as the use of telehealth for psychological consultations
A6 Impacto de la COVID-19 en niños con trastorno del espectro autista Espanha, 2020	To know how children with Autism Spectrum Disorder (ASD) and their families experienced social isolation during quarantine	Observational, cross-sectional, and analytical study, with an anonymous questionnaire. Sample of 99 children, 43 with ASD and 56 children in the control group. with a mean age of 10.75 years old. Level of Evidence: IV	Children with ASD showed predominantly behavioral changes, with a negative impact on the management of emotions, and higher levels of anxiety, compared to those in the control group, which expressed a mainly positive/no impact	Caregivers must maintain a routine, distribute tasks, provide new experiences and share common interests. Health professionals must be prepared for the surveillance of mental disorders during and after the pandemic
A7 Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany Alemanha, 2021	To investigate the impact of the COVID-19 pandemic on the health-related quality of life (HRQoL) and mental health of children and adolescents in Germany, from the perspective of the children	Representative study, with a qualitative and quantitative approach. The sample had 1586 participants, between 7 and 17 years old. Results were compared with data from BELLA's national, longitudinal, and representative cohort study (n=1556) conducted in Germany before the pandemic. Level of Evidence: II	Lower HRQoL (40.2% vs. 15.3%), more mental health problems (17.8% vs. 9.9%) and higher levels of anxiety (24.1% vs. 14, 9%). Children with low socioeconomic status, a history of migration, and limited space to live were significantly more affected	Strategies for the promotion and prevention of mental health in children and adolescents. It is recommended that parents talk to their children and create a daily routine that can give their children stability and security
A8 Mental health and its correlates among children and adolescents during COVID-19 school closure: The importance of parent-child discussion China, 2020	To estimate the prevalence of depressive symptoms, anxiety, stress, and levels of life satisfaction, among children and adolescents in home quarantine and to identify factors related to their mental health status	Observational and cross-sectional study. The sample had 4,391 students in elementary school (22.9%), junior high school (69.6%), and senior high school (7.4%). Schools were randomly selected in Shanghai, China. The age ranged from 6-to 17 years old. The Chinese version of the DASS-21 measured the psychological impacts and life satisfaction was measured using a specific questionnaire. Level of Evidence: VI	The highest prevalence was anxiety (24.9%), depression (19.7%), and stress symptoms (15.2%). Among elementary school students, 51.7% were concerned about being infected with COVID-19. Concerns about studies and the pandemic were negatively related and good relationships with parents and open discussions about the pandemic were related to positive results and a good general condition	Formulating tailored mental health policies and interventions to help children and adolescents deal with public health crises such as the COVID-19 pandemic. Also, it allowed to development of guidelines for parents on how to help their children during public health crises

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Table 2 - Synthesis of articles and main results

Identification, Title, Country, and Year	Objective	Study type, Target audience, and level of evidence	Repercussions	Coping strategies
A9 Sleep and Psychological Difficulties in Italian School-Age Children During COVID-19 Lockdown Itália, 2021	To investigate how restrictive measures affected sleep quality, time, and psychological difficulties of school-age children and their mothers during confinement due to coronavirus	Cross-sectional study, with a qualitative and quantitative approach. The sample had 299 mothers and their children (between 6 and 10 years old). The Italian versions of the Pittsburgh Sleep Quality Index (PSQI), Sleep Disturbance Scale for Children (SDSC), Difficulties in Emotion Regulation (DERS), and Strengths and Difficulties Questionnaire-Parent version (SDQ-P) were used. Level of Evidence: VI	During the lockdown, the children showed a marked delay in bedtime, a slight worsening in sleep quality, and an increase in emotional, behavioral, and hyperactivity symptoms	Caregivers should manage sleep quality, maintain a sleep routine, reduce the use of electronic devices close to bedtime and avoid their use in bed, practice physical activities. Implementation of prevention and intervention programs to increase the psychological well-being of children and their caregivers during epidemic situations
A10 The effect of the coronavirus (COVID-19) pandemic on health-related quality of life in children Turquia, 2020	To examine the effect of the COVID-19 pandemic on health-related quality of life in children	Cross-sectional study with a qualitative and quantitative approach, carried out with 597 children aged 7 to 13 years. The sociodemographic form and the generic health-related quality of life questionnaire for children (Kid-KINDL) were used for data collection. Level of Evidence: VI	During the pandemic, 41.5% of parents said that their child gained weight, increased the tendency to sleep (34.2%), and the tendency to use the Internet (69.3%). The children's average self-reported quality of life score was considered good (73.91 ± 8.44)	To perform physical activities an adequate and balanced diet, regular sleep routine, and Internet use at certain times of the day. Caregivers should talk about the pandemic, seeking information in trusted places
A11 The impact of COVID-19 pandemic outbreak on education and mental health of Chinese children aged 7 - 15 years: an online survey China, 2021	To assess the impact of the COVID-19 pandemic on mental health and the effectiveness and attitudes towards online education among Chinese children aged 7-15 years	Cross-sectional study, with a qualitative and quantitative approach. The sample had 668 parents or guardians of children aged 7 to 15 years old, from different regions of China. The Chinese version of the Impact of Events Scale-Revised (IES-R) and the SMFQ-P were used to measure psychological effects. Level of Evidence: VI	During the pandemic, 20.7% of children reported experiencing post-traumatic stress disorder (PTSD) and 7.2% reported depressive symptoms. In general, 79.8% of respondents are satisfied with the new education system	Authorities must optimize online education systems and implement effective interventions to address the psychological effects of COVID-19 on children
A12 The prevalence of behavioral problems among school-aged children in home quarantine during the COVID-19 pandemic in china China, 2020	To assess the prevalence of behavioral problems in school-age children during home confinement	Cross-sectional study, with a qualitative and quantitative approach. Sample of 1,264 children, ages 7 to 12, and their parents from two primary schools in Hubai, China. Behavioral problems were assessed using the Strengths and Difficulties Questionnaire (SDQ). Level of Evidence: VI	The prevalence of prosocial behaviors was 10.3%, followed by conduct problems (7.0%), problems with colleagues (6.6%), hyperactivity-inattention (6.3%), and emotional problems (4.7%). Children with physical activity have a lower risk of inattention-hyperactivity and fewer prosocial behavior problems	Practice physical exercise (at least 60 minutes a day), based on recommendations from the WHO and the National Health Commission of the People's Republic of China

Source: Authors' creation

(NRS). Its results were 19.4% and 21.8%, respectively. Among the results found, the prevalence of anxiety was higher in children with parents who had essential jobs and in those who were social distancing without parents. There was an association between the number of people living in the same house and the level of education of parents or caregivers.¹⁵

A study in the United States of America and using data from the 2016 National Survey of Child Health (NSCH) found a prevalence of only 6.6% in anxiety levels among children between 6-11 years old. This shows the importance of current studies - the difference between then and now - to be used in the design of interventions and preventive measures. The prevalence was associated, with the mental and emotional health status of parents or caregivers, among other factors, which corroborates the findings of the analyzed studies.¹⁸

In the A4 comparative study, carried out in India, the first group was composed of 121 children and adolescents in isolation (either at home or in specialized centers), and the second group was composed of 131 children, whose families maintained social distancing but were not in isolation. In both groups, high levels of stress were found, and in the group in isolation, 68.59% were concerned about their condition, even though some of them showed fear of contaminating other people. Most of the two groups reported that the most difficult activity to perform was not leaving the house to socialize, whether with friends or relatives.¹⁹

The grouping between peers, whether at the same or different ages, allows the person to share experiences and learn with the other, building and/or rebuilding their identity, with a coexistence based on human values.²⁰ Some parents noticed that their children developed increased negative or maladaptive behavioral changes after the restrictions of face-to-face social interaction. Children were stressed when performing remote teaching tasks and for missing the dynamics of face-to-face teaching.¹⁴

Similar to the findings above, study A7, carried out in Germany with 1556 children and adolescents, showed that participants felt impaired in their relationships with friends and believed they had fewer social interactions. In this group, 40.2% had a low quality of life-related to health, and it was worse in the youngest when the group is compared with each other.¹⁷ Therefore, it is of great importance to maintain this relationship so that children can present an effective social and cognitive development.¹⁵

We observed the need for social interaction, highlighting the danger of the transmission of the coronavirus. One of the survey studies rated understanding, compliance, and knowledge about the COVID-19 pandemic as “deficient” among its participants. Also, most reported difficulties in maintaining social distance, which can increase the risk of contamination for the family and the community.¹⁹

In China, study A8 carried out with 4,342 children and adolescents, discussed the importance of a good bond and family discussion about the COVID-19 pandemic. Those who fulfilled these characteristics showed more satisfaction with life and fewer negative repercussions for mental health. There were some positive repercussions in which 21.4% of the participants claimed to be more satisfied with their current life. Despite this, 24.9% had symptoms of anxiety, which demonstrates that even those who are generally feeling well experienced negative impacts.²¹

We found a relationship between negative psychological symptoms and worsening sleep quality. Study A9, carried out in Italy with 299 children and their mothers, revealed that both groups were sleeping and waking up later. An increase in emotional, behavioral, and hyperactivity symptoms was also observed in children, which was associated with a change in the quality of sleep during the current scenario.²² In Turkey, study A10, with 597 participants, also evaluated the impact of the pandemic on sleep patterns, showing that 34.2% of participants had an increase in sleep time and 69.3% increased screen time, which also showed low percentages of self-esteem and physical and emotional well-being.²³

Sleep quality is recognized as an indicator of health, and environmental and social factors can affect it. Thus, the importance of preserving sleep health during the pandemic is highlighted. In the studies analyzed, we could identify that an ineffective sleep pattern is associated with adverse physical and mental health outcomes. This pattern can also increase behavioral health risk factors, such as increased screen time and physical inactivity.^{24,25}

Study A11 investigated the symptoms of Post-Traumatic Stress Disorder (PTSD), which aimed to assess online education, the prevalence of PTSD, symptoms of depression, and their associated factors. In general, 46.7% claimed to have been psychologically affected, 35.8% emotionally, and 34% socially affected. PTSD symptoms were found in 20.7% of the children, with 7.16% also having depressive symptoms.¹⁶ The results referring to factors associated with children’s education level, school system, living conditions, the province where they live and the

profession of the parents show significant association with PTSD symptoms. Children living with their parents showed better psychological and emotional conditions. As for online education, 44.3% considered it effective, but many were not comfortable with this teaching method, mainly for financial reasons, and not being able to participate effectively. There was special concern about the consequences that this change in the way of teaching could cause.¹⁶

Other aspects can affect the mental and physical health of children, as observed in study A10. In this study, 41.5% of the participants had weight gain as a result of the decrease in physical activity provided by the school environment, resulting in a sedentary lifestyle. We observed that children who did not gain weight showed greater physical and emotional well-being.²³

Study A12 was carried out in two elementary schools in China, with 1,264 children and their parents. It aimed to assess the prevalence of behavioral problems in school-age children during home confinement. The prevalence of prosocial behaviors was 10.3%, followed by total difficulty (8.2%), conduct problems (7.0%), problems with colleagues (6.6%), hyperactivity-inattention (6.3%), and emotional problems (4.7%). Children who performed physical activity had a lower risk of inattention-hyperactivity and fewer prosocial behavior problems.²⁶

In study A2, which aimed to examine the impacts of social isolation on Physical Activity (PA) levels and mood states of 9,979 children and adolescents in China, the average of Moderate to Vigorous Physical Activity (MVPA) was 23, 19 minutes a day, and below the recommended by the WHO. The results suggested that MVPA decreased when compared to pre-pandemic studies. We found that the higher the PA level, the better the mood state and the level of self-esteem.²⁷

Children with pre-existing disorders may be more susceptible to negative psychological effects during the pandemic. In study A1, developed in Ireland, children with Autism Spectrum Disorder (ASD) present specific challenges related to routine interruption, resulting from mental and emotional vulnerability. Parents feared that so much time away from routine could affect the return to the school environment, which could generate even more anxiety and stress.¹⁴

Study A6 carried out in Spain, analyzed the experience of isolation during the pandemic in children with and without ASD. In the group of children with ASD, 72.1% of the cases showed changes in behavior; while, in the control group, 67.9% showed no changes. Anxiety and irritability were the main findings in children with ASD.

Those who did not maintain their routines had higher average levels of anxiety and lower values of adaptability to the quarantine.²⁸

The findings of studies A1 and A6 show a possible psychological impact on children with ASD arising from the changes caused by the pandemic. In addition to the numbers already presented, there was an increase in symptoms of obsession, hostility, and impulsivity. The results support the hypothesis that children with ASD are obsessed with routine and rituals and maybe a risk group for mental health in the pandemic scenario.^{14, 28}

Children with Attention Deficit Hyperactivity Disorder (ADHD) are another group potentially vulnerable to the changes resulting from the pandemic. In the French study (A5), a sample of 533 children with ADHD and their parents showed that 34.71% of the participants reported a worsening in their behavior, with an increase in symptoms of opposition and aggression, a worsening in the sleep pattern, and an increase in screen time. Caregivers have reported worsening behavior and symptoms when parents leave for work, which may stem from children's fears about the health and well-being of those they are close to. Both parents and caregivers admitted that they are finally able to understand the difficulties children face when observing them closely during this period of confinement.²⁹

On the other hand, there was an improvement in anxiety in some children with ADHD due to flexible study hours, as opposed to the "restricted" school life and academic pressure that existed before the pandemic. Another positive point found in the study refers to self-esteem. The feeling of social inadequacy meant that this characteristic was considered low in the pre-pandemic period. Parents reported that it was easier to work on their children's self-esteem. There was an improvement in the symptoms of inattention and agitation, mainly due to the chance of taking regular breaks during study hours.²⁹

Children are a delicate and vulnerable social group, and support systems need to be in place so that any negative psychosocial and emotional effects can be mitigated. The results of the studies addressed to bring the importance of observing the possible repercussions and organizing coping strategies to assist in the care of the changes caused by the pandemic. Next, we will address the coping strategies suggested by the studies.

Coping strategies

In the context of the COVID-19 pandemic, the articles analyzed showed correlations between the repercussions

on children and the relationship between parents and children, whether in the transfer of information or the mirroring of behaviors. Thus, we observed the importance of the feeling of security within the family environment.^{15,16,22} Given the correlation between the anxiety levels of both groups, health strategies that act on the mental health of parents and/or caregivers may also be beneficial to children's mental health.¹⁵

In study A10, well-being was lower in children whose parents were fearful or anxious about the coronavirus and also in those whose parents went out to work or faced financial difficulties. Better results were seen in children with parents working from home. As a coping strategy, especially in families where both parents need to go out to work, there is a time for socialization within the family, with conversations, games, or other activities, so that children can have a greater sense of well-being.²³ Study A12 corroborates the findings of another study that also shows a relationship between anxiety symptoms in parents and greater risks of emotional and behavioral symptoms in children.²⁶

Parents and caregivers must be aware of the relationship between a good family environment and children's mental health, so they can manage the difficulties. Many times, the example guides a child in how to face a certain situation, as can be seen in the articles that examined this dynamic.

Study A8 brought up the importance of discussing the current scenario. Children who carried out this discussion showed more satisfaction with life and fewer negative repercussions for mental health. Discussing the current scenario is a protective factor - even in cases with only negative-pessimistic views about the pandemic. Thus, open discussion with children is encouraged whenever possible.²¹

There is a chance that more compliance with the pandemic scenario will occur if there is knowledge about the disease and a better understanding of quarantine measures¹⁹. Children who had greater knowledge about the pandemic and the current scenario, in general, had lower levels of anxiety. Even children under two years old can perceive the changes that have taken place around them.^{15,23}

The United Nations Children's Fund (UNICEF) has published an article to teach parents how to talk to children about the pandemic and COVID-19. Among the eight tips presented, the importance of giving space for the child to speak what he knows in his words was highlighted, while parents fill in or correct what is necessary, also reinforcing prevention measures. It is not necessary to "scare"

the child but to make sure that there are no doubts. This dialogue can be done in many ways, such as through stories and drawings. Children need to receive correct information, but it is important to always respect the level of understanding and seek reliable sources.³⁰

Curiosity is always present, and we need to know how to react so that children can understand what is happening around them. The most important thing for children is to have adults who can meet their needs, help them feel safe, and listen to their concerns.^{15,31} It is important to always strengthen children's knowledge, especially the younger ones. They should be taught how to wash their hands, wear masks, cover a cough or sneeze with their elbow, not get too close to other people and emphasize that this is a protection for them and their friends and people they care about.^{19,30} Talking to children about the situation, clearing doubts and removing misunderstood information is beneficial for children's mental health. Understanding what is happening around them is a right of children.¹⁵

All these findings highlight the delicate relationship that exists between the general condition of parents and how it affects their children, as well as the presence of a good family environment to foster mental health. Parents and caregivers need to be aware of this correlation so that they can manage the difficulties presented.

Limited spaces in homes and restricted contact with physical education teachers may be factors that contribute to the low rate of physical activity during social isolation.³² In study A12, 41.8% of children practiced 60 minutes of physical exercise for more than 2 days a week during home quarantine. These children were less likely to have behavioral problems and inattention-hyperactivity than those who were not physically active. Therefore, physical activity is considered a protective factor.²⁶

In study A10, part of the sample showed weight gain as a result of reduced physical activity. As a coping strategy, it was suggested that schools send physical activity schedules that can be done at home. Also, parents should consider games and activities to be done as a family, ensuring that their children exercise, maintain an adequate diet, have a healthy sleep routine, and use electronic devices at a predetermined time. It is also important for parents to talk about the pandemic, leaving their children well-informed, always respecting the child's level of understanding, and using reliable and up-to-date sources.²³

According to the WHO Guidelines for Physical Activity and Sedentary Behavior, in children and adolescents

between 5-17 years old, physical activity improves cardio-respiratory and muscular, cardiometabolic (blood pressure, dyslipidemia, glucose and insulin resistance), bone, cognitive (performance academic and executive function), mental health (reduction of symptoms of depression) and reduction of adiposity.³³

It is recommended that there is an average of 60 minutes daily of moderate to vigorous physical activity, mostly aerobic. Activities should be done at least three times a week. In addition, some physical activity is better than none, and parents should ensure that this becomes an enjoyable and age-appropriate routine, to ensure that screen time or other sedentary behaviors are limited.³³ They should also ensure that screen time or other sedentary behaviors are limited. public health policies should be established aimed at encouraging physical activity for children and adolescents, both on normal days and in emergencies, such as the pandemic scenario.²⁷

In study A9, the repercussions for mental health found were associated with changes in sleep quality. As a coping strategy, it was suggested that parents and caregivers organize their children's time, creating a regular sleep pattern and organizing schedules for the practice of physical activities, even in the restricted environment of the home. It was also proposed the implementation of public policies and special guides that can help in the abandonment of the sedentary lifestyle.²²

Physically active life provides a reduction in risk related to the serious damage caused by COVID-19.³⁴ Thus, government agencies must develop and implement health policies and actions that can encourage the practice of physical activity since childhood. Policies aimed at the practice of physical activity would not have a significant monetary weight compared to the financial and social cost of taking care of the sequelae of a sedentary lifestyle.³²

Social isolation can bring a series of changes in everyday life, which can affect, especially, children with ASD, who tend to react to changes in their daily routine. The challenges faced by this group are specific, although interventions such as physical activity can be integrated. Parents should also explain to children about the COVID-19 pandemic, create daily activities, share mutual interests, and stay in touch with the school.²⁸

The main challenges for this group will occur in the post-pandemic period when coping strategies will be necessary to minimize the emotional and psychological consequences of the new routine.¹⁴ Families with a child with ASD will need support, and the public health network must provide services and health actions that can effectively help at this time.

Health care such as childcare consultations and therapies suffered a temporary suspension of activity, which meant that several children were left without basic and/or specialized care, resulting in a lack of observation of their development. Thus, the importance of the systematic application of tools to detect neurodevelopmental disorders in the post-pandemic period is indicated.²⁸

In children with ADHD, the authors bring what is described as "ideal confinement", which would be a house with a garden or backyard where the child can play and run, observing the importance of physical activity. Coping strategies vary. They range from reinforcement to maintaining positive and supportive attitudes from parents, regulation of sleep and wake-up times, and encouraging the search for activities that can reduce screen time. Similar to children with ASD, those with ADHD need to receive special care in the post-pandemic period when they return to school and their old routine — especially in those whose symptoms have improved during the pandemic and quarantine.²⁹

Finally, the last coping strategy verified by this review concerns minimizing the negative effects of remote teaching, especially for children and adolescents with low socioeconomic and educational levels. The governments of each country must take responsibility for improving conditions for remote learning and ensuring that access to education is distributed fairly and universally.^{16,17}

We can mention some limitations of the study. Due to a large number of articles found, even with the use of instruments, the search was carried out by only one researcher, which may have led to the loss of a relevant article. In addition, the research was carried out in only four databases and a short period.

CONCLUSION

The main repercussions for mental health were anxiety, stress, depressive symptoms, hyperactivity, irritability, and changes in sleep patterns and mood states. The repercussions that refer to the social and entertainment scope are social distancing, changes in behavior, a decrease or absence of connection with peers, and an increase in screen time. There was a positive association between the practice of physical activity and good family structure for mental health in the groups studied.

Coping strategies were also pointed out, such as open and explanatory dialogues between parents and children about the pandemic and the coronavirus, regulation of sleep patterns and screen time, regular physical activity, improvement in the quality of remote teaching, and universality access to classes and implementation of public policies

and health actions. For specific groups, such as children with ASD and ADHD, symptom management and care in returning to the routine of the pre-pandemic period is necessary.

Given the repercussions we observed in the study, the Nursing team must be active, seeking to guide care according to the situation, whether as a form of treatment or prevention, and to promote health education, seeking to alleviate psychological consequences, which can end up lasting. COVID-19 affects the patient physically, socially, behaviorally, and emotionally in a peculiar way, which is also an atypical moment for Nursing, given that it is a newly discovered disease, with a frequent flow of new information. This demands that nurses are always looking for scientific improvement to be able to deal with the whole scenario in the most effective way possible.

This study contributed to a critical and reflective reflection in the area of teaching, research, and health care, through the results presented. This review has the potential to raise discussions about the post-pandemic moment and its repercussions on children's quality of life, seeking to alleviate psychological consequences - which can end up being lasting, since risk factors can be chronically cumulative. We expect that this study can contribute to the provision of assistance and qualified and comprehensive care, through continuous processes of construction, deconstruction, and reconstruction of ways of doing and thinking about the mental health of children and their families.

REFERENCES

1. Ministério da Saúde (BR). Coronavírus - O que você precisa saber. Brasília: MS; 2020[cited 2020 Oct 22]. Available from: <https://coronavirus.saude.gov.br/>
2. Organização Pan-Americana de Saúde. OMS afirma que COVID-19 é agora caracterizada como pandemia 11 de mar. Washington, DC: OPAS; 2020[cited 2020 Nov 05]. Available from: https://www.paho.org/bra/index.php?option=com_content&view=article&id=6120:oms-afirma-que-Covid-19-e-agora-caracterizada-como-pandemia&Itemid=812
3. World Health Organization. Health Emergency Dashboard. Geneva: WHO; 2020[cited 2021 Apr 15]. Available from: <https://covid19.who.int/region/amro/country/br>
4. Organização Pan-Americana de Saúde. Considerações para medidas de saúde pública relacionadas a escolas no contexto da COVID-19. Washington, DC: OPAS; 2020[cited 2020 Nov 04]. Available from: https://iris.paho.org/bitstream/handle/10665.2/52682/OPASWBRACOV19-202112_por.pdf?sequence=5&isAllowed=y
5. Linhares MBM, Enumo SRF. Reflexões baseadas na Psicologia sobre efeitos da pandemia COVID-19 no desenvolvimento infantil. *Estud Psicol.* 2020[cited 2019 Dec 12];37. Available from: <https://doi.org/10.1590/1982-0275202037e200089>
6. Sociedade Brasileira de Pediatria. Manual Saúde de Crianças e Adolescentes na Era Digital. Rio de Janeiro: SBP; 2016[cited 2020 Nov 05]. Available from: https://www.sbp.com.br/fileadmin/user_upload/2016/11/19166d-MOrient-Saude-Crian-e-Adolesc.pdf
7. BBC News Brasil. Crianças no celular? Como a pandemia mudou o modo como especialistas veem o uso de telas na infância. São Paulo, 23 de ago. de 2020[cited 2020 Nov 05]. Available from: <https://www.bbc.com/portuguese/geral-53774440>
8. World Health Organization. Mental health: strengthening our response. Geneva: WHO; 2018[cited 2021 Mar 12]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
9. Wade M, Prime H, Browne DT. Why we need longitudinal mental health research with children and youth during (and after) the COVID-19 pandemic. *Psychiatry Res.* 2020[cited 2021 Mar 12];290:113143. Available from: 10.1016/j.psychres.2020.113143
10. Xie X, Xue Q, Zhou Y, Zhu K, Liu Q, Zhang J, *et al.* Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China. *JAMA Pediatr.* 2020[cited 2021 Mar 20];174(9):898-900. Available from: 10.1001/jamapediatrics.2020.1619
11. Souza MT, Silva MD, Carvalho R. Revisão integrativa: o que é e como fazer. Einstein (São Paulo). 2010[cited 2021 Mar 20];8(1)102-6. Available from: <https://doi.org/10.1590/S1679-45082010RW1134>
12. CASP. Critical Appraisal Skills Programme [2018]. CASP checklist. Oxford, UK: 1993[cited 2020 Aug 21]. Available from: <https://casp-uk.net/casp-tools-checklists/>
13. Stillwell SB, Fineout-Overholt E, Melnyk BM, Williamson KM. Evidence-based practice, step by step: searching for the evidence. *Am J Nurs.* 2010[cited 2021 Mar 20];110(5):41-7. Available from: 10.1097/01.NAJ.0000372071.24134.7e
14. O'Sullivan K, Clark S, McGrane A, Rock N, Burke L, Boyle N, *et al.* A Qualitative Study of Child and Adolescent Mental Health during the COVID-19 Pandemic in Ireland. *Int J Environ Res Public Health.* 2021[cited 2021 Mar 20];18(3):1062. Available from: 10.3390/ijerph18031062
15. Avila MAG, Hamamoto Filho PT, Jacob FLS, Alcantra LRS, Berghammer M, Nolbris MJ, *et al.* Children's Anxiety and Factors Related to the COVID-19 Pandemic: an exploratory study using the children's anxiety questionnaire and the numerical rating scale. *Int J Environ Res Public Health.* 2020[cited 2021 Mar 25];17(16):5757. Available from: 10.3390/ijerph17165757
16. Ma Z, Idris S, Zhang Y, Zewen L, Ji Y, Pan Q, *et al.* The impact of COVID-19 pandemic outbreak on education and mental health of Chinese children aged 7-15 years: an online survey. *BMC Pediatr.* 2021[cited 2021 Mar 20];21(1):95. Available from: 10.1186/s12887-021-02550-1
17. Ravens-Sieberer U, Kaman A, Erhart M, Devine J, Schlack R, Otto C. Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany. *Eur Child Adolesc Psychiatry.* 2021[cited 2021 Mar 25]. Available from: <https://doi.org/10.1007/s00787-021-01726-5>
18. Ghandour RM, Sherman LJ, Vladutiu CJ, Ali MM, Lynch SE, Bitsko RH, *et al.* Prevalence and Treatment of Depression, Anxiety, and Conduct Problems in US Children. *J Pediatr.* 2019[cited 2021 Mar 25];206:256-67. Available from: 10.1016/j.jpeds.2018.09.021
19. Saurabh K, Ranjan S. Compliance and Psychological Impact of Quarantine in Children and Adolescents due to COVID-19

- Pandemic. *Indian J Pediatr.* 2020[cited 2021 Mar 25];87(7):532-6. Available from: [10.1007/s12098-020-03347-3](https://doi.org/10.1007/s12098-020-03347-3)
20. Medeiros CV, Kokott V. Convivência Escolar entre Pares de Idades Diferentes. *Anais do XII Congresso Nacional de Educação*; 2015; PUC-Paraná. 2015[cited 2021 Apr 10]. Available from: https://educere.bruc.com.br/arquivo/pdf2015/20692_10925.pdf
 21. Tang S, Xiang M, Cheung T, Xiang YT. Mental health and its correlates among children and adolescents during COVID-19 school closure: the importance of parent-child discussion. *J Affect Disord.* 2021[cited 2021 Apr 10];279:353-60. Available from: [10.1016/j.jad.2020.10.016](https://doi.org/10.1016/j.jad.2020.10.016)
 22. Cellini N, Di Giorgio E, Mioni G, Di Riso D. Sleep and Psychological Difficulties in Italian School-Age Children During COVID-19 Lockdown. *J Pediatr Psychol.* 2021[cited 2021 Apr 10];46(2):153-67. Available from: [10.1093/jpepsy/jsab003](https://doi.org/10.1093/jpepsy/jsab003)
 23. Adibelli D, Sümen A. The effect of the coronavirus (COVID-19) pandemic on health-related quality of life in children. *Child Youth Serv Rev.* 2020[cited 2021 Apr 10]; 119:105595. Available from: [10.1016/j.childyouth.2020.105595](https://doi.org/10.1016/j.childyouth.2020.105595)
 24. Yuksel D, Mckee GB, Perrin PB, Alzueta E, Cafarra S, Usuga-Ramos D, *et al.* Sleeping when the world locks down: correlates of sleep health during the COVID-19 pandemic across 59 countries. *Sleep Health.* 2021[cited 2021 Apr 10];7(2):134-42. Available from: <https://doi.org/10.1016/j.sleh.2020.12.008>
 25. Rezai N, Grandner MA. Changes in sleep duration, timing, and variability during the COVID-19 pandemic: large-scale Fitbit data from 6 major US cities. *Sleep Health.* 2021[cited 2021 Apr 10];7(2). Available from: <https://doi.org/10.1016/j.sleh.2021.02.008>
 26. Liu Q, Zhou Y, Xie X, Xue Q, Zhu K, Whan Z, *et al.* The prevalence of behavioral problems among school-aged children in home quarantine during the COVID-19 pandemic in china. *J Affect Disord.* 2021[cited 2021 Apr 29];279:412-6. Available from: [10.1016/j.jad.2020.10.008](https://doi.org/10.1016/j.jad.2020.10.008)
 27. Zhang X, Zhu W, Kang S, Qiu L, Lu Z, Sun Y. Association between Physical Activity and Mood States of Children and Adolescents in Social Isolation during the COVID-19 Epidemic. *Int J Environ Res Public Health.* 2020[cited 2021 Apr 10];17(20):7666. Available from: [10.3390/ijerph17207666](https://doi.org/10.3390/ijerph17207666)
 28. Amorim R, Catarino S, Miragaia P, Ferreras C, Viana V, Guardianio M. The impact of COVID-19 on children with autism spectrum disorder. *Rev Neurol.* 2020[cited 2021 Apr 10];71(8):285-91. Available from: [10.33588/rn.7108.2020381](https://doi.org/10.33588/rn.7108.2020381)
 29. Bobo E, Acquaviva E, Caci H, Franco N, Gamon L, Picot MC, *et al.* Comment les enfants et adolescents avec le trouble déficit d'attention/hyperactivité (TDAH) vivent-ils le confinement durant la pandémie COVID-19? *Encephale.* 2020[cited 2021 Apr 10];46(3S):S85-S92. Available from: [10.1016/j.encep.2020.05.011](https://doi.org/10.1016/j.encep.2020.05.011)
 30. United Nations International Children's Emergency Fund. How to talk to your child about coronavirus disease 2019 (COVID-19): 8 tips to help comfort and protect children. 2020[cited 2021 Apr 29]. Available from: <https://www.unicef.org/coronavirus/how-talk-your-child-about-coronavirus-covid-19>
 31. Fundo das Nações Unidas para a Infância. Coronavírus: como ajudar crianças a lidarem com o estresse? Brasília: UNICEF; 2020[cited 2021 Apr 29]. Available from: <https://www.unicef.org/brazil/historias/coronavirus-como-ajudar-criancas-lidarem-com-o-estresse>
 32. Fernandes T. Atividade física sempre: antes, durante e depois da pandemia de COVID-19. *Veja Saúde.* 2021[cited 2021 Apr 29]. Available from: <https://saude.abril.com.br/blog/guenta-coracao/atividade-fisica-sempre-antes-durante-e-depois-da-pandemia-de-covid-19/>
 33. World Health Organization. WHO guidelines on physical activity and sedentary behaviour. Geneva: WHO; 2020[cited 2021 Apr 29]. Available from: <https://www.who.int/publications/i/item/9789240015128>
 34. Sallis R, Young DR, Tartof SY, Sallis J, Sall J, Li Q, *et al.* Physical inactivity is associated with a higher risk for severe COVID-19 outcomes: a study in 48 440 adult patients. *Br J Sports Med.* 2021[cited 2021 Apr 29];55:1099-105. Available from: [10.1136/bjsports-2021-104080](https://doi.org/10.1136/bjsports-2021-104080)